University of St. Thomas Multipurpose Arena

Environmental Assessment Worksheet

June 2023

Prepared for:

SAINT PAUL
MINNESOTA

Prepared by:

Kimley»Horn

Table of Contents

List of Tables

List of Figures

List of Appendices

December 2022 Version

Environmental Assessment Worksheet

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board's (EQB's) website at: https://www.eqb.state.mn.us. The EAW form provides information about a project that may have the potential for significant environmental effects. Guidance documents provide additional detail and links to resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation, and the need for an EIS.

1. Project Title

University of St. Thomas Multipurpose Arena

2. Proposer

Proposer: University of St. Thomas
Contact Person: Anthony Adams, PE
Title: Senior Civil Engineer
Address: 533 South Third Street, Suite 100
City, State, ZIP: Minneapolis, MN 55415
Phone: 612-492-4741
Email: Anthony.Adams@ryancompanies.com

3. RGU

RGU: City of Saint Paul
Contact Person: Josh Williams
Title: Principal Planner
Address: 25 West Fourth Street
City, State, ZIP: Saint Paul, MN 55102
Phone: 651-266-6659
Email: josh.williams@ci.stpaul.mn.us

4. Reason for EAW Preparation

Check one:

Required:	Discretionary:
☐EIS Scoping	☐Citizen petition
☒Mandatory EAW	☐RGU discretion
	☐Proposer initiated

If EAW or EIS is mandatory, give EQB rule category subpart number(s) and name(s):
Minnesota Rules, part 4410.4300, subpart 34 (sports or entertainment facilities)

5. Project Location

County: Ramsey
City/Township: Saint Paul
PLS Location (¼, ¼, Section, Township, Range): NW ¼, SE ¼, Section 5, Township 28N, Range 23W
Watershed (81 major watershed scale): Mississippi River – Twin Cities
GPS Coordinates: 44.9396077, -93.1946973
Tax Parcel Number: 052823420005, 052823420004
At a minimum, attach each of the following to the EAW:

- **County map showing the general location of the project** (see Figure 1)
- **US Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries** (see Figure 2)
- **Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.** (see Figure 3 and Appendix A)
- **List of data sources, models, and other resources (from the Item-by-Item Guidance: *Climate Adaptation and Resilience* or other) used for information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the project during the life of the project (as detailed below in Item 7).**

6. Project Description

a. Provide the brief project summary to be published in the *EQB Monitor* (approximately 50 words).

The proposed University of St. Thomas Multipurpose Arena will be a redevelopment of an approximately 6-acre site located on the University of St. Thomas South Campus in Saint Paul, Minnesota. The proposed project will include a multi-purpose competition venue for the University's hockey and basketball programs with capacity for approximately 4,000 to 5,500 spectators. The project is also expected to include practice facilities, coaching offices, locker rooms, and student athlete support services and will host other university events such as commencement ceremonies, academic convocations, speakers, career fairs, and other

events for the university. The new facility will be designed to meet a LEED Silver rating[1]. There are three existing campus buildings with adjacent surface parking lots on site that will be demolished.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion, include a description of the existing facility. Emphasize 1) construction and operation methods and features that will cause physical manipulation of the environment or will produce wastes; 2) modifications to existing equipment or industrial processes; 3) significant demolition, removal, or remodeling of existing structures; and 4) timing and duration of construction activities.

The 6-acre University of St. Thomas Multipurpose Arena (Lee and Penny Anderson Arena at the University of St. Thomas) project site is located on the University of St. Thomas South Campus, bounded to the north by Summit Avenue, the east by Cretin Avenue, the South by Goodrich Avenue, and the west by Mississippi River Boulevard South. See Figure 1 and Figure 2 for project location and Figure 3 for existing site conditions.

The proposed project will include one building to house a dual-purpose competition venue for the University's hockey and basketball programs with capacity for approximately 4,000 to 5,500 spectators. The project is also expected to include coaching offices, locker rooms, and student athlete support services including sports medicine, strength and conditioning, nutrition, and equipment. Additionally, two basketball practice facilities and an auxiliary ice sheet are expected. The arena will host other university events such as commencement ceremonies, academic convocations, speakers, career fairs, and other events for the university. Existing utility tunnels will connect the arena to nearby facilities, and a bridge will connect the third level of the arena to Anderson Parking Ramp. The concept plan is included in Appendix A.

Three existing buildings on the site will be demolished to accommodate the redevelopment: Cretin Hall, Service Center, and McCarthy Gymnasium. Existing surface parking lots will be demolished to accommodate the redevelopment: Lot N, Lot P1, Lot V, Lot X, Lot Y, and a portion of Lot O (38 spaces to remain after reconstruction). Utility relocations and extensions are expected to accommodate facility construction. No onsite parking is expected to be constructed in the redevelopment as existing parking elsewhere within the University campus is to be used. Vehicular access to the facility will consist of loading zones via an access drive on the western boundary of the project site and via the termination of Grand Avenue in the northeast part of the project site.

Construction methods are expected to be typical of new buildings on the University of St. Thomas campus and may include poured in place concrete spread footing and concrete foundation walls with limited drilled piers and temporary earth retention system possibilities adjacent to existing buildings. Construction is anticipated to begin in spring 2024 and be

[1] The USGBC's LEED green building program provides a framework for improving building performance and the responsible use of energy, water, and material resources through design, construction, and ongoing operations. Achieving certification demonstrates a project's verified implementation of these strategies and commitment to supporting a healthier, more sustainable community.

complete by fall 2025. The project may complete some early utility work in the Fall of 2023 to prepare the site.

c. Project magnitude

Table 1: Project Magnitude

Measure	Magnitude
Total Project Acreage	6 acres
Institutional Building Area (square feet)	270,000 square feet
Structure Height(s)	58 feet 3 inches (Main Arena) 66 feet (Basketball Practice Facilities) 81 feet 11 inches (Raised parapets for stair/elevator overruns and/or mechanical screening)

d. Explain the project purpose. If the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The purpose of this project is to redevelop a portion of the University of St. Thomas South Campus into a multipurpose arena to house a competition venue for the University's hockey and basketball programs to meet Division I athletic program expectations.

e. Are future stages of this development, including development on any other property, planned or likely to happen? ☒ Yes ☐ No

If yes, briefly describe future stages, relationship to present project, timeline, and plans for environmental review.

The Anderson Parking Facility is an existing parking ramp that was designed for a future expansion of two additional floors. The expansion is discussed as a potential improvement in the Traffic Impact Analysis (Appendix D); however, is not currently planned or funded at this time.

f. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No

If yes, briefly describe the past development, timeline, and past environmental review.

Not applicable.

7. Climate Adaption and Resilience

a. Describe the climate trends in the general location of the project (see guidance: *Climate Adaptation and Resilience*) and how climate change is anticipated to affect that location during the life of the project.

Trends in temperature, precipitation, flood risk, and cooling degree days are described below for the general project location. Some of the climate projections summarized below use Representative Concentration Pathways (RCPs), which are greenhouse gas concentration scenarios used by the Intergovernmental Panel on Climate Change. RCP 4.5 is an

intermediate scenario in which emissions decline after peaking around 2040, and RCP 8.5 is a worst-case scenario in which emissions continue to rise through the century.[2]

Temperature

According to the Minnesota Climate Explorer,[3] the historical average temperature in Ramsey County between 2002 and 2022 was approximately 45.66°F, with the lowest average in 2014 (41.53°F) and the highest average in 2012 (49.17°F). The average annual temperature in Ramsey County is projected to be 49.53°F from 2040-2059 under RCP 4.5. From 2080-2099, the average annual temperature is projected to be 51.91°F and 55.68°F under RCP 4.5 and RCP 8.5, respectively[4].

Urban Heat Island

Surfaces and structures such as roads, parking lots, and buildings absorb and re-emit more heat from the sun than natural landscapes. This can significantly raise air temperature and overall extreme heat vulnerability in urban areas where there are dense concentrations of these surfaces. This is referred to as urban heat island effect. According to the Metropolitan Council's Extreme Heat Map Tool, based on the land surface temperature at the project site during a heatwave in 2016, the site is susceptible to extreme heat.[5]

Precipitation

According to the Minnesota Climate Explorer, historic average precipitation in Ramsey County between 2002 and 2022 was approximately 31.34 inches, with the lowest average in 2022 (21.78 inches) and the highest average in 2016 (41.13 inches). Average annual precipitation in Ramsey County from 2040 to 2059 is projected to be 32.95 inches under RCP 4.5. From 2080 to 2099, average annual precipitation is projected to be 33.51 inches and 35.97 inches under RCP 4.5 and RCP 8.5, respectively.

Localized Flood Risk

The Metropolitan Council's Localized Flood Map Screening Tool[6] identifies localized flood hazards, referred to as Bluespots, which are broken into categories based on potential flood water depth. This tool shows several Bluespots within the project site. Multiple Primary and Shallow Bluespots are mapped in the northern part of the project site along Grand Avenue and in surface parking lots, with a maximum depth of 1.60 feet. A Shallow Bluespot is located along McCarthy Gymnasium in the eastern part of the project site, with a maximum depth of 0.28 feet. There are also Primary and Shallow Bluespots in the southwest portion of the project site, with a maximum depth of 1.74 feet. Primary Bluespots are the first areas to fill with water and are generally considered higher risk, while Shallow Bluespots are separate, isolated low areas generally considered low risk.

---

[2] Climate Explorer Metadata. Available at https://www.dnr.state.mn.us/climate/climate-explorer-metadata.html.
[3] Minnesota Climate Explorer. Minnesota Department of Natural Resources. Available at https://arcgis.dnr.state.mn.us/ewr/climateexplorer/main/historical.
[4] The timeframe of 2060-2079 is not included because it is not one of the models in the Climate Explorer analysis.
[5] Extreme Heat Map Tool. Metropolitan Council. Available at https://metrocouncil.org/Communities/Planning/Local-Planning-Assistance/CVA/Tools-Resources.aspx.
[6] Localized Flood Map Screening Tool. Metropolitan Council. Available at https://metrocouncil.org/Communities/Planning/Local-Planning-Assistance/CVA/Tools-Resources.aspx.

Cooling Degree Days

As defined by the National Weather Service, Cooling degree days, which are often used as a proxy to estimate cooling needs for buildings, can be examined as a baseline and projected exposure indicator under the RCP 4.5 and RCP 8.5 scenarios. Cooling degree days are indexed units, not actual days, which roughly describe the demand to heat or cool a building. Cooling degree days accumulate on days warmer than 65°F when cooling is required. For example, if a weather station recorded an average daily temperature of 78°F, cooling degree days for that station would be 13[7]..[8] Cooling degree days are used as a proxy to estimate cooling needs for buildings.

According to Heat Vulnerability in Minnesota,[9] the number of cooling degree days in 2019 for Ramsey County was 374. The number of cooling degree days in 2050 for Ramsey County is projected to be 450 and 593 for RCP 4.5 and RCP 8.5, respectively.

b. For each resource category in the table below, describe the project's proposed activities and how the project's design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.

Climate considerations and adaptations for the proposed project are described in Table 2.

[7] Heat Vulnerability in Minnesota. Available at: https://maps.umn.edu/climatehealthtool/heat_app/
[8] "What Are Heating and Cooling Degree Days." National Weather Service. Available at https://www.weather.gov/key/climate_heat_cool.
[9] Heat Vulnerability in Minnesota. Minnesota Department of Health and the University of Minnesota. Available at https://maps.umn.edu/climatehealthtool/heat_app/.

Table 2: Climate Considerations and Adaptations

Resource Category	Climate Considerations	Project Information	
		Climate Change Risks and Vulnerabilities	**Adaptations**
Project Design	Aspects of the building architecture/materials choices and site design that may negatively affect urban heat island conditions in the area considering changing climate zones, temperature trends, and potential for extended heat waves.	The site is located in an area that experiences urban heat island effect[10]. Additionally, projected climate trends include increased temperature and precipitation, and increased frequency of freeze/thaw cycles.	• University of St. Thomas is considering ways to design landscaping (via shade trees) and stormwater management systems to reduce stormwater runoff and mitigate for the urban heat island effect. Additionally, these stormwater facilities would improve water quality and stormwater runoff in the project vicinity through using minimal turfgrass, which will reduce irrigation needs, as well as the use of native pollinating perennials, which after 2-3 years period generally do not require irrigation. Plantings around the building perimeter will be salt-tolerant and tolerant of harsh sites, urban settings. For more information on this topic, see Section 12. • University of St. Thomas has committed to building LEED-certified facilities that can be designed to use less energy and water • The following measures provide increased reliability and energy efficiency in the arena to reduce emissions: o Redundant chiller design and incorporation of glycol into supply

[10] Defined by the Environmental Protection Agency as "urbanized areas that experience higher temperatures than outlying areas. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies. Urban areas, where these structures are highly concentrated and greenery is limited, become "islands" of higher temperatures relative to outlying areas." Source: https://www.epa.gov/heatislands

Resource Category	Climate Considerations	Project Information	
		Climate Change Risks and Vulnerabilities	Adaptations
			loop for all cooling coils will protect from freezing conditions and ensure systems remain operational. o Chillers will use next-generation refrigerants with low global warming potential. o The boiler system will include n+1 redundancy and freeze protection. o The project is being considered for connection to the campus microgrid for back-up power during outages or emergency events. • These efficiencies reduce heat emitted from the buildings and their HVAC systems and reduces indoor and outdoor exposure to heat, which is one of the impacts of the heat island effect.[11]
Land Use	No critical facilities (i.e., facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed, and the study area has a low risk of localized flooding.	The proposed development is in an area with low flood risk.	University of St. Thomas will investigate ways to design the stormwater management facilities to minimize standing water and reduce the risk of flooding on the project site.

[11] Source: https://www.sciencedirect.com/science/article/pii/S2666278722000083

Resource Category	Climate Considerations	Project Information	
		Climate Change Risks and Vulnerabilities	Adaptations
Water Resources	Changes in land cover caused by the project could affect site surface hydrology, resulting in more stormwater runoff and nutrient loading	• Changes in weather patterns may cause a higher frequency of freeze/thaw cycles, resulting in the need for increased salting. • Chlorides from salting degrade nearby water quality and impact aquatic life.	• The stormwater system will be sized for the additional impervious areas and changes in stormwater requirements. • The snow and ice management system at the University of St. Thomas includes a multi-step process to reduce the use of chemicals for salting which includes pretreatment, removal, de-icing, and clean up For more information on this topic, see Section 12.
Contamination/ Hazardous Materials/ Wastes	Current Minnesota climate trends and anticipated climate change in the general location of the project may influence the potential environmental effects of generation/ use/storage of hazardous waste and materials.	Increased moisture added to waste material or debris, which will in turn increase methane gas production and add to greenhouse gases.	Any hazardous waste products generated or stored within the proposed development will be registered and kept in accordance with Minnesota Pollution Control Agency (MPCA) requirements. For more information on this topic, see Section 13.
Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)	Current Minnesota climate trends and anticipated climate change in the general location of the project may influence local species and suitable habitat.	Suitable habitat for local species may become unsuitable due to land use changes, increased temperature, and increased runoff.	University of St. Thomas is investigating ways to minimize tree removals or replace more trees than are removed and include non-invasive native plants, resulting in a net gain of suitable habitat for local species including small mammals, insects, and birds. For more information on this topic, see Section 14.

8. Cover Types

Estimate the acreage of the site with each of the following cover types before and after development.

Estimated cover type acreages within the project site before and after development are provided in Table 3. Green infrastructure and tree canopy acreages before and after site development are provided in Table 4 and Table 5.

Table 3: Cover Types

Cover Type	Before (Acres)	After (Acres)
Wetlands and Shallow Lakes (less than 2 meters deep)	0.0	0.0
Deep Lakes (more than 2 meters deep)	0.0	0.0
Rivers/Streams	0.0	0.0
Wooded/Forest	0.0	0.0
Brush/Grassland	0.0	0.0
Cropland	0.0	0.0
Livestock Rangeland/Pastureland	0.0	0.0
Lawn/Landscaping	1.3	0.3
Green Infrastructure (total from Table 4)	0.0	0.0
Impervious Surface	4.8	5.8
Stormwater Pond (wet sedimentation basin)	0.0	0.0
Other (describe)	0.0	0.0
Total	6.	6

Table 4: Green Infrastructure

Green Infrastructure	Before (Acres)	After (Acres)
Constructed Infiltration Systems (infiltration basins, infiltration trenches, rainwater gardens, bioretention areas without underdrains, swales with impermeable check dams)	0.0	0.0
Constructed Tree Trenches and Tree Boxes	0.0	0.0
Constructed Wetlands	0.0	0.0
Constructed Green Roofs	0.0	0.0
Constructed Permeable Pavements	0.0	0.0
Other (describe)	0.0	0.0
Total	0.0	0.0

The specifics of potential proposed green infrastructure will be determined as design advances and will be addressed through the City's entitlement process as well as watershed district and MPCA requirements.

Table 5: Trees

Trees	Number
Number of Mature Trees Removed During Development	76

Trees	Number
Number of New Trees Planted	50[12]

9. Permits and Approvals Required

List all known local, state, and federal permits, approvals, certifications, and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing, and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules Chapter 4410.3100.*

Table 6: Permits and Approvals Required

Unit of Government	Type of Application	Status
Federal		
Federal Aviation Administration	Notice of Proposed Construction or Alteration	To be applied for
State		
Minnesota Department of Health	Water Main Installation Permit	To be applied for, if applicable
	Well Sealing Notification	To be applied for
Minnesota Department of Natural Resources	Water Appropriation Permit	To be applied for, if applicable
Minnesota Pollution Control Agency	Construction Contingency Plan and Response Action Plan Approval	To be applied for, if applicable
	Disturbance Permit	To be applied for, if applicable
	Notice of Intent of Demolition	To be applied for, if applicable
	National Pollutant Discharge Elimination System Permit	To be applied for
	Sanitary Sewer Extension Permit	To be applied for, if applicable
Regional		
Metropolitan Council	Sewer Connection Permit	To be applied for, if applicable
Capitol Region Watershed District	Permit for Stormwater Management	To be applied for
	Permit for Erosion and Sediment Control	To be applied for
Local		
Ramsey County	Right-of-Way Permit	To be applied for, if applicable
	Road Access Permit	To be applied for, if applicable

[12] The University of St. Thomas has plans for at least 26 trees to be planted elsewhere on campus, outside of the EAW site area, in order to replace or exceed the amount of trees removed from the project. Final locations of the trees will be determined as the project design advances.

Unit of Government	Type of Application	Status
	Demolition Permit and Pre-Demolition Inspection	To be applied for, if applicable
City of Saint Paul	Building Permit	To be applied for
	Certificate of Occupancy	To be applied for
	Demolition Permit	To be applied for
	Electrical Permits and Inspections	To be applied for
	Excavation Permit	To be applied for
	Fire Engineering Permits and Inspections	To be applied for, if applicable
	Grading/Fill Permit and Inspections	To be applied for
	Heritage Preservation Commission Design Review	To be applied for
	Mechanical Permits and Inspections	To be applied for
	Obstruction Permit	To be applied for, if applicable
	Plumbing/Gas Permits and Inspections	To be applied for
	Right-of-Way Plan Review	To be applied for, if applicable
	Sewer Permits	To be applied for
	Sidewalk Permit	To be applied for, if applicable
	Sign Permit	To be applied for
	Site Plan Review	To be applied for
	Tank Permit	To be applied for, if applicable
	Plumbing Permit	To be applied for
	Transportation Demand Management Plan	To be applied for
Saint Paul Regional Water Services	Hydrant Permit	To be applied for
	Backflow Preventer Permit (and Testing)	To be applied for
	Water Main Installation	To be applied for

10. Land Use

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks and open space, cemeteries, trails, and prime or unique farmlands.

The existing site is part of the University of St. Thomas campus and includes several buildings (Cretin Hall, Service Center, McCarthy Gymnasium), surface parking lots (Lots N, O, P1, V, X, and Y), and sidewalks (see Figure 3). Adjacent existing land use is institutional in all directions (the University of St. Thomas and St. Paul Seminary

campuses). Beyond campus to the north lies park/recreational and residential land, to the east lies residential and mixed-use land, to the south lies residential properties, and to the west lies park/recreational/preserve and open water (see Figure 4).

There are two parks within ¼ mile of the project site: Mississippi Gorge Regional Park to the west and Shadow Falls Park to the northwest. The Mississippi Gorge East River Parkway Trail extends through both parks.

There are no cemeteries or prime or unique farmland within or adjacent to the project site.

ii. Planned land use as identified in comprehensive plans (if available) and any other applicable plan for land use, water, or resource management by a local, regional, state, or federal agency.

In 2020, the City of Saint Paul adopted the *2040 Comprehensive Plan* to guide development in the city over the next 20 years.

The *2040 Comprehensive Plan* Future Land Use map designates the project site as Civic and Institutional, which includes building and open space for major institutional campuses. Three policies apply to the Civic and Institutional land use category; however, one is specific to the Capitol Area and is not applicable to the project site. Policy LU-53 encourages partnerships with colleges and universities to strengthen connections with the community and adjacent neighborhoods, and support workforce development, business creation and innovation, and retention of youth and young professionals. Policy LU-54 aims to ensure that campuses are compatible with surrounding neighborhoods by managing parking demand and supply, maintaining institution-owned housing stock, minimizing traffic congestion, and providing for safe pedestrian and bicycle access.

The project site is located in the Mississippi River Corridor Critical Area (MRCCA). The MRCCA is designated in Minnesota state law and applies to land areas on both sides of the Mississippi River in the Minneapolis-Saint Paul-Bloomington metropolitan area along a roughly 72-mile stretch of the river between Coon Rapids and Hastings, MN. The intent of the MRCCA is to protect and preserve the natural, scenic, recreational, and transportation resources along the corridor, which is done through additional planning requirements and development standards, implemented by communities located in the MRCCA.

The MRCCA was established by Governor's Executive Order 79-19. In 2017, the Minnesota Department of Natural Resources promulgated new MN Rules Sec, 6106 in place of the original executive order. Among the new features of MN Rules 6106 is that all municipalities within the MRCCA were required to include an MRCCA-specific chapter in their 2040 comprehensive plans. Saint Paul's plan includes Policy CA-1, stating that the City guide land use and development activities consistent with the management purpose of each of the MRCCA Districts. The project site is located within the River Towns and Crossings District (CA-RTC) of the MRCCA. The CA-RTC District includes historic downtown areas and limited nodes of intense development at specific river crossings. Institutional campuses that predate designation of the Mississippi River, such as the project site, are also included in this District. Land use

management within the CA-RTC District aims to focus redevelopment in limited areas at river crossings. Priorities of the CA-RTC District include minimizing erosion, minimizing untreated stormwater runoff into the river, maintaining public access to and public views of the river, and restoring natural vegetation in riparian corridors and tree canopy. While comprehensive plan policy language has been adopted and still applies, it should be noted that MN Rules 6106 also require all municipalities to adopt zoning regulations consistent with the rules for all areas within the MRCCA. Saint Paul is in the process of formal adoption of new ordinance language consistent with MN Rules 6106, but has not yet completed the adoption. Per the Rules, Saint Paul's existing MRCCA ordinance, which refers to the area where the project is located as the RC3 River Corridor Urban Open (an overlay zoning district), must remain in effect until new MRCCA zoning is formally adopted by the City.

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The project site is currently zoned R2 – One Family Residential (see Figure 5). This district consists primarily of low-density, one-family dwellings, civic and institutional uses, and public services and utilities that serve residents. In Saint Paul, college and university campuses located in residentially zoned areas require a Conditional Use Permit (CUP), which defines campus boundaries and regulates building heights and setback requirements, among other things. There is an existing CUP in place for the University of St Thomas campus. The CUP specifies building height limits of 75′ for the western portion of the project site and 60′ for the eastern.

In addition to the underlying zoning and CUP, the project site is covered by two overlay zoning districts: the SH Student Housing Neighborhood Overlay District and overlay zoning for the MRCCA. The Student Housing overlay district only applies to non-owner occupied single family and homes and duplexes, and does not apply to the proposed arena. The project is also within the RC3 River Corridor Urban Open Overlay District (MRCCA, see Figure 6). The RC3 River Corridor Urban Open Overlay District limits building heights to 40 feet. Once formally adopted, Saint Paul's new MRCCA zoning will conform MN Rules 6106, which will allow for heights of 48′ and up to 65′ with a conditional use permit for the project site.

iv. If any critical facilities (i.e., facilities necessary for public health and safety, those storing hazardous materials, or those housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity.

No critical facilities are proposed as part of the project, and the project site is not located within a FEMA 100-year floodplain area.

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 10a above, concentrating on implications for environmental effects.

The proposed multipurpose arena is generally compatible with surrounding campus land uses on campus and the planned land use for the site. Civic and institutional use in the R2 –

One Family Residential zone includes college, university, seminary, or similar institutions of higher learning.

The main arena section of the proposed facility is designed to a structure height of 58 feet 3 inches. The portion of the arena to house basketball practice facilities is designed to a structure height of 66 feet. Prominent corners of the building are designed as raised parapets for stair or elevator overruns and/or mechanical screening at a height of 81 feet 11 inches. All measurements are as defined by the City of Saint Paul building height calculations. Parapets, stair or elevator overruns, and mechanical screening are not calculated towards the building height per the City's zoning regulations. For sloped roofs, the midpoint of the roof is used for structure height calculations.

The proposed structure heights of the arena exceed the maximum height allowed in the RC3 River Corridor Urban Open Overlay District of 40 feet. However, the more specific height requirements of the University of St. Thomas CUP, 75' feet in the western portion of the project site and 60' in the eastern, are controlling for purposes of height regulation per a long-standing City interpretation. The facility's structure height does not exceed the maximum height allowance as defined by the University of St. Thomas' Conditional Use Permit. Note that the basketball practice facilities portion of the building, which is designed to a height of 66 feet, is located within the portion of the site with a building height restriction of 75 feet.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.

As noted above in Item 10b, no land use or zoning incompatibilities were identified.

11. Geology, Soils, and Topography/Landforms

a. Geology – Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

According to the Geologic Atlas of Ramsey County (1992),[13] bedrock geology of the project site consists of Decorah Shale – green, calcareous shale with thin limestone interbeds. In April 2023, American Engineering Testing prepared a draft Report of Geotechnical Exploration for the project site. American Engineering Testing completed subsurface exploration which consisted of 12 penetration test borings throughout the project site. Bedrock was encountered at depths of 8 feet to 12 feet below ground surface. Groundwater was encountered in penetration test borings at depths of 6 feet to 12 feet below ground surface. Groundwater was also encountered in limestone seams within the bedrock formation. Surficial geology of the project consists of stream sediment of Glacial River Warren.

No sinkholes or karst conditions were identified for the project site.

[13] Geologic Atlas of Ramsey County, Minnesota. Minnesota Geological Survey. Available at https://conservancy.umn.edu/handle/11299/58233.

b. Soils and Topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability, or other soil limitations, such as steep slopes or highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections, or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 12.b.ii.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, there are two soil types within the site: the Urban land-Chetek complex, 3 to 15 percent slopes, which covers the majority of the project site, and the Urban land-Waukegan complex, 0 to 3 percent slopes, which covers the northeastern corner of the project site. Due to the location of the site and the classification of the soil, the soil type is not rated for an erosion hazard rating, meaning that there is not enough information to make a determination regarding soil erodibility.

In April 2023, American Engineering Testing prepared a draft Report of Geotechnical Exploration for the project site. American Engineering Testing completed subsurface exploration which consisted of 12 penetration test borings throughout the project site. Fill, consisting of a mixture of sandy lean clays, lean clays, clayey sands, and silty sands, was encountered at all boring locations to depths of 3 feet to 9.5 feet below ground surface. American Engineering Testing concluded that the fill material has variable strength and compressibility, are mostly slow draining and are susceptible to freeze-thaw movements. Soils documented below fill included coarse alluvial soil and till, determined to be moderate to slow draining and susceptible to freeze thaw movements.

Site grading for the proposed arena will occur, with approximately 60,000 cubic yards of excavation proposed for site grading and development. Grading activities within the site are anticipated to begin in spring 2024. Where required, slope stabilization will be provided by means of vegetation establishment, erosion control blankets, or other standard methods of erosion and sediment control. The proposed development within the site will require compliance with the Capitol Region Watershed District's and the City of Saint Paul's erosion and sediment control standards.

12. Water Resources

a. Describe surface water and groundwater features on or near the site below.

i. Surface Water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, shoreland classification and floodplain/floodway, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive species and the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

There are no surface waters located within the project site (see Figure 7). No trout streams or lakes, wildlife lakes, migratory waterfowl feeding and resting lakes, or outstanding resource value waters are located within the project site or within one mile of the project site.

The National Wetlands Inventory identifies 12 wetland and water features within 1 mile of the project site, including the Mississippi River which is located less than ¼ mile west of the project site (see Figure 7). This segment of the Mississippi River is also identified as a Minnesota Department of Natural Resources (DNR) Public Watercourse and Public Water Basin (U.S. Lock & Dam #1 Pool).

The Mississippi River is listed as impaired on the Minnesota Pollution Control Agency's (MPCA's) Part 303d Impaired Waters List (ID Number 07010206-814). This stretch of the river, from Upper St. Anthony Falls to the St. Croix River, is listed as impaired for mercury, PCBs, PFOS, aluminum, nutrients, total suspended solids, and fecal coliform. Total Maximum Daily Load (TMDL) plans have been approved for mercury in fish tissue and water column, nutrients, and total suspended solids.

The National Hydrography Dataset from the U.S. Geological Survey identifies nine flowline features within 1 mile of the project site, including the Mississippi River. The nearest NHD-mapped flowline is a stream approximately 140 feet west of the project site, in alignment with the Grotto. The Grotto is a known feature within the campus. The grotto is a linear aquatic feature that conveys stormwater run-off from the impervious surfaces within the project site.

ii. Groundwater – aquifers, springs, and seeps. Include 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; and 3) identification of any onsite and/or nearby wells, including unique numbers and well logs, if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

According to the Minnesota Department of Natural Resources' (DNR's) Minnesota Hydrogeology Atlas,[14] depth to groundwater is mapped as greater than 50 feet across the site. In April 2023, American Engineering Testing prepared a draft Report of Geotechnical Exploration for the project site. American Engineering Testing completed subsurface exploration which consisted of 12 penetration test borings throughout the project site. Groundwater was encountered in penetration test borings at depths of 6 feet to 12 feet below ground surface. Groundwater was also encountered in limestone seams within the bedrock formation.

According to the Minnesota Department of Health's (MDH's) Minnesota Well Index,[15] one active irrigation well is mapped south of McCarthy Gymnasium. In March 2023, American Engineering Testing installed a temporary piezometer to measure groundwater levels. The well has not been updated on MDH's Well Index. According

[14] Minnesota Department of Natural Resources. Minnesota Hydrogeology Atlas. Available at https://www.dnr.state.mn.us/waters/groundwater_section/mapping/mn-hydro-atlas.html.
[15] Minnesota Department of Health. Minnesota Well Index. Available at https://mnwellindex.web.health.state.mn.us/.

to MDH's Source Water Protection Web Map Viewer,[16] the project site is not within a wellhead protection area or drinking water supply management area.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects below.

i. Wastewater – For each of the following, describe the sources, quantities, and composition of all sanitary, municipal/domestic, and industrial wastewaters projected or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

Wastewater pretreatment measures to be installed at the project site include a commercial kitchen grease trap. Existing sanitary sewers to serve the project site are located along Summit Avenue, Cretin Avenue, and Grand Avenue. The proposed site design includes a new sanitary sewer connection up to the south side of Summit Avenue and connection near the southeast corner of the site to an existing sanitary sewer within the site. These convey wastewater via city sanitary sewers to the Metropolitan Council interceptor system and eventually to the Metropolitan Council Wastewater Treatment Plant. The Metropolitan Council Wastewater Treatment Plant is an advanced secondary treatment plant with ultraviolet disinfection. The plant currently treats approximately 178 million gallons per day (GPD), with a capacity of up to 314 million GPD according to the Metropolitan Council Environmental Services (MCES) Plant Inflow Summary Report for the period ending September 30, 2014. Based on the Metropolitan Council Environmental Services (MCES) Sewer Availability Charge (SAC) criteria calculator, the estimated daily flow for the Multipurpose Arena is 0.055 gallons per day (MGD). Using the Metropolitan Council's hourly peaking factor of 3.2, the estimated peak flow generated is 0.176 MGD (0.06 percent of existing capacity). Thus, the existing municipal wastewater infrastructure is capable of handling new demand generated by the development.

2) If the wastewater discharge is to a subsurface sewage treatment system (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system. If septic systems are part of the project, describe the availability of septage disposal options within the region to handle the ongoing amounts generated as a result of the project. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity, and amount with this discussion.

Not applicable.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent

[16] Minnesota Department of Health. Source Water Protection Web Map Viewer. Available at https://mdh.maps.arcgis.com/apps/View/index.html?appid=8b0db73d3c95452fb45231900e977be4.

limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects.

Not applicable.

ii. **Stormwater – Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post-construction, including how the project will affect runoff volume, discharge rate, and change in pollutants. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity, and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments or are classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.**

The project site currently consists of approximately 4.8 acres of impervious surfaces, including approximately 2 acres of impervious surfaces which drain via topography west towards the Grotto. The Grotto lies on the University of St. Thomas campus, west of the project site and follows a drainage channel west towards the Mississippi River based on a review of topography. A National Hydrography Dataset (NHD) stream is mapped in this area. The remaining approximately 2.8 acres of impervious surfaces drain towards the southeast to an existing storm sewer tunnel which discharges to the Mississippi River.

After construction, approximately 5.8 acres of impervious surfaces are expected within the project site. Post-construction quality of stormwater runoff from the project site will be improved by best management practices (BMPs) to meet MPCA and Capital Region Watershed District treatment requirements. Design objectives for stormwater management will also include no increase in rate of stormwater drainage toward the Grotto while maintaining or improving water quality in the stormwater run-off. Remaining acres of stormwater will drain towards the existing storm sewer tunnel.

A Stormwater Pollution Prevention Plan (SWPPP) will be developed in accordance with the National Pollutant Discharge Elimination System (NPDES) permit administered by the MPCA. The SWPPP will cover temporary measures to prevent pollution during construction (erosion and sediment control as well as controls to

minimize spills, leaks, or other discharges of pollutants) and permanent measures to prevent stormwater pollution after construction. These BMPs may include one or more of the following: silt fencing, inlet sediment filters, sediment traps, diversion ditches, grit chambers, temporary ditch checks, rock filter dikes, fiber logs, turf reinforcement mats, temporary seeding, riprap and erosion control blankets for disturbed areas, and seeding or placement of sod or other plant material for final restoration. An Erosion Control Plan checklist will be followed by the developer to meet city and state requirements, minimize drainage problems and soil erosion, and prevent sediment from entering curb and gutter systems and storm sewer inlets.

The project will comply with all city, watershed district, county, and state rules for stormwater management, and chloride use will be addressed in the Stormwater Management Plan that will be reviewed by the city for compliance.

iii. **Water Appropriation – Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use, and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should the appropriation volume increase beyond infrastructure capacity or water supply for the project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.**

Construction dewatering may be required for the development of the project site. Construction activities associated with dewatering will include discharging into temporary sedimentation basins to reduce the rate of water discharged from the site, as well as discharging to temporary stormwater BMPs. Any temporary dewatering will require a DNR Temporary Water Appropriations General Permit 1997-0005 if less than 50 million gallons per year and less than one year in duration. It is anticipated that the temporary dewatering would only occur during utility installations and potential construction of building footings.

The water supply will be obtained from the municipal water supply system operated by Saint Paul Regional Water Services (SPRWS). SPRWS obtains water from the Mississippi River, which is filtered through a chain of lakes and drawn into the treatment plant from Vadnais Lake. The system also has 10 water supply wells, which obtain water from the Prairie du Chien and Jordan aquifers. These wells are typically only used for emergency backup or are run at limited volumes to help control temperature and odor from the surface water intakes. By only running the wells at

these limited times, SPRWS is reducing the potential impact to the available groundwater supplies, relying instead on the available surface water supplies.

Two eight-inch water mains will serve the arena for the domestic water use. Peak demand is undetermined at the current level of project design; however, project expectations on duration include heavy usage during events, average usage during the academic year, and light to medium usage in the summer. Water use will include water closets, sinks, showers, HVAC makeup water, and ice making which will serve toilet rooms, commercial kitchens, locker rooms, ice making equipment, and HVAC makeup water. The project site is currently part of the University of St. Thomas campus and existing infrastructure will be modified.

No wells will be used as a water source for this project. One existing well is located at the southern edge of McCarthy Gymnasium and will be removed during project construction. One temporary piezometer was installed at the project site to document groundwater levels and will be removed prior to project construction. If unidentified wells are found during construction, the MPCA and MDH must be contacted to determine the course of action, which may include sealing, relocating, or preserving by a licensed well contractor according to Minnesota Rules Chapter 4725.

iv. Surface Waters

1) **Wetlands – Describe any anticipated physical effects or alterations to wetland features, such as draining, filling, permanent inundation, dredging, and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.**

   No wetlands are located within the project site; therefore, no impacts are anticipated.

2) **Other surface waters – Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal, and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that**

are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The intent of the site design will be to allow hydrology to be maintained as it exists today to the Grotto. Measures that are planned to avoid, minimize, or mitigate environmental impacts include:

- Connecting relocated storm sewer pipes into the existing storm sewer pipe upstream of the Grotto outlet to avoid disturbing the outlet connection and the existing vegetation within the channel
- Matching existing drainage areas to maintain a consistent volume of stormwater to the Grotto. Reducing volume to the Grotto may cause the existing channel to dry up and increasing volume to the Grotto may cause erosion of the existing channel and areas downstream.
- Discharging building roof water to the Grotto in lieu of surface parking lot, since building roof water is relatively clean compared to site water which often contains salts and sediments

No other surface waters are located within the project site; therefore, no additional impacts to surface waters are anticipated.

13. Contamination/Hazardous Materials/Wastes

a. Pre-project Site Conditions – Describe existing contamination or potential environmental hazards on or in close proximity to the project site, such as soil or groundwater contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize, or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

The MPCA's What's in My Neighborhood database was reviewed to determine if any known contaminated properties or potential environmental hazards are located within or adjacent to the site. Two sites were identified within the project site, and two sites were identified adjacent to the site (see Figure 8 and Table 7).

Table 7: What's in My Neighborhood Sites

Site ID	Site Name	Active	Activity	Program
105494	University of Saint Thomas	Yes	Petroleum Remediation, Leak Site, Underground Tanks	Investigation and Cleanup
145996	UST South Campus Facilities Bldg	No	Construction Stormwater	Stormwater

Site ID	Site Name	Active	Activity	Program
251021	University of St. Thomas Schoenecker Center	Yes	Construction Stormwater	Stormwater
143128	Soccer/Softball Field Improvements	No	Construction Stormwater	Stormwater

b. Project Related Generation/Storage of Solid Wastes – Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage, and disposal. Identify measures to avoid, minimize, or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

According to the Ramsey County Solid Waste Management Master Plan 2018-2038, Ramsey County will ensure compliance with applicable laws, rules, and ordinances related to the management of solid and hazardous waste as required by Minnesota Statutes, Section 473.811.

Waste Generated During Construction

Demolition debris and earth materials will be generated during demolition of the existing facilities. Demolition debris is inert material such as concrete, brick, bituminous, and rock. The solid wastes generated during demolition will be recycled or disposed of at a state-permitted landfill. The project will target a 50 percent to 75 percent diversion rate for construction-produced waste as part of the LEED approach.

Construction of the proposed development will generate construction-related waste materials such as wood, packaging, excess materials, and other wastes, which will either be recycled or disposed of in the proper facilities in accordance with state regulations and guidelines.

According to the University of St. Thomas Conditional Use Permit, a demolition survey of each building to be removed must be completed prior to demolition. The survey will identify asbestos-containing materials for the structures, if present. If asbestos-containing materials are present, they will be removed in accordance with MPCA and MDH regulations.

Waste Generated During Operation

Operation of the multipurpose arena will generate solid wastes such as food waste, beverage containers, packaging, and paper. In total, it is estimated that the proposed development will generate approximately 2,072 tons of solid waste per year. A source recycling/separation plan will be implemented for additional waste and waste that cannot be recycled will be managed in accordance with state regulations and guidelines. Waste sorting at the University of St. Thomas currently includes a co-mingled recycling program and a composting program for food waste and other compostable wastes.

c. Project Related Use/Storage of Hazardous Materials – Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location, and size of any new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size, and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spills or releases of hazardous materials. Identify

measures to avoid, minimize, or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

No existing above ground storage tanks have been identified within the project site. One approximately 20,000-gallon underground fuel storage tank is located in the northeast corner of the project site. The underground fuel storage tank is located in the northwest corner of the Service Center building and will be removed prior to demolition of the building. According to the What's in My Neighborhood database, the tank was installed in 2012. The tank will not be replaced after construction is complete.

The project may install a diesel generator to provide backup power to the arena as well as up to four additional future diesel generators to feed the University of St. Thomas' MicroGrid. These generators would have diesel storage tanks at each generator or utilize one fuel storage tank for fuel supply. The project proposer will obtain the appropriate permits from the MPCA.

Any hazardous waste materials used or stored during construction and/or operation of the project will be disposed of in the manner specified by local or state regulation or by the manufacturer. A spill prevention plan will be developed, and proper spill prevention controls will be in place for any vehicle refueling or maintenance that occurs on site during construction.

d. Project Related Generation/Storage of Hazardous Wastes – Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize, or mitigate adverse effects from the generation/storage of hazardous wastes including source reduction and recycling.

Removal of the existing structures within the site is not expected to generate new hazardous waste. Toxic or hazardous waste to be stored within the site during construction will include fuel and oil necessary to operate heavy construction equipment and during operations may include commercial cleaning supplies. Regulated material and/or waste generated or stored during construction and operations will be managed in accordance with state and local requirements.

14. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

a. Describe fish and wildlife resources as well as habitats and vegetation on or near the site.

The existing site is primarily impervious surfaces with minimal landscaping. There are no above ground streams, rivers, lakes or ponds located within the project site; therefore, the site provides no fish habitat. The site provides minimal wildlife habitat due to the extent of impervious surfaces and low coverage of natural vegetation. However, wildlife that can be found within the project site may include songbirds and small mammals that have adapted to an urban environment.

Fish and wildlife habitat within the vicinity of the project site includes the Mississippi River, Mississippi Gorge Regional Park, and Shadow Falls Park, all located within ¼ mile of the project site to the west and northwest.

Based on information from the U.S. Fish and Wildlife Service, the project site is located within a high potential zone of the rusty patched bumble bee; however, the disturbed nature of the site does not provide suitable habitat.

The project site is not located within any regionally significant ecological areas (RSEA), Minnesota Biological Survey (MBS) Sites of Biodiversity Significance, or native plant communities. However, as described under Item 14b, one RSEA, two MBS Sites of Biodiversity Significance, and eight native plant communities are located within one mile of the project site.

b. Describe rare features such as state-listed (endangered, threatened, or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-1074) which the data were obtained and attach the Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe results.

State-Listed Threatened and Endangered Species

A review of the DNR's Natural Heritage Inventory System (NHIS) was conducted per license agreement LA-1074 for the project site and the area within approximately one mile of the project site. The database includes known occurrences of any state endangered, threatened, or special concern species. The review identified 20 records of 7 species that may be found near this area (see Table 8).

Table 8: State-Listed Threatened and Endangered Species

Species	Group	Status	Location	Habitat
Handsome Sedge (*Carex 26ormosa*)	Vascular Plant	Endangered	One record is located within the project site.	Preferred habitat within Ramsey County includes forested slopes along the Mississippi River.
Higgins Eye (*Lampsilis higginsii*)	Mussel	Federally and State Endangered	One record is located within one mile of the project site.	Preferred habitat is stable substrates of the Mississippi River and the lower portion of some large tributaries.
Kentucky Coffee Table (*Gymnocladus dioica*)	Vascular Plant	Special Concern	One record is located within the project site.	Preferred habitat includes mesic hardwood forest on terraces of the Mississippi River.
Round Pigtoe (*Pleurobema sintoxia*)	Mussel	Special Concern	One record is located within one mile of the project site.	Preferred habitat includes fast current areas dominated by coarse sand and gravel substrate in medium to large rivers.
Rusty patched Bumble Bee (*Bombus affinis*)	Insect	Federally Endangered	Four records are located within one mile of the project site.	Preferred habitat includes semi-natural upland grassland, shrubland, woodlands, and forests. The entire project site is within a High Potential Zone.
Swamp White Oak (*Quercus bicolor*)	Vascular Plant	Special Concern	One record is located within the project site and two records are located within one mile of the project site.	Preferred habitat includes floodplain forest along the Mississippi River.
Wartyback (*Quadrula nodulata*)	Mussel	Threatened	Nine records are located within one mile of the project site.	Preferred habitat includes large rivers with fine or coarse substrates in areas with slow to moderate current.

Other Sensitive Ecological Resources

The Mississippi River is located within ¼ mile of the project site and is identified as an RSEA. RSEAs are given a score of 1, 2, or 3 based on how well continuous natural areas meet standards for size, shape, connectivity, adjacent land use, and species diversity, with 3 being the highest possible score. The section of the Mississippi River near the project site has a score of 1. Areas ranked as 1 tend to be small and have less diversity in vegetative cover. They also typically have adjacent land cover types or uses that could adversely affect the RSEA.

Two MBS Sites of Biodiversity Significance, St. Paul Bluffs W and West Bank Mississippi River, are located approximately 0.15 mile and 0.30 mile west of the project site. Each MBS Site is ranked based on rare species populations, native plant communities, and landscape context. Both St. Paul Bluffs W and West Bank Mississippi River have been assigned a moderate rank. Moderate sites contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have strong potential for recover of native plant communities.

Eight native plant communities were identified within one mile of the project site, and approximately align with the St. Paul Bluffs W and West Bank Mississippi River MBS Sites of Biodiversity Significance. The plant communities include one Mesic Prairie (Southern), one Red Oak-White Oak-(Sugar Maple) Forest, three Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forests, and three Silver Maple-(Virginia Creeper) Floodplain Forests.

As noted above in Item 14a, these sites and native plant communities are not located within the project site.

c. Discuss how the identified fish, wildlife, plant communities, rare features, and ecosystems may be affected by the project, including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Wildlife Habitat and Threatened and Endangered Species

No impacts to fish, wildlife, plant communities, rare features, or ecosystems are anticipated due to the lack of suitable wildlife habitat. No impacts to the state-listed and federally-listed mussels species are expected, as there is no suitable habitat within the project site and no impacts to the nearby Mississippi River are expected. The DNR is completing a Natural Heritage Review for the proposed project and results are pending (see correspondence in Appendix B).

Invasive Species

Invasive species are plants and animals that are not native to an area and are capable of causing harm. Certain measures can be taken to limit the likelihood of introducing invasive species, such as securing local materials to avoid the long-range movement of goods or washing vehicles prior to accessing the project site. Additionally, as landscape designs are finalized, they will consider including native, non-invasive plants.

d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

Invasive species will be controlled on site during construction, and proposed landscaping will not include any DNR-identified invasive species. Additionally, best management practices will be followed when relocating construction equipment from other sites.

University of St. Thomas is considering ways to design landscaping plans to add shade trees and increase the landscaped area with a blend of biodiverse, native, drought tolerant plant species that could provide pollinator habitat.

No adverse impacts are expected to state-listed and federally-listed species.

15. Historic Properties

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include 1) historic designations; 2) known artifact areas; and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

A search of the Minnesota State Historic Preservation Office's (SHPO) Statewide Inventory was requested to identify known historic properties and archaeological sites in the vicinity of the project. The database search identified no archaeological records in the project site. Within Township 28N, Range 23W, Section 5, the database search identified 221 records. Of the 221 records, 35 properties are listed in the National Register of Historic Places (NRHP) and 5 properties that are considered eligible for the NRHP. "Considered eligible" means that a federal agency has recommended that the property is eligible for listing in the NRHP and SHPO has accepted the recommendation for the purposes of the environmental review process. However, these properties need to be further assessed before they are officially listed in the NRHP. The remaining 181 records identified in the database search have no designation and may not have been evaluated; therefore, no assumption to their eligibility can be made. Three of the properties identified via the database search are located within the project site, and an additional 14 properties are located within 500 feet of the project site (see Table 9 and Figure 9). The three properties located within the project site are listed as considered eligible; however, these buildings are not considered locally significant for historic preservation. Given the lack of a federal nexus or formal listing on the NRHP and the lack of local designation no further evaluation or assessment is required. The City of Saint Paul Heritage Preservation staff has also reviewed the project and project site and has determined no further evaluation is needed for demolition of the existing buildings within the project site.

Table 9: Historic Properties within 500 feet of the Project Site

Property Name	Location Relative to Project	Status
Almendinger Apartments	Within 500 feet of Project Site	No designation
Apartment (2171 Grand Ave. W)	Within 500 feet of Project Site	No designation
Binz Refectory – St. Paul Seminary (University of St. Thomas)	Within 500 feet of Project Site	No designation

Property Name	Location Relative to Project	Status
Brady Education Center – St. Paul Seminary (University of St. Thomas)	Within 500 feet of Project Site	No designation
Cretin Court Apartments	Within 500 feet of Project Site	No designation
Grace Residence (University of St. Thomas)	Within 500 feet of Project Site	Considered eligible
Grand Student Apartments	Within 500 feet of Project Site	No designation
Grotto and Woodland Walk – St. Paul Seminary	Within 500 feet of Project Site	No designation
McCarthy Recreation Building – St. Paul Seminary (University of St. Thomas)	Project Site	No designation
Mills, H.S., House	Within 500 feet of Project Site	Listed in the NRHP
Nilson Apartments	Within 500 feet of Project Site	No designation
O'Shaughnessy Hall – University of St. Thomas	Within 500 feet of Project Site	No designation
St. Mary's Chapel (St. Paul Seminary)	Within 500 feet of Project Site	Listed in the NRHP
St. Paul Seminary Gymnasium/Heating Plant (Service Center Building) (University of St. Thomas)	Project Site	Considered eligible
St. Paul Seminary South Dormitory/Cretin Hall (University of St. Thomas)	Project Site	Considered eligible
Tierney, S., House	Within 500 feet of Project Site	Listed in the NRHP

The northern portion of the project site is located within the Summit Avenue West Heritage Preservation District. In February 2022 the Saint Paul Heritage Preservation Commission determined that a review of the project is required, focused on the portion of the building that lies within the Summit Avenue West Heritage Preservation District. The review will be complete when detailed project designs are provided to the Heritage Preservation Commission.

It is not anticipated that unknown archaeological sites will be uncovered during the construction of this project as the site has been previously disturbed. However, if cultural materials are encountered during construction, unanticipated discovery protocols will be followed.

16. Visual

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The project site includes existing institutional land, and no unique designated scenic views or vistas are located within the site. The City of Saint Paul *2040 Comprehensive Plan* identifies Public River Corridor Views (PRCV) within the Mississippi River Corridor Critical Area (MRCCA) on public property, including parks and trails, historic properties, and bridge overlooks. Views towards

bluffs from the opposite side of the shore are also noted. View #3 – Shadow Falls Overlook is located within ¼ mile of the project site; however, the view direction is towards the Mississippi River and away from the project site. Considering the set back from Mississippi Gorge Regional Park, views of the project site from the western bank of the Mississippi River will be minimal.

Policy CA-11 as outlined in the MRCCA plan is intended to protect and minimize impacts to PRCV from public development activities. According to the PRCV map, the project site is not located within the view range of any identified view locations. Therefore, the project will not have an impact on identified significant public views, which is consistent with Policy CA-11.

Generally, views from the surrounding area would be similar to those experienced currently, as current and future land use is within an institutional facility and there are buildings of similar massing already in the area. Changes in views of the campus would be most noticeable from portions of Goodrich Avenue, and from the Grand Avenue right-of way. The proposed project will conform with the City's regulations for building height, building form, landscape screening, and lighting. Adverse visual effects are not anticipated.

17. Air

a. Stationary Source Emissions – Describe the type, sources, quantities, and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants and criteria pollutants. Discuss effects to air quality including any sensitive receptors, human health, or applicable regulatory criteria. Include a discussion of any methods used to assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

Minimal stationary source air emissions are anticipated from natural gas use and #2 fuel oil for the boiler system. See Table 12: Proposed Operational Emissions for more information.

b. Vehicle Emissions – Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g., traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

Motor vehicles emit a variety of air pollutants including carbon monoxide (CO), hydrocarbons, nitrogen oxides, and particulates. The primary pollutant of concern is CO, which is a byproduct of the combustion process of motor vehicles. CO concentrations are highest where vehicles idle for extended periods of time. For this reason, CO concentrations are generally highest in the vicinity of signalized intersections where vehicles are delayed and emitting CO. Generally, concentrations approaching state air quality standards are found within about 100 feet of a roadway source. Further from the road, the CO in the air is dispersed by the wind such that concentrations rapidly decrease.

The Minnesota Department of Transportation (MnDOT) has developed a screening method designed to identify intersections that will not cause a carbon monoxide (CO) impact above state standards. MnDOT has demonstrated that even in the 10 highest traffic volume intersections in the Twin Cities do not experience CO impacts. Therefore, intersections with traffic volumes lower than these 10 highest intersections will not cause a CO impact above

state standards. MnDOT's screening method demonstrates that intersections with total daily approaching traffic volumes below 82,300 vehicles per day will not have the potential for causing CO air pollution problems. The 10 highest traffic volumes in the Twin Cities include: Cedar Avenue at County Road 42, Hwy 252 at 66th Avenue, Hwy 252 at 85th Avenue, County Road 42 at Nicollet Avenue, Hwy 252 at Brookdale Drive, Hwy 7 at County Road 101, Hwy 7 at Williston Road, University Avenue at Lexington Avenue, University Avenue at Snelling Avenue, and Hennepin Avenue at Lake Street. None of the intersections in the vicinity of the project site exceed the criteria that would lead to a violation of the air quality standards.

c. Dust and Odors – Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under Item 17a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

The project may generate temporary fugitive dust emissions during construction. These emissions would be controlled by sweeping, watering, or sprinkling, as appropriate or as prevailing weather and soil conditions dictate. Dust emissions are not anticipated during operations as all surfaces will either be impervious or vegetated.

The construction and operation of the project are not expected to generate objectionable odors.

18. Greenhouse Gas (GHG) Emissions/Carbon Footprint

a. GHG Quantification – For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to come to that conclusion and any GHG emission sources not included in the total calculation.

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs) play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back towards space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

The primary GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Examples of fluorinated gases include chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3); however, it is noted that these gases are not associated with typical

land use development. Human-caused emissions of GHGs exceeding natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming.[17]

This section includes an estimated quantification of the following GHG emissions associated with the proposed project:

- Carbon Dioxide (CO_2)
- Nitrous Oxide (N_2O)
- Methane (CH_4)

The projected GHG emissions are provided on an average annual basis using the CO_2 equivalent (CO_2e) and include the proposer's best estimate of average annual emissions over the proposed life/design service life of the project. Emissions were estimated using the US Environmental Protection Agency's Simplified GHG Emissions Calculator (August 2022)[18] and are summarized by project phase (i.e., construction and operations) and source type (e.g., combustion from mobile equipment, off-site electricity (see Appendix C for background analysis). Estimated existing emissions are summarized in Table 10 and estimated proposed emissions are summarized in Table 11 and Table 12 .

Construction emissions are based on length of construction, size of site, and are from mobile equipment including passenger cars, light-duty trucks, medium and heavy-duty trucks, and construction equipment (both gasoline and diesel).

Emissions from cooling and refrigeration systems are not accounted for in this operational emissions analysis as GHGs from refrigerants are approximately less than 5 percent of the total GHG emissions of a building.[19] The project will incorporate an ammonia (NH3)-based refrigerant plant for the ice rinks; however, annual usage will be limited for maintenance needs only and therefore not included in the GHG analysis. Ammonia is considered an acceptable non-ozone depleting alternative for ice rinks compared to other hydrochlorofluorocarbons substances under EPA's Significant New Alternatives Policy program.[20] There will be safety plans in place to handle the ammonia use appropriately. The project will include the use of Zambonis to service the ice rink and a forklift to service the facility and both are planned to be electric and not included in the GHG analysis. The project does not plan to purchase gases during operation or land use conversions.

Table 10: Existing Operational Emissions

Scope	Emission Type	Emission Sub-Type	CO_{2e} Emissions (tons/year)
Scope 1	Combustion	Stationary equipment	161
Scope 2	Off-site electricity	Grid-based	523

[17] Summarized from U.S. EPA, Overview of Greenhouse Gases: https://www.epa.gov/ghgemissions/overview-greenhouse-gases
[18] Source: https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator
[19] Source: https://practicegreenhealth.org/sites/default/files/2019-06/PracticeGreenhealth_GHG_Toolkit_0.pdf
[20] Source: https://www.epa.gov/sites/default/files/2015-07/documents/ice_rinks_and_the_phaseout_of_hcfc-22.pdf

Scope	Emission Type	Emission Sub-Type	CO_{2e} Emissions (tons/year)
Scope 3	Off-site waste management[21]	Area	294
Total			**978**

Table 11: Construction Emissions

Scope[22]	Emission Type	Emission Sub-Type	CO_{2e} Emissions (tons)
Scope 1	Combustion	Mobile equipment	1,239
Total			**1,239**

Table 12: Proposed Operational Emissions

Scope	Emission Type	Emission Sub-Type	CO_{2e} Emissions (tons/year)
Scope 1	Combustion	Stationary equipment	914
Scope 2	Off-site electricity	Grid-based	1,539
Scope 3	Off-site waste management	Area	531
Total			**2,984**

b. GHG Assessment

i. Describe any mitigation considered to reduce the project's GHG emissions.

The following design strategies and other sustainability measures are being considered for the proposed development to reduce emissions:

- Use energy efficient lighting.
- Occupancy/vacancy and daylight sensor controls on lighting.
- Energy efficient building envelope, including continuous insulation for all roof and wall surfaces and high-performance aluminum glazing systems.
- The facility will be designed to meet LEED Silver rating.
- Install low-flow indoor plumbing fixtures.
- Use high-efficiency boilers for domestic hot water.
- Lower carbon structure and materials selection through incorporation of products with recycled content and/or sustainable manufacturing methods.

[21] Based on calculations from CalRecycle's website titled "Estimated Solid Waste Generation Rates," available at https://www2.calrecycle.ca.gov/wastecharacterization/general/rates.

[22] Emissions are categorized as either direct or indirect. Scope 1 emissions are direct emissions that are released directly from properties owned or under the control of the project proposer. This includes, for example, the use of mobile equipment during construction. Scope 2 and 3 emissions are indirect emissions. Scope 2 emissions are associated with the offsite generation of purchased electricity and/or steam. Scope 3 emissions are from the offsite provision of waste management services, including land disposal (landfilling), recycling, and solid waste composting.

- Install on-site photovoltaics.
- Provide electrical vehicle infrastructure.
- Use low global warming potential refrigerants for the building cooling system.
- Install air curtains at all loading dock doors to reduce infiltration.

ii. Describe and quantify reductions from selected mitigation, if proposed to reduce the project's GHG emissions. Explain why the selected mitigation was preferred.

The proposed mitigation listed in Item 18.b.i includes best management practices for new construction and reducing GHG emissions where practicable during operations.

iii. Quantify the proposed project's predicted net lifetime GHG emissions (total tons per number of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

The Next Generation Energy Act requires the state to reduce greenhouse gas emissions in the state by 80 percent between 2005 and 2050, while supporting clean energy, energy efficiency, and supplementing other renewable energy standards in Minnesota. The MPCA's biennial GHG emissions reduction act report from 2023[23] identifies strategies for reducing emissions in the three economic sectors with the highest emissions – transportation, electricity generation, and agriculture, forestry, and land use.

The expected lifespan of the project is 50 years, which equates to an estimated 149,200 CO_2e metric tons over the lifetime of the building (including both construction and operations phases). The proposer is committed to implementing the sustainability measures listed in Item 18.b.i. to reduce operational emissions to the extent practicable. The proposed project will be built in compliance with state regulations (State of Minnesota Statutes Chapter 326.89) and City of Saint Paul building code (Saint Paul Legislative Code Chapter 326).

The University of St. Thomas has had a 53 percent reduction in carbon emissions since 2008, and 20 percent of building square footage on campus are LEED-certified. Additionally, the University has committed to a goal of carbon neutrality by 2035.

19. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area; 2) nearby sensitive receptors; 3) conformance to state noise standards; and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Existing Noise

[23] Available at https://www.pca.state.mn.us/air-water-land-climate/climate-change-initiatives

The project site is located on at an institution (University of St. Thomas) in an urban area, and existing noise at the site is largely from the surrounding roadways. Nearby sensitive receptors include residences approximately 200 feet east, 300 feet south, and 500 feet north of the project site.

Construction Noise

Typical construction noise will be temporarily generated by construction activities. The Saint Paul Code of Ordinances regulates both the hours of operation for construction equipment and allowable noise levels. Construction of the project will adhere to requirements identified in Saint Paul Code of Ordinance Chapter 293 Section 07, which limits construction noise in residentially zoned districts to 65 decibels A (dBA) between the hours of 7:00 am and 10:00 pm, and 55 dBA between the hours of 10:00 pm and 7:00 am.

Operational Noise

The City of Saint Paul and Minnesota Pollution Control Agency regulate noise. The proposed project will potentially contribute to the existing campus noise. Further noise evaluation will be completed as design progresses and best practices to reduce noise spill will be considered including placement of speakers and other sound systems within the arena and the design of the building wall systems. The facility will be required to comply with local and state noise regulations. If the facility exceeds noise regulations, the project proposer will work with the city to identify potential mitigation options. As with any other entity, it is also possible for the project proposer to seek noise-level variances for special events, which would be reviewed by the Saint Paul City Council through existing procedures.

20. Transportation

a. Describe traffic-related aspects of project construction and operation. Include 1) existing and proposed additional parking spaces; 2) estimated total average daily traffic generated; 3) estimated maximum peak hour traffic generated and time of occurrence; 4) source of trip generation rates used in the estimates; and 5) availability of transit and/or other alternative transportation modes.

Parking

In May 2023, SRF prepared a Transportation Study for the project site (see Appendix D). According to information provided by the study, several surface parking lots (Lots N, O, P, V, X, and Y) are expected to be removed during project construction. Lot O is expected to be reconstructed during project implementation to provide 38 surface parking spaces, resulting in a total net loss of 264 surface parking spaces. The proposed development requires creation of a Transportation Demand Management Plan under Saint Paul Zoning Code Sec. 63.122.

Traffic Generation

An existing pre-event and post-event peak hour trip generation was estimated for a maximum capacity event at the project site based on assumptions that were discussed and reviewed by UST and City of St. Paul throughout the study process. Total pre-event peak hour generates approximately 1,498 trips and post-event peak generates approximately 1,581 trips.

Pedestrians and Bicycles

The project site is currently served with sidewalks and all signalized intersections surrounding the University of St. Thomas campus are programmed with leading pedestrian interval timing, which helps improve pedestrian safety. A sidewalk gap exists on the north side of Goodrich Avenue.

An off-street bicycle trail is located along Mississippi River Boulevard, west of the project site. On-street bicycle lanes are located along Summit Avenue and Cleveland Avenue to the north and east of the project site.

Transit Service

Several Metro Transit stops are located on or near the University of St. Thomas campus. Metro Transit Bus Routes 21, 63, and 87 serve the vicinity of the project site.

Routes 21 provides service between the Uptown Transit Station and downtown Saint Paul, and Route 63 provides service between western Saint Paul and downtown Saint Paul. Both Routes 21 and 63 operate seven days a week and are part of Metro Transit's High Frequency Network, with approximately 15-minute headways during peak hours on the weekdays and Saturdays. Service during nights and on Sundays provides 15 to 30-minute headways. Route 87 is a local bus route between Saint Paul and Roseville. It operates seven days a week with 30-minute headways during peak hours on the weekdays and 1-hour headways during nights and on the weekends.

Additionally, the University of St. Thomas provides a shuttle bus between the Saint Paul campus and the Minneapolis campus, is free for staff and students, and runs every 20-30 minutes.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. ***If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 (available at: http://www.dot.state.mn.us/accessmanagement/resources.html) or a similar local guidance.***

In May 2023, SRF prepared a Transportation Study for the project site. A parking demand analysis was performed during peak non-event conditions at the University of St. Thomas and determined that on average, 173 vehicles will be displaced as a result of the project. However, on average, 259 parking spaces are available during peak non-event conditions on campus, a surplus of 86 parking spaces during those times given current (pre-project) parking availability.

An event parking demand analysis was also completed and estimated the maximum demand for basketball games to be 1,420 parking spaces, maximum demand for hockey games to be 1,050 parking spaces, and typical event demand to be 775 parking spaces. Based on campus and adjacent on-street parking restrictions, maximum basketball events are expected to have a deficit of approximately 330 to 740 vehicles which will likely use public parking in the neighborhood. Maximum basketball events may occur one to two times per year. Maximum

hockey events are expected to occur two to four times per year and parking demand is expected to generally be accommodated on campus. Typical events are expected to have a parking deficit of approximately 100 vehicles for weeknight events and parking surplus of approximately 240 to 320 vehicles for weekend events. See Table 13 from the SRF Transportation Study included in Appendix D to this EAW that provides further information on assumptions used to derive expected parking demand.

Table 13: Event parking Demand Analysis

	Total Number of Games (1)	Estimated Frequency	Available Supply	Demand (2)	Deficit/Surplus
Thursday/Weeknight Night Event					
Max Basketball (5,500)	4 to 7 BBall No Hockey	0 - 1	678	1420	-742
Typical (3,000)		6		773	-95
Friday Night Event					
Max Basketball (5,500)	1 BBall 9 Hockey	0	1016	1420	-404
Max Hockey (4,000)		2		1053	-37
Typical (3,000)		8		773	243
Saturday Night Event					
Max Basketball (5,500)	6 BBall 9 Hockey	0 - 1	1090 (3)	1420	-330
Max Hockey (4,000)		2		1053	37
Typical (3,000)		13		773	317

(1) Based on expected men's hockey and basketball schedules.

(2) UST players/coaches and event staff are expected to park in the reconstructed lot O or other commuter and faculty/staff lots.

(3) Note nearby city permit parking restrictions are generally not in effect on Saturday.

An intersection capacity analysis was conducted to determine how traffic is expected to operate during pre-event peak hour and post-event peak hour times. Capacity analysis results identify a level of service (LOS) which indicates how well an intersection is operating. Intersections are graded from LOS A (indicates best traffic operation) through LOS F (indicates an intersection where demand exceeds capacity) and are based on average delay per vehicle. Overall intersection LOS A through LOS D is generally considered acceptable in the Twin Cities Metropolitan Area, although longer delays for short periods of time and/or for specific movements are often considered acceptable as well.

Based on the intersection capacity analysis, multiple areas were identified for further consideration. Mitigation strategies for traffic congestion and event management are further discussed in Section 20.c. below. Existing conditions of intersection capacity, 2025 maximum capacity pre-event and post-event intersection capacity, and 2025 maximum capacity pre- and post-event capacity with mitigation strategies are provided in Table 13 below.

Table 14: LOS Summary

Intersection	Existing Conditions				2025 Build Maximum Capacity Event Conditions			
	AM Peak Hour		PM Peak Hour		Pre-Event		Post-Event	
	LOS	Delay s/veh (typ)	LOS	Delay s/veh (typ)	No Mitigation	Mitigation	No Mitigation	Mitigation
Cretin Ave S / Marshall Ave	C	26	D	53	C	D	C	C
Cretin Ave S / Selby Ave	A/A	10	A/B	11	A/E	B/F	A/C	A/B
Cretin Ave S / Mississippi River Blvd	A/A	5	A/A	6	A/B	A/B	A/A	A/A
Cretin Ave S / Summit Ave	A	8	B	14	D	D	D	C
Cretin Ave S / Grand Ave	B	10	B	14	E	D	F	D
Cretin Ave S / Goodrich Ave	A/A	9	A/C	16	F/F	C/F	A/C	A/C
Cleveland Ave S / Selby Ave	A/A	6	A/B	12	A/A	A/A	A/A	A/A
Cleveland Ave S / Summit Ave	B	13	B	19	B	B	B	B
Cleveland Ave S / Grand Ave	B	15	B	15	B	B	B	B
Mississippi River Blvd / Summit Ave	A/A	4	A/A	5	A/A	A/A	A/A	A/A
Mississippi River Blvd / Goodrich Ave	A	4	A	4	A	A	A	A

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

Traffic Level of Service

During both pre-event conditions, multiple unsignalized side-street approaches on Cretin Avenue will be difficult to make left-turn movements for 15 to 30 minutes. These approaches mostly consist of low-volume residential traffic. Communication should be made to area residents and other sources of commuter traffic, so they are aware of potential event traffic and the most efficient route to get to/from their destination. In urban areas, it is common for intersections to operate at LOS E or LOS F for short periods of time, particularly when balancing other transportation modal priorities.

Parking

The transportation study identified several mitigation strategies to address maximum event parking deficits and reduce on-street public parking in nearby neighborhoods during events.

The University of St. Thomas could implement time-of-day restrictions on campus parking lots during event days to clear out campus lots. This strategy could provide between 120 and 165 additional parking spaces on weekends and up to 390 additional parking spaces on weeknights. This strategy alone would not provide off-street parking sufficient to meet anticipated demand for peak-attendance basketball games or the largest potential ancillary events, such as graduation ceremonies. However, several additional mitigation strategies and improvements were identified that could help reduce this deficit. An additional mitigation strategy would be to require pre-paid event parking tickets for all visitor lots. Assignment of parking ahead of event days could assure event patrons know their destination prior to the event. Additionally, the University of St. Thomas could schedule higher attendance games on weekends to limit higher attendance games on weeknights when less on-campus parking is available, provide transit incentives with the purchase of an event ticket, utilize restricted commuter and faculty/staff parking lots, form a partnership with a rideshare company, provide overflow parking on the south athletic fields, and communicate bicycle parking locations to event patrons.

Several potential event management recommendations to reduce pedestrian/vehicular conflicts to improve pedestrian safety and reduce event congestion are outlined in the transportation study (see Appendix D). Designated pedestrian routes provided through the use of barricades, cones, and wayfinding signage is expected to improve pedestrian safety and traffic flow efficiencies during pre- and post-event peak hours. Traffic cones to allow additional storage of vehicles entering the Anderson Parking Facility along Cretin Avenue could alleviate traffic operations. Wayfinding signage within Anderson Parking Facility can direct pedestrians towards the western access and reduce crossing conflicts. Additionally, signal timing modifications and traffic control officer usage could reduce traffic congestion during pre-event and post-event conditions. As the project proceeds, further refinement of potential mitigation strategies is expected.

These potential mitigation strategies will be finalized and reviewed with the City of St. Paul through the Zoning Code-required Transportation Demand Management Plan that is a site plan review submittal requirement.

21. Cumulative Potential Effects

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

Cumulative potential effects are defined as "the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects."[24] The geographic areas considered for cumulative potential effects are those near the project site (within approximately one-half mile), and the timeframe considered includes projects that would be constructed in the reasonably foreseeable future.

[24] Minnesota Rules, part 4410.0200, subpart 11a

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

According to the City of Saint Paul Downtown Projects Map interactive viewer,[25] there is one reasonably foreseeable project within approximately one-half mile of the project site. Summit Avenue from Mississippi River Boulevard to Snelling Avenue is scheduled to be resurfaced in 2023. The University of St. Thomas does not have any board approved plans for new building construction at the Saint Paul campus. While future development of the University is indicated by historic and forecasted trends, there is not sufficiently detailed information about any future building projects to contribute to the understanding of cumulative potential effects.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The identified reasonably foreseeable future projects may result in impacts to transportation, utilities, or other resources. However, potential impacts of these projects will be addressed as required by regulatory permitting and approval processes, minimizing the potential for cumulative effects.

22. Other Potential Environmental Effects

If the project may cause any additional environmental effects not addressed by Items 1 to 21, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

All anticipated potentially adverse environmental effects are addressed in the preceding EAW items.

[25] Available at https://experience.arcgis.com/experience/99bea6f90c4a409a8a64fff81dee30e7/page/Overview/?data_id=dataSource_5-17cc347089c-layer-15%3A238

RGU Certification

*The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages, or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively,
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature Nicolle Goodman
Nicolle Goodman (Jun 20, 2023 12:45 CDT)

Date Jun 20, 2023

Title Director, Department of Planning and Economic Development

Figures

Figure 1: County Map

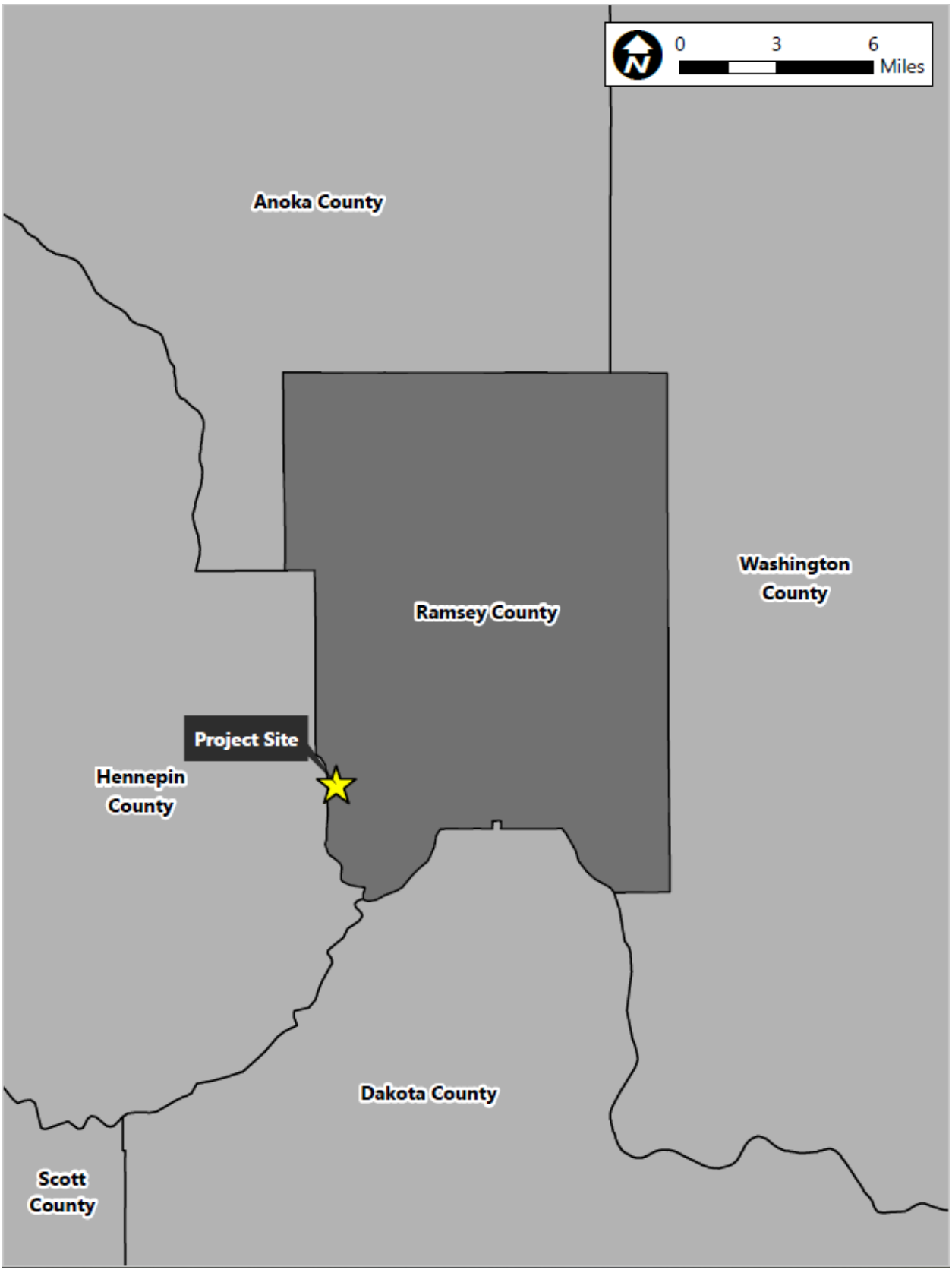


Figure 2: USGS Map

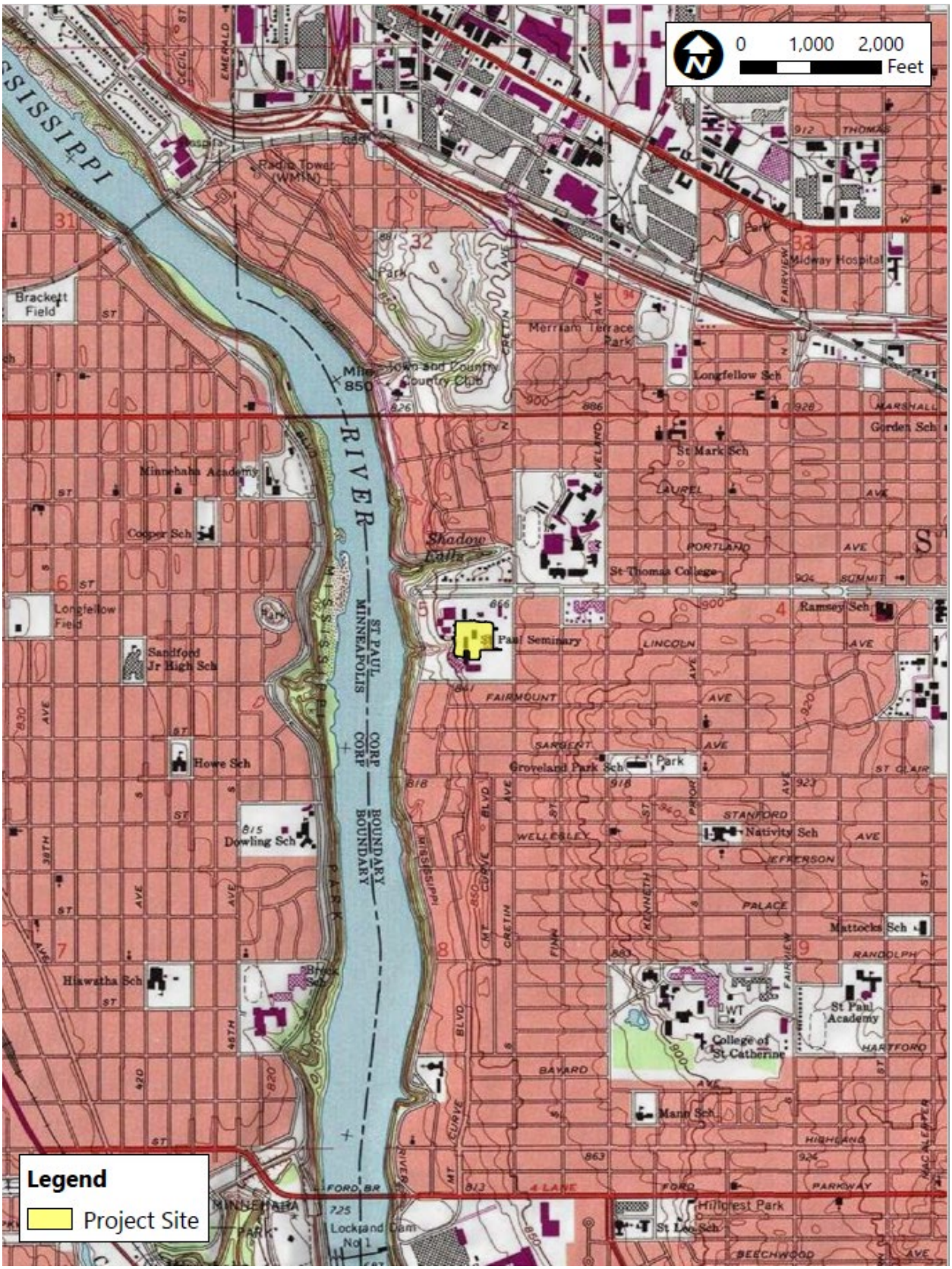


Figure 3: Existing Conditions

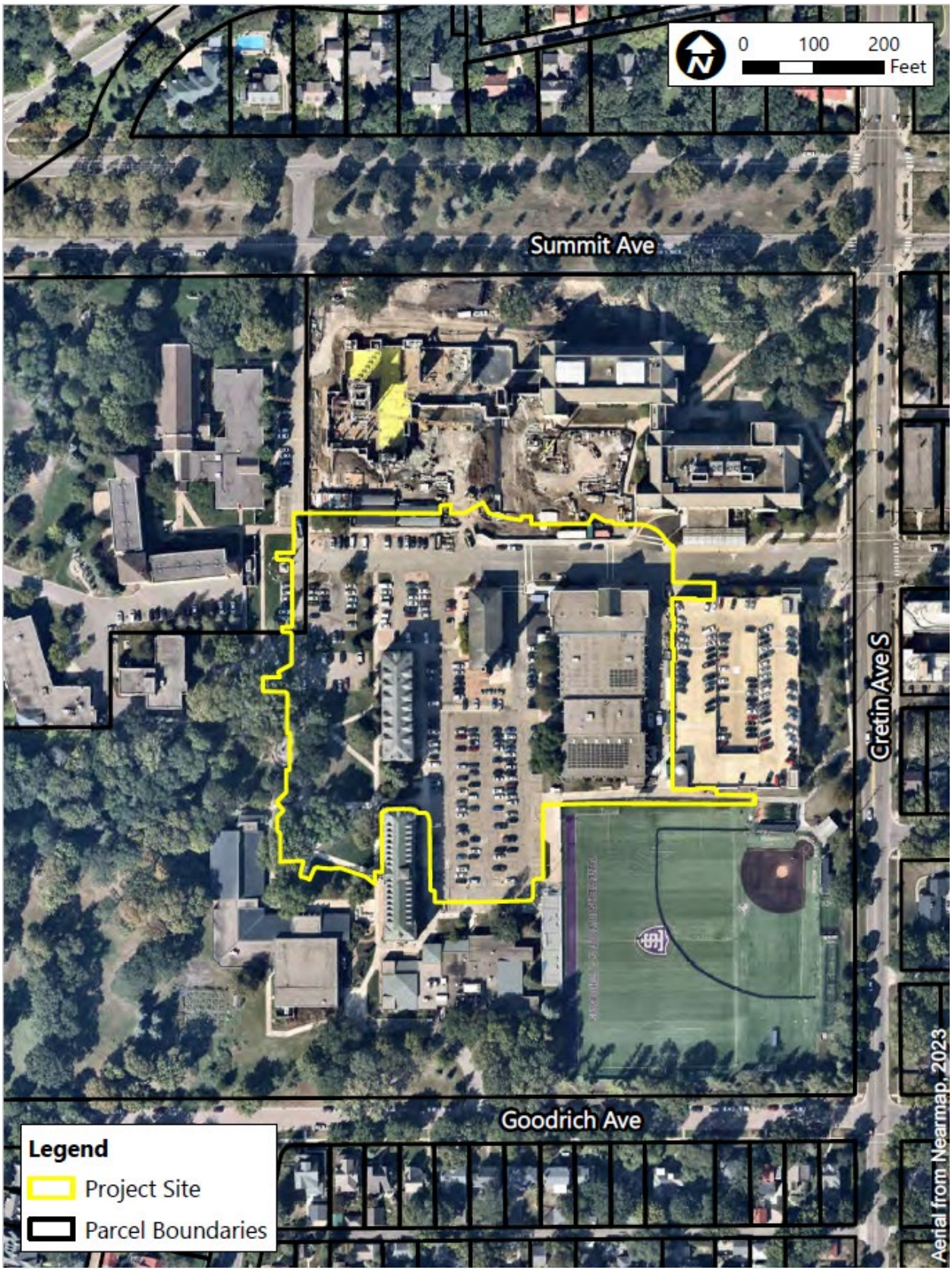


Figure 4: Existing Land Use

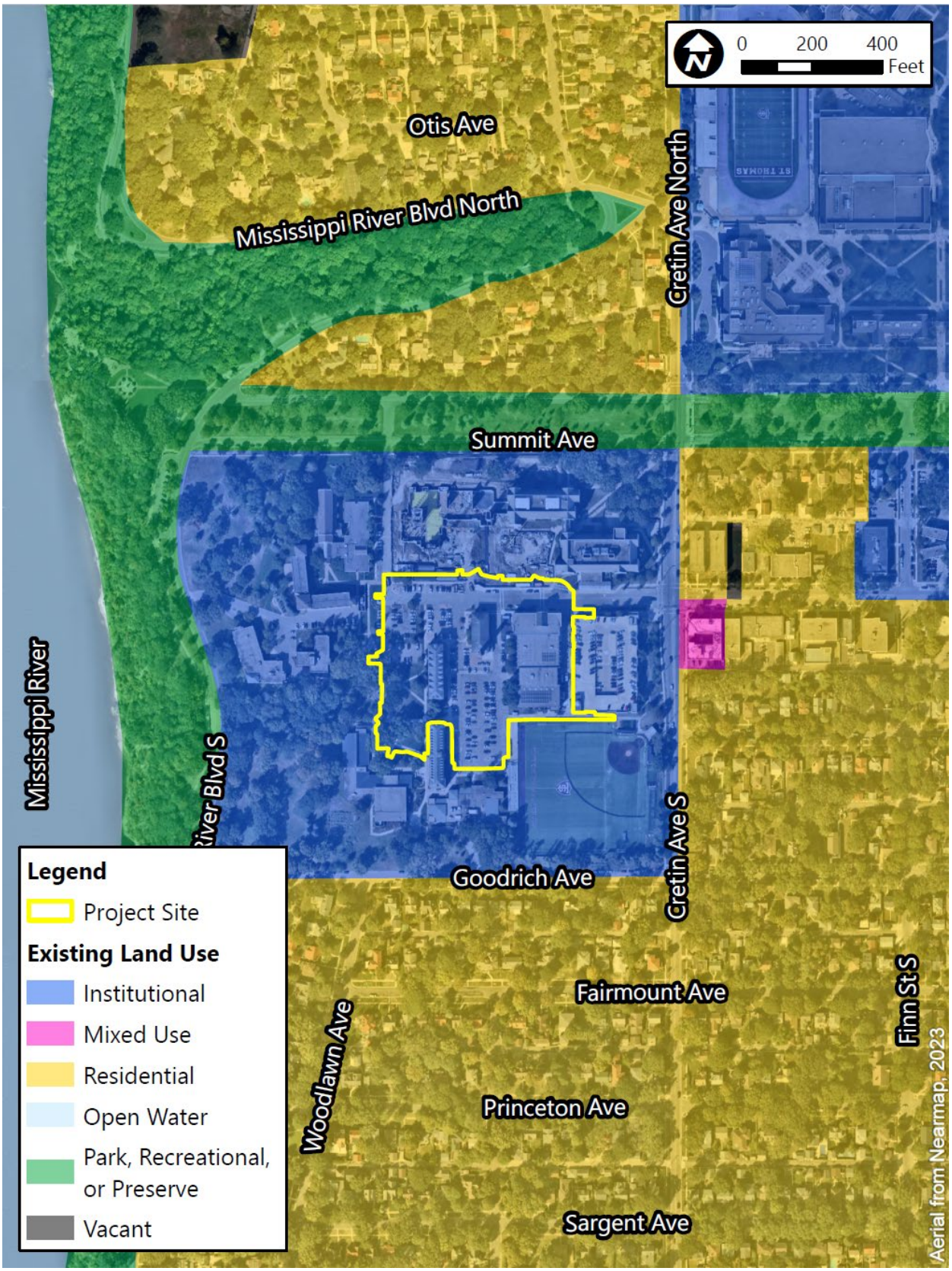


Figure 5: Existing Zoning

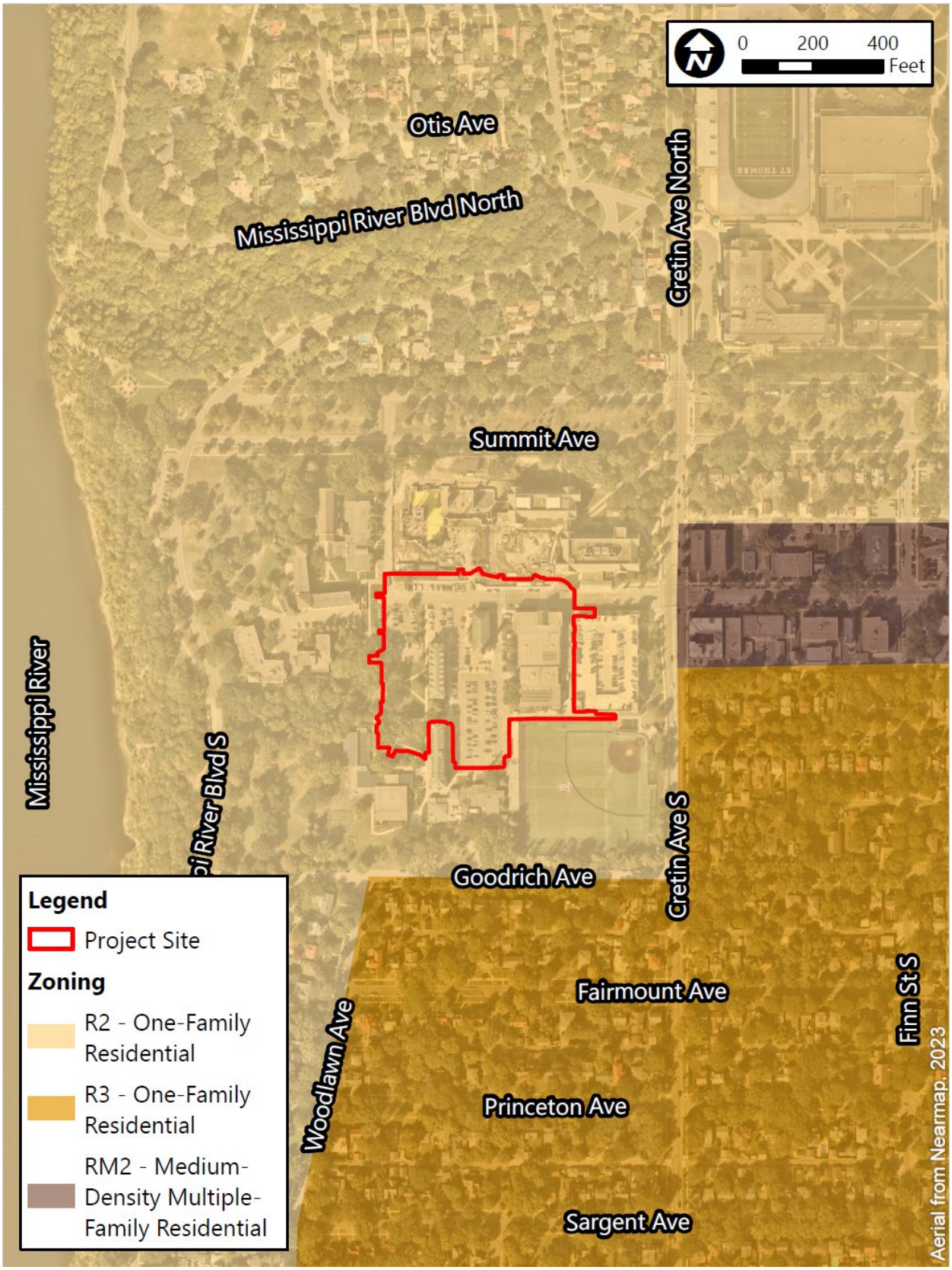


Figure 6: Zoning Overlay Districts

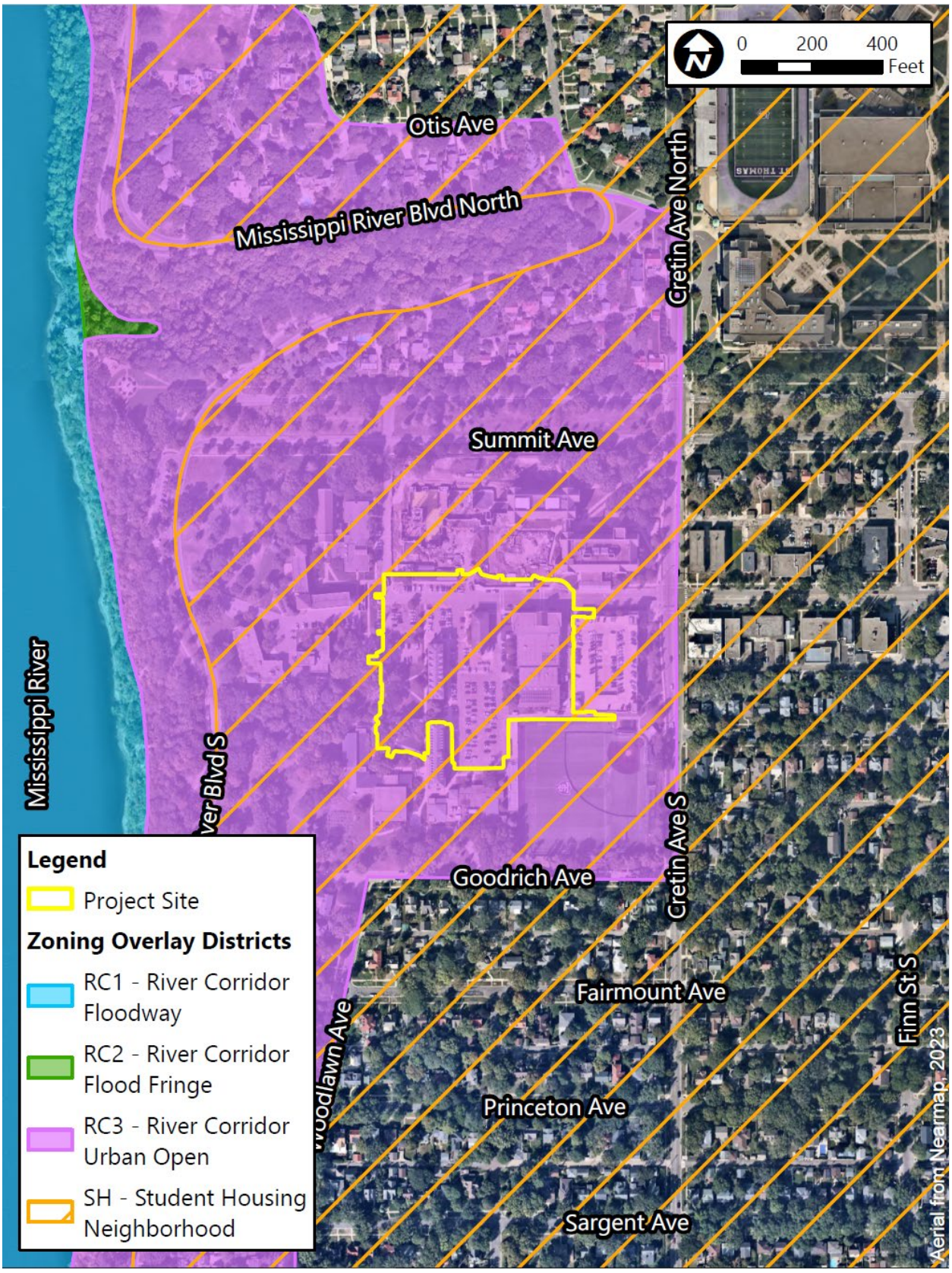


Figure 7: Water Resources

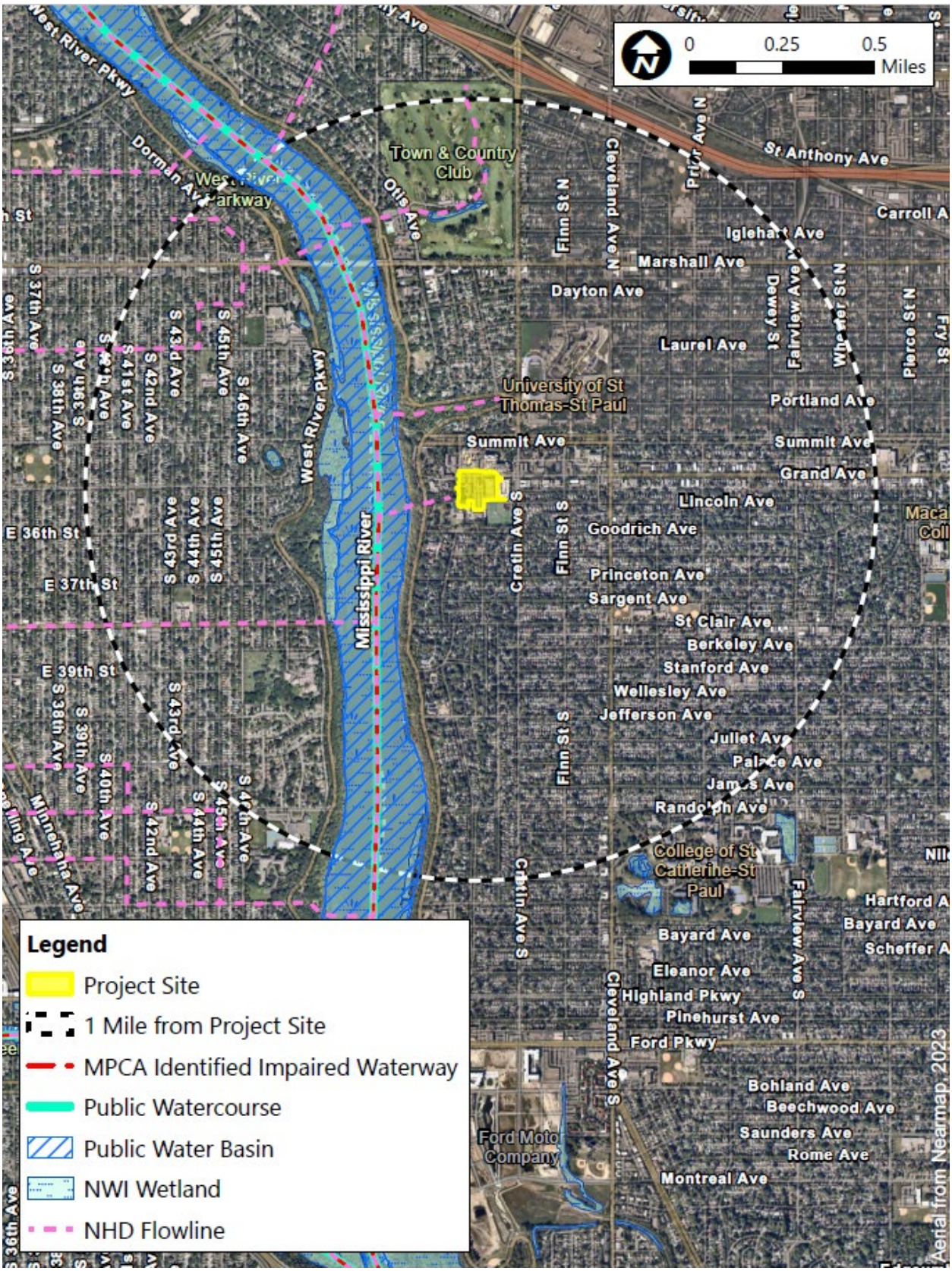


Figure 8: What's In My Neighborhood Sites Within 200 feet of the Project Site

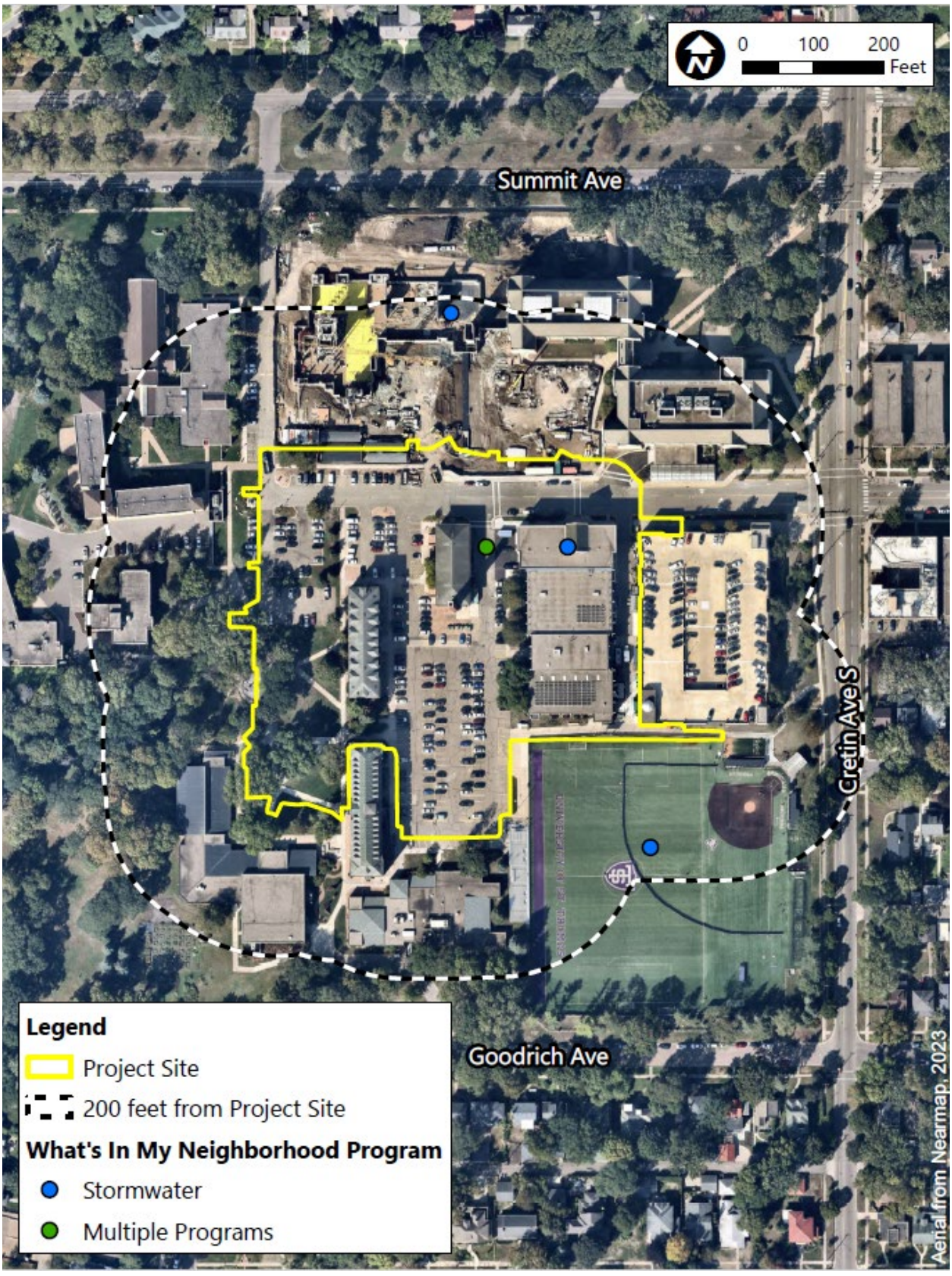


Figure 9: Historic Resources Within 500 feet of the Project Site

Appendix A

Site Plan

LEGEND:

EXISTING	PROPOSED	
		STORM SEWER PIPE
		SOLID DRAINTILE
		PERFORATED DRAINTILE
		STORM INLET
		STORM MANHOLE
		STORMWATER SYSTEM
		SANITARY SEWER PIPE
		SANITARY SEWER FORCE MAIN
		SANITARY SEWER MANHOLE
		SANITARY SEWER CLEANOUT
		WATER MAIN
		HYDRANT
		GATE VALVE
		WATER MANHOLE
		METER
		FIRE SPRINKLER
		IRRIGATION
GAS GAS	GAS GAS	NATURAL GAS
EOH EOH	EOH EOH	ELECTRIC OVERHEAD
EUG EUG	EUG EUG	ELECTRIC UNDERGROUND
FOH FOH	FOH FOH	FIBER OPTIC OVERHEAD
FUG FUG		FIBER OPTIC UNDERGROUND
TOH TOH	TOH TOH	TELEPHONE OVERHEAD
TUG TUG	TUG TUG	TELEPHONE UNDERGROUND
COH COH	COH COH	CABLE OVERHEAD
CUG CUG	CUG CUG	CABLE UNDERGROUND
STM STM	STM STM	STEAM
		CHILLED WATER
		ELECTRIC MANHOLE
		TRANSFORMER
		LIGHT POLES
		POWER POLE
		GAS VALVE
		GAS METER
		FIBER OPTIC MANHOLE
		CABLE MANHOLE
		CABLE BOX
		TELEPHONE MANHOLE
		TELEPHONE BOX
		UTILITY TUNNEL
		UTILITY REMOVAL

RYAN

UST Arena • Existing Conditions Plan • 05.10.2023

ST MARYS
APEL (SMC)

SCHOENECKER
CENTER (SCC)

SCHOOL OF
DIVINITY (SOD)

OWENS SCIENCE
HALL (OWS)

SEMINARY
RESIDENCE (SEM)

FACILITIES & DESIGN
CENTER (FDC)
FFE: 861.83'

PROPOSED BUILDING

135,419± SF

ANDERSON PARKING
FACILITY (APF)
FFE: 863.50'
BFE: 853.67'

SHOP
EMORIAL
Y (IRL)

BRADY EDUCATION
CENTER (BEC)

GRACE
HALL (GRA)

BINZ REFECTORY (BIN)

SOUTH ATHLETIC
FIELDS (SAF)

CRETIN AVENUE

GRAND AVE

CRETIN AVE S

LINCOLN
AVENUE

MAPLE AVENUE

N

0 40 80
SCALE IN FEET

LEGEND:

EXISTING	PROPOSED	
		PROPERTY BOUNDARY
		LOT/TRACT LINE
		CURB
		EASEMENT
		BITUMINOUS
		CONCRETE PAVEMENT
		CONCRETE SIDEWALK
		GRAVEL
X	X	CHAIN LINK FENCE
		WOOD FENCE
		NORMAL WATER LEVEL
		DRAINAGE SWALE
BSBL	BSBL	BUILDING SETBACK LINE
PSBL	PSBL	PARKING SETBACK LINE

Appendix B

Agency Correspondence

DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: University of St. Thomas Multipurpose Arena

Project Proposer: Ryan Companies

Project Type: Development, Commercial/Institutional/Industrial

Project Type Activities: Tree Removal;Structure Removal or Bridge Removal

TRS: T28 R23 S5

County(s): Ramsey

DNR Admin Region(s): Central

Reason Requested: State EAW

Project Description: Ryan Companies proposes to develop the University of St. Thomas Multipurpose Arena on the existing campus. Three existing buildings onsite will be demolished ...

Existing Land Uses: The project site is currently part of the University of St. Thomas campus and includes buildings, impervious surfaces, and managed/landscaped open green space.

Landcover / Habitat Impacted: The proposed project will include one building, impervious surfaces, and managed/landscaped open green space.

Waterbodies Affected: No wetlands or surface waters are present within the project site; therefore, no impacts are anticipated.

Groundwater Resources Affected: N/A

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	No Comments	No Further Review Required
Ecologically Significant Area	Comments	Protected Wetlands: Calcareous Fens
State-Listed Endangered or Threatened Species	Needs Further Review	State-protected Species in Vicinity
State-Listed Species of Special Concern	Comments	Recommendations
Federally Listed Species	Comments	Visit IPaC for Federal Review RPBB High Potential Zone

DEPARTMENT OF NATURAL RESOURCES

March 29, 2023

Project Name: University of St. Thomas Multipurpose Arena
Project Proposer: Ryan Companies
Project Type: Development, Commercial/Institutional/Industrial
Project ID: MCE #2023-00262

AUTOMATED RESULTS: FURTHER REVIEW IS NEEDED
As requested, the above project has undergone an automated review for potential impacts to rare features. Based on this review, one or more rare features may be impacted by the proposed project and further review by the Natural Heritage Review Team is needed. You will receive a separate notification email when the review process is complete and the Natural Heritage Review letter has been posted.

Please refer to the table on the cover page of this report for a summary of potential impacts to rare features. For additional information or planning purposes, use the Explore Page in Minnesota Conservation Explorer to view the potentially impacted rare features or to create a Conservation Planning Report for the proposed project.

If you have additional information to help resolve the potential impacts listed in the summary results, please attach related project documentation in the Edit Details tab of the Project page. Relevant information includes, but is not limited to, additional project details, completed habitat assessments, or survey results. This additional information will be considered during the project review.

University of St. Thomas Multipurpose Arena

Aerial Imagery With Locator Map

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 6.44

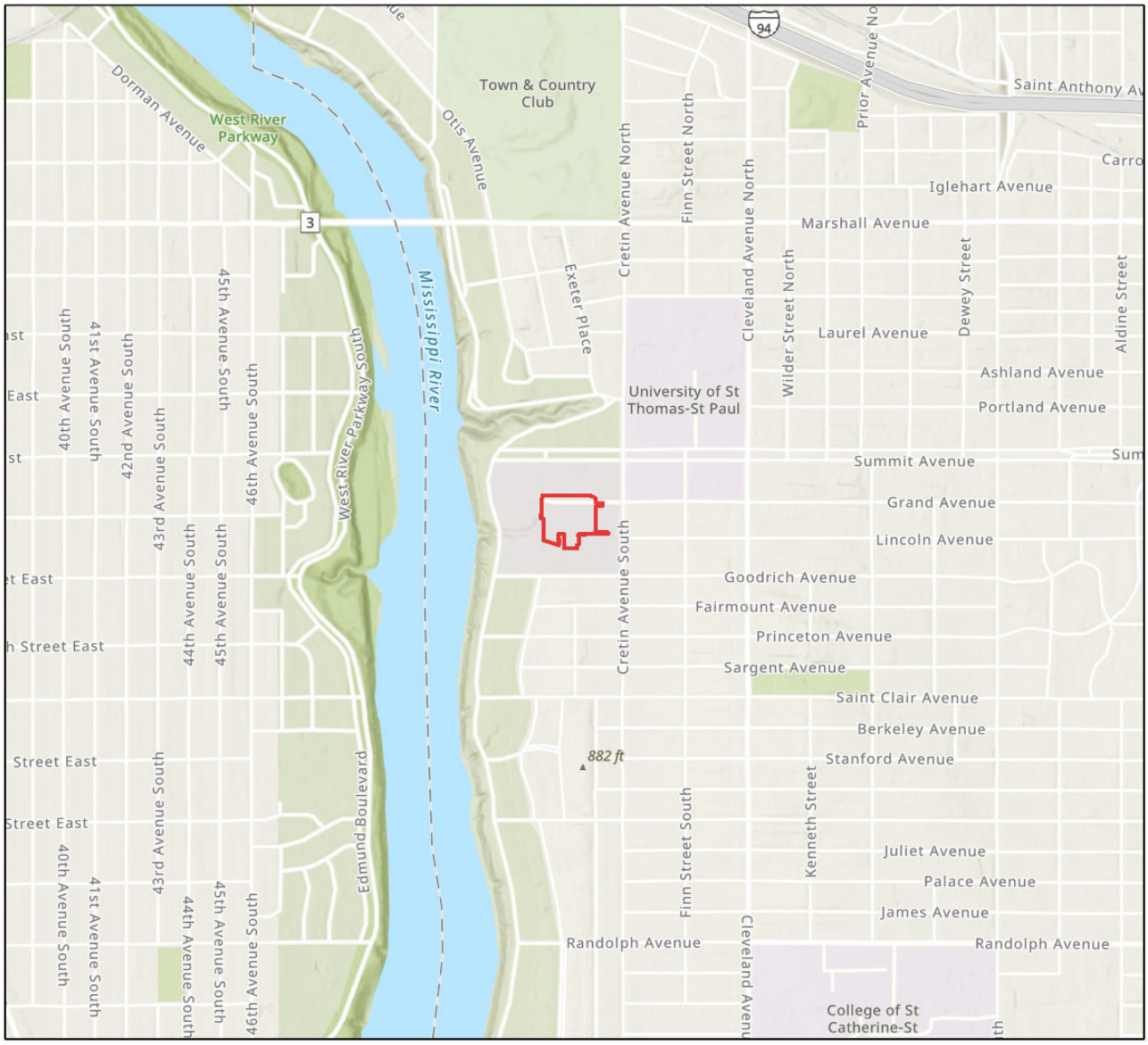
County(s): Ramsey

TRS: T28 R23 S5

City of Minneapolis, Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

University of St. Thomas Multipurpose Arena

USA Topo Basemap With Locator Map



N
W E
S

0 0.13 0.25 0.5 0.75 1 Miles

Project Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 6.44

County(s): Ramsey

TRS: T28 R23 S5

Esri, NASA, NGA, USGS, FEMA
City of Minneapolis, Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS,

University of St. Thomas Multipurpose Arena EAW NHIS Species Attachment

Kimley-Horn has been contracted to complete an EAW for the University of St. Thomas Multipurpose Arena located in Saint Paul, Ramsey County, MN. Ryan Companies is proposing to redevelop the 6.1-acre project site, currently part of the University of St. Thomas campus, into a multipurpose arena to house a competition venue, practice facilities, coaching offices, locker rooms, and student athlete support services.

A review of the DNR Natural Heritage Inventory System database per license agreement LA-1074 was conducted for the project site and the area within one mile of the project site. This review identified 20 records: 3 records which intersect the project site and 17 additional records within 1 mile of the project site.

One record for Handsome Sedge (*Carex Formosa*), a state-listed endangered species, intersects the project corridor. The preferred habitat for this forest sedge includes forested slopes along the Mississippi River in Ramsey County. No suitable habitat for Handsome Sedge is located within the project site; thus, no impacts to the species are anticipated.

One record for the Kentucky Coffee Tree (*Gymnocladus dioica*), a state-listed special concern species, intersects the project corridor. This deciduous tree is found in mesic hardwood forest on terraces of the Minnesota River. This record was last observed in 1909. Based on the nature of the project as an institutional campus with landscaping, this species is not anticipated to occur within the project site; therefore, we do not anticipate any adverse impacts to this species.

One record for Swamp White Oak (*Quercus bicolor*), a state-listed special concern species, intersects the project corridor, and two records are located within one mile of the project. The preferred habitat for this deciduous tree is floodplain forests along the Mississippi River. No suitable habitat for Swamp White Oak is located within the project site; therefore, no impacts to the species are anticipated.

Four records of the Rusty Patched Bumble Bee (*Bombus affinis*), a federally-listed endangered species, are located within one mile of the project site. The preferred habitat for this species includes grasslands and tallgrass prairies. The project site is an institutional campus with impervious surfaces, structures, and landscaping. Landscaping onsite includes trees and mowed grass; therefore, no suitable habitat for the Rusty Patched Bumble Bee will be disturbed and no impacts are anticipated.

One record of Higgins Eye (*Lampsilis higginsii*), a federally-listed and state-listed endangered species, is located within one mile of the project site. The Higgins Eye occurs only in the Mississippi River and the lower portion of some of its large tributaries, occupying stable substrates that vary from sand to boulders. There are no surface water features within the project site; thus no impacts to the Higgins Eye are anticipated.

One record of Round Pigtoe (*Pleurobema sintoxia*), a state-listed special concern species, is located within one mile of the project site. Preferred habitat of the Round Pigtoe is fast current areas dominated by coarse sand and gravel substrate in medium to large rivers. They can occasionally be found in small rivers. There are no surface water features within the project site; thus no impacts to the Round Pigtoe are anticipated.

Nine records of Wartyback (*Quadrula nodulata*), a state-listed threatened species, are located within one mile of the project site. The Wartyback is found in large rivers with fine or coarse substrates in areas of slow to moderate current. There are no surface water features within the project site; thus no impacts to the Wartyback are anticipated.

There are no Minnesota Biological Survey Sites of Biodiversity Significance, Native Plant Communities, or Regionally Significant Ecological Areas, or public water bodies located within the project site. Approximately 0.10 mile west of the project site lies Mississippi Gorge Regional Park, which is identified as a Minnesota Biological Survey Site of Biodiversity Significance (site name St. Paul Bluffs W), and a Native Plant Community (Mesic Hardwood Forest System). Considering these resources are not located within project limits, no adverse impacts are anticipated. The Mississippi River is located approximately 0.15 mile west of the project site and is identified as a Regionally Significant Ecological Area and a public water body. The Mississippi River is not located within the project site; therefore, no impacts are anticipated.

Based on the information listed above, no adverse impacts are anticipated to the state-listed species or the protected habitats identified.

From: MN_MNIT_Data Request SHPO
To: Mayer, Susan
Subject: RE: SHPO Database Search for EAW in Saint Paul, Ramsey County, Minnesota
Date: Thursday, March 30, 2023 5:52:36 PM
Attachments: image001.png
image002.png
image003.png
image004.png
History.xls

Hello Susan,

Please see attached. Our database has no archaeological records for the given project area.

Jim

SHPO Data Requests
Minnesota State Historic Preservation Office
50 Sherburne Avenue, Suite 203
Saint Paul, MN 55155
(651) 201-3299
datarequestshpo@state.mn.us

Notice: This email message simply reports the results of the cultural resources database search you requested. The database search is only for previously known archaeological sites and historic properties. **IN NO CASE DOES THIS DATABASE SEARCH OR EMAIL MESSAGE CONSTITUTE A PROJECT REVIEW UNDER STATE OR FEDERAL PRESERVATION LAWS –** please see our website at https://mn.gov/admin/shpo/protection/ for further information regarding our Environmental Review Process.
Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development projects within that area. Additional research, including field surveys, may be necessary to adequately assess the area's potential to contain historic properties or archaeological sites.
Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received, if any. The following codes may be on those reports:
NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.
CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Environmental Review Process. These properties need to be further assessed before they are officially listed in the National Register.
SEF – Staff eligible Findings are those properties the MN SHPO staff considers eligible for listing in the National Register, in circumstances other than the Environmental Review Process.
DOE – Determination of Eligibility is made by the National Park Service and are those properties that are eligible for listing in the National Register, but have not been officially listed.
CNEF – Considered Not Eligible Findings are made during the course of the Environmental Review Process. For the purposes of the review a property is considered not eligible for listing in the National Register. These properties may need to be reassessed for eligibility under additional or alternate contexts.

Properties without NR, CEF, SEF, DOE, or CNEF designations in the reports may not have been evaluated and therefore no assumption to their eligibility can be made. Integrity and contexts change over time, therefore any eligibility determination made ten (10) or more years from the date of the current survey are considered out of date and the property will need to be reassessed.
If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic/architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson, Environmental Review Specialist @ 651-201-3285 or by email at kelly.graggjohnson@state.mn.us.
The Minnesota SHPO Archaeology and Historic/Architectural Survey Manuals can be found at https://mn.gov/admin/shpo/identification-evaluation/.

Please subscribe to receive SHPO notices for the most current updates regarding office hours, accessing research files, or changes in submitting materials to the SHPO.

To access historic resource information please visit our webpage on Using SHPO's Files.

From: Mayer, Susan <Susan.Mayer@kimley-horn.com>
Sent: Wednesday, March 29, 2023 10:29 AM
To: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Subject: SHPO Database Search for EAW in Saint Paul, Ramsey County, Minnesota

This message may be from an external email source.
Do not select links or open attachments unless verified. Report all suspicious emails to Minnesota IT Services Security Operations Center.

Hello,

Kimley-Horn is preparing an EAW for the University of St. Thomas Multipurpose Arena in Saint Paul, Ramsey County, Minnesota. I am writing to request a search of the Minnesota Statewide Inventory Database for the site located in the following section(s), township(s), and range(s):

¼ Section	Section(s)	Township	Range
SE	5	28N	23W

See the attached figure of the project location. The EAW will examine the potential impacts of proposed development within the study area.

Please let me know if you have any questions or need additional information.

Thank you,

Susan Mayer | Environmental Scientist-Analyst

Kimley-Horn | 767 Eustis Street, Suite 100, Minneapolis, MN 55114

Direct: 612-254-7320 | Mobile: 414-510-2229 | Kimley-Horn.com

Appendix C

Greenhouse Gas (GHG) Analysis

Back to Intro

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Emissions Summary

Guidance

The total GHG emissions from each source category are provided below. You may also use this summary sheet to fill out the *Annual GHG Inventory Summary and Goal Tracking Form* as this calculator only quantifies one year of emissions at a time.

https://www.epa.gov/climateleadership/center-corporate-climate-leadership-annual-ghg-inventory-summary-and-goal-tracking

By entering the data below into the appropriate cell of the *Annual GHG Inventory Summary and Goal Tracking Form,* you will be able to compare multiple years of data.

If you have multiple Calculator files covering sub-sets of your inventory for a particular reporting period, sum each of the emission categories (e.g. Stationary Combustion) to an organizational total, which then can be entered into the *Annual GHG Inventory Summary and Goal Tracking Form* .

(A) Enter organization information into the orange cells. Other cells on this sheet will be automatically calculated from the data entered in the sheets in this workbook. Blue cells indicate required emission sources if applicable. Green cells indicate scope 3 emission sources and offsets, which organizations may optionally include in their inventory.

(B) The "Go To Sheet" buttons can be used to navigate to the data entry sheets.

Organizational Information:

Organization Name:	University of St. Thomas Arena EAW (Existing)
Organization Address:	
Inventory Reporting Period:	*e.g., Calendar Year 2020, Fiscal Year 2020*
Start:	*MM/DD/YY*
End:	*MM/DD/YY*
Name of Preparer:	Koehl Simmons
Phone Number of Preparer:	
Date Prepared:	

Summary of Organization's Emissions:

Scope 1 Emissions

Go To Sheet	Stationary Combustion	161	CO_2-e (metric tons)
Go To Sheet	Mobile Sources	0	CO_2-e (metric tons)
Go To Sheet	Refrigeration / AC Equipment Use	0	CO_2-e (metric tons)
Go To Sheet	Fire Suppression	0	CO_2-e (metric tons)
Go To Sheet	Purchased Gases	0	CO_2-e (metric tons)

Location-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	523	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Market-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	523	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Total organization Emissions

Total Scope 1 & Location-Based Scope 2	684	CO_2-e (metric tons)
Total Scope 1 & Market-Based Scope 2	684	CO_2-e (metric tons)

Reductions

Go To Sheet	Offsets	0	CO_2-e (metric tons)

Net Scope 1 and 2 Location-Based Emissions	684	CO_2-e (metric tons)
Net Scope 1 and 2 Market-Based Emissions	684	CO_2-e (metric tons)

Scope 3 Emissions

Go To Sheet	Employee Business Travel	0	CO_2-e (metric tons)
Go To Sheet	Employee Commuting	0	CO_2-e (metric tons)
Go To Sheet	Product Transport	0	CO_2-e (metric tons)
Go To Sheet	Waste	274	CO_2-e (metric tons)

Required Supplemental Information

Go To Sheet	Biomass CO_2 Emissions from Stationary Sources	0	CO_2-e (metric tons)
Go To Sheet	Biomass CO_2 Emissions from Mobile Sources	0	CO_2-e (metric tons)

Back to Intro

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Operational Boundary Questions - Emissions Sources to Include

Guidance
Use the questions below to help you determine which emissions sources should be included in the inventory.

Emissions Source Questions
A typical office-based organization will likely have the following (scope 1 and scope 2) emissions sources:

- Stationary Combustion
- Refrigeration and AC
- Electricity

If you answer "yes" to a question below, that emissions source should be included in your inventory. For each facility within the defined organizational boundary, collect the necessary data for the selected time period. Use the corresponding Excel sheet to quantify these emissions.

Tip: you may need to ask your landlord about heating sources, steam purchased and refrigerants

Stationary Combustion	Yes or No?
Do you have facilities that burn fuels on-site (e.g., natural gas, propane, coal, fuel oil for heating, diesel fuel for backup generators, biomass fuels)?	N
Mobile Sources	
Do any vehicles fall within your organizational boundary? This can include cars, trucks, propane forklifts, aircraft, boats. Only vehicles owned or leased by your organization should be included here.	N
Refrigeration and Air Conditioning	
Do your facilities use refrigeration or air conditioning equipment?	?
Fire Suppression	
Do your facilities use chemical fire suppressants?	?
Purchased Gases	
Do you purchase any industrial gases for use in your business? These gases may be purchased for use in manufacturing, testing, or laboratories.	?
Waste Gases	
Are VOCs combusted in thermal oxidizers in your facilities?	?
Do you flare any gases on-site?	?
Electricity	
Does your inventory include facilities that use electricity?	Y
Steam	
Do you purchase steam for heating or cooling in your facilities?	?
Market-Based Emission Factors (entered on Electricity and or Steam tabs)	
Do you purchase renewable energy certificates (RECs) or green power products? Do you purchase electricity through a power purchase agreement (PPA)? Do you have supplier-specific emission factors?	N

The questions below refer to scope 3 emissions sources and offsets. If you answer "yes" you may choose whether or not to include these emissions sources in your inventory. Use the corresponding sheet to enter data.

Business Travel	Yes or No?
Do your employees travel for business using transportation other than owned or leased vehicles (e.g., commercial airline flights, rental cars, trains)?	?
Employee Commuting	
Do your employees commute to work in personal vehicles or use public transportation?	?
Product Transport	
Do you hire another company to transport products or other materials to or from your facilities?	?
Waste Generated in Operations	
Do you generate waste that is disposed of in a facility owned by another organization?	Y
Offsets	
Do you purchase greenhouse gas offsets?	N

Scope 1 Emissions from Stationary Combustion Sources

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Guidance

(A) Enter annual data for each combustion unit, facility, or site (by fuel type) in ORANGE cells on **Table 1**. Example entry is shown in first row (*GREEN Italics*).
- Select "Fuel Combusted" from drop down box.
- Enter "Quantity Combusted" and choose the appropriate units from the drop down box in the unit column. If it's necessary to convert units, common heat contents can be found on the "Heat Content" sheet and unit conversions on the "Unit Conversion" sheet.

(B) If fuel is consumed in a facility but stationary fuel consumption data are not available, an estimate should be made for completeness. See the "Items to Note" section of the Help sheet for suggested estimation approaches.

(C) Biomass CO_2 emissions are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Stationary Source Fuel Combustion

Source ID	Source Description	Source Area (sq ft)	Fuel Combusted	Quantity Combusted	Units
BLR-012	*East Power Plant*	*12,517*	*Natural Gas*	*10,000*	*MMBtu*
Cretin Hall	Natural Gas Use	60	Natural Gas	3	MMBtu
Service Cer	Natural Gas Use	8,481	Natural Gas	362	MMBtu
McCarthy G	Natural Gas Use	29,061	Natural Gas	985	MMBtu
Facilities &	Natural Gas Use	29,466	Natural Gas	1,685	MMBtu

GHG Emissions

Total Organization-Wide Stationary Source Combustion by Fuel Type

Fuel Type	Quantity Combusted	Units
Anthracite Coal	0	short tons
Bituminous Coal	0	short tons
Sub-bituminous Coal	0	short tons
Lignite Coal	0	short tons
Natural Gas	2,958,470	scf
Distillate Fuel Oil No. 2	0	gallons
Residual Fuel Oil No. 6	0	gallons
Kerosene	0	gallons
Liquefied Petroleum Gases (LPG)	0	gallons
Wood and Wood Residuals	0	short tons
Landfill Gas	0	scf

Total Organization-Wide CO_2, CH_4 and N_2O Emissions from Stationary Source Fuel Combustion

Fuel Type	CO_2 (kg)	CH_4 (g)	N_2O (g)
Anthracite Coal	0.0	0.0	0.0
Bituminous Coal	0.0	0.0	0.0
Sub-bituminous Coal	0.0	0.0	0.0
Lignite Coal	0.0	0.0	0.0
Natural Gas	161,059.1	3,047.2	295.8
Distillate Fuel Oil No. 2	0.0	0.0	0.0
Residual Fuel Oil No. 6	0.0	0.0	0.0
Kerosene	0.0	0.0	0.0
Liquefied Petroleum Gases (LPG)	0.0	0.0	0.0
Total Fossil Fuel Emissions	**161,059.1**	**3,047.2**	**295.8**
Wood and Wood Residuals	0.0	0.0	0.0
Landfill Gas	0.0	0.0	0.0
Total Non-Fossil Fuel Emissions	**0.0**	**0.0**	**0.0**
Total Emissions for all Fuels	**161,059.1**	**3,047.2**	**295.8**

Total CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**161.2**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**0.0**

Back to Intro | Back to Summary | Help | Help - Market-Based Method

Scope 2 Emissions from Purchase of Electricity

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Guidance

The Indirect Emissions from Purchased Electricity Guidance document provides guidance for quantifying two scope 2 emissions totals, using a **location-based method** and a **market-based method**. The organization should quantify and report both totals in its GHG inventory. The location-based method considers average emission factors for the electricity grids that provide electricity. The market-based method considers contractual arrangements under which the organization procures electricity from specific sources, such as renewable energy.

(A) Enter total annual electricity purchased in kWh and each eGRID subregion for each facility or site in ORANGE cells of **Table 1**.
(B) If electricity consumption data are not available for a facility, an estimate should be made for completeness.
See the "Items to Note" section of the Help sheet for suggested estimation approaches.
(C) Select "eGRID subregion" from drop box and enter "Electricity Purchased."
- Use map (Figure 1) at bottom of sheet to determine appropriate eGRID subregion. If subregion cannot be determined from the map, find the correct subregion by entering the location's zip code into EPA's Power Profiler:
https://www.epa.gov/egrid/power-profiler#/
(D) See the market-based emission factor hierarchy on the market-based method Help sheet. If any of the first four types of emission factors are applicable, enter the factors in the yellow cells marked as "<enter factor>". If not, leave the yellow cells as is, and eGRID subregion factors will be used for market-based emissions.
Example entry is shown in first row (*GREEN Italics*) for a facility that purchases RECs for 100% of its consumption, and therefore has a market-based emission factor of 0.

Help - Market-Based Method

Tips: Enter electricity usage by location and then look up the eGRID subregion for each location.
If you purchase renewable energy that is less than 100% of your site's electricity, see the example in the market-based method Help sheet.

Table 1. Total Amount of Electricity Purchased by eGRID Subregion

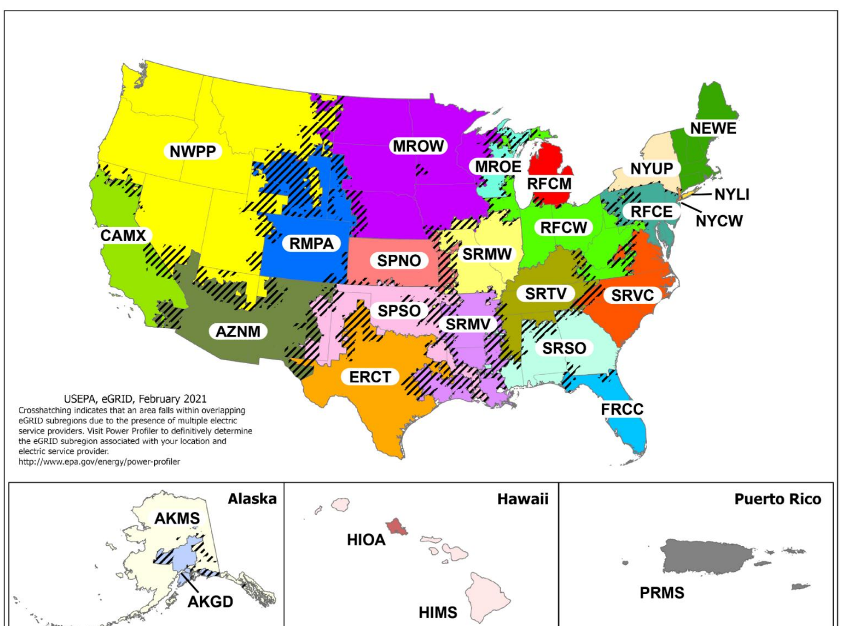
					Market-Based *Use these cells to enter applicable market-based emission factors*						Location-Based		
					Emission Factors			Emissions			Emissions		
Source ID	Source Description	Source Area (sq ft)	eGRID Subregion *where electricity is consumed*	Electricity Purchased (kWh)	CO_2 Emissions (lb/MWh)	CH_4 Emissions (lb/MWh)	N_2O Emissions (lb/MWh)	CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)	CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)
Bldg-012	*East Power Plant*	*12,517*	*HIMS (HICC Miscellaneous)*	*200,000*	*0*	*0*	*0*	*0.0*	*0.0*	*0.0*	*237,120.0*	*28.6*	*4.4*
Cretin Hall	Electricity Use	60	MROW (MRO West)	924	<enter factor>	<enter factor>	<enter factor>	1,014.9	0.1	0.0	1,014.9	0.1	0.0
Service Cer	Electricity Use	8,481	MROW (MRO West)	61,911	<enter factor>	<enter factor>	<enter factor>	68,003.4	7.4	1.1	68,003.4	7.4	1.1
McCarthy G	Electricity Use	29,061	MROW (MRO West)	383,605	<enter factor>	<enter factor>	<enter factor>	421,352.0	45.6	6.5	421,352.0	45.6	6.5
Facilities &	Electricity Use	29,466	MROW (MRO West)	595,213	<enter factor>	<enter factor>	<enter factor>	653,782.2	70.8	10.1	653,782.2	70.8	10.1
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
Total Emissions for All Sources				1,041,654				1,144,152.4	124.0	17.7	1,144,152.4	124.0	17.7

GHG Emissions

CO_2 Equivalent Emissions (metric tons)	
Location-Based Electricity Emissions	522.8
Market-Based Electricity Emissions	522.8

Notes:
1. CO_2, CH_4 and N_2O emissions are estimated using methodology provided in EPA's Center for Corporate Climate Leadership Greenhouse Gas Inventory Guidance - Indirect Emissions from Purchased Electricity (January 2016).

Figure 1. EPA eGRID2019, February 2021.



Back to Intro | Back to Summary | Help

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Scope 3 Emissions from Waste

Guidance

(A) Enter annual waste data in ORANGE cells. Example entry is shown in first row (*GREEN Italics*).

(B) Choose the appropriate material and disposal method from the drop down options. For the average-data method, use one of the mixed material types, such as mixed MSW. If the exact waste material is not available, consider an appropriate proxy. For example, dimensional lumber can be used as a proxy for wood furniture.

(C) Choose an appropriate disposal method. Note that not all disposal methods are available for all materials. If there is a #NA or # Value error in the emissions column, you must pick a new material type or appropriate disposal method.

Table 1. Waste Disposal Weight by Waste Material and Disposal Method (CO_2, CH_4 and N_2O)

Source ID	Source Description	Waste Material	Disposal Method	Weight	Unit	CO_2e Emissions (kg)
Bldg-012	*East Power Plant Finished Goods*	*Steel Cans*	*Landfilled*	*1.000*	*metric ton*	*22,040*
Nonresidential Buildings	Nonresidential Waste	Mixed MSW municipal solid waste	Combusted	382	metric ton	*180,989*
Residential	Residential Waste	Mixed MSW municipal solid waste	Combusted	53	metric ton	*25,313*
Nonresidential Buildings	Nonresidential Recycling	Mixed Recyclables	Recycled	603	metric ton	*59,813*
Residential	Residential Recycling	Mixed Recyclables	Recycled	84	metric ton	*8,365*

GHG Emissions

Total Emissions by Disposal Method

Waste Material	CO_2e (kg)
Recycled	68,178
Landfilled	-
Combusted	206,302
Composted	-
Anaerobically Digested (Dry Digestate with Curing)	-
Anaerobically Digested (Wet Digestate with Curing)	-

EPA Climate Leaders Simplified GHG Emissions Calculator (Optional 3.0)

Total CO_2 Equivalent Emissions (metric tons) - Waste **274.5**

Back to Intro

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Emissions Summary

Guidance

The total GHG emissions from each source category are provided below. You may also use this summary sheet to fill out the *Annual GHG Inventory Summary and Goal Tracking Form* (.xls) as this calculator only quantifies one year of emissions at a time.

https://www.epa.gov/climateleadership/target-setting

By entering the data below into the appropriate cell of the *Annual GHG Inventory Summary and Goal Tracking Form,* you will be able to compare multiple years of data.

If you have multiple Calculator files covering sub-sets of your inventory for a particular reporting period, sum each of the emission categories (e.g. Stationary Combustion) to an organizational total, which then can be entered into the *Annual GHG Inventory Summary and Goal Tracking Form*.

(A) Enter organization information into the orange cells. Other cells on this sheet will be automatically calculated from the data entered in the sheets in this workbook. Blue cells indicate required emission sources if applicable. Green cells indicate scope 3 emission sources and offsets, which organizations may optionally include in its inventory.

(B) The "Go To Sheet" buttons can be used to navigate to the data entry sheets.

Organizational Information:

Organization Name:	University of St. Thomas
Organization Address:	2115 Summit Ave, St Paul, MN 55105
Inventory Reporting Period:	*Proposed Scenario*
Start:	*Jan-23*
End:	*Dec-23*
Name of Preparer:	Kimley-Horn
Phone Number of Preparer:	763-251-1015
Date Prepared:	Apr-23

Summary of Organization's Emissions:

Scope 1 Emissions

Go To Sheet	Stationary Combustion	914	CO_2-e (metric tons)
Go To Sheet	Mobile Sources	1,239	CO_2-e (metric tons)
Go To Sheet	Refrigeration / AC Equipment Use	0	CO_2-e (metric tons)
Go To Sheet	Fire Suppression	0	CO_2-e (metric tons)
Go To Sheet	Purchased Gases	0	CO_2-e (metric tons)

Location-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	1,539	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Market-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	1,539	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Total organization Emissions

Total Scope 1 & Location-Based Scope 2	3,692	CO_2-e (metric tons)
Total Scope 1 & Market-Based Scope 2	3,692	CO_2-e (metric tons)

Reductions

Go To Sheet	Offsets	0	CO_2-e (metric tons)

Net Scope 1 and 2 Location-Based Emissions	3,692	CO_2-e (metric tons)
Net Scope 1 and 2 Market-Based Emissions	3,692	CO_2-e (metric tons)

Scope 3 Emissions

Go To Sheet	Employee Business Travel	0	CO_2-e (metric tons)
Go To Sheet	Employee Commuting	0	CO_2-e (metric tons)
Go To Sheet	Upstream Transportation and Distribution	0	CO_2-e (metric tons)
Go To Sheet	Waste	531	CO_2-e (metric tons)

Required Supplemental Information

Go To Sheet	Biomass CO_2 Emissions from Stationary Sources	0	CO_2-e (metric tons)
Go To Sheet	Biomass CO_2 Emissions from Mobile Sources	0	CO_2-e (metric tons)

Back to Intro | Back to Summary | Heat Content | Help

Scope 1 Emissions from Stationary Combustion Sources

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Guidance

(A) Enter annual data for each combustion unit, facility, or site (by fuel type) in ORANGE cells on **Table 1**. Example entry is shown in first row (*GREEN Italics*).

- Select "Fuel Combusted" from drop down box.
- Enter "Quantity Combusted" and choose the appropriate units from the drop down box in the unit column. If it's necessary to convert units, common heat contents can be found on the "Heat Content" sheet and unit conversions on the "Unit Conversion" sheet.

(B) If fuel is consumed in a facility but stationary fuel consumption data are not available, an estimate should be made for completeness. See the "Items to Note" section of the Help sheet for suggested estimation approaches.

(C) Biomass CO_2 emissions are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Stationary Source Fuel Combustion

Source ID	Source Description	Source Area (sq ft)	Fuel Combusted	Quantity Combusted	Units
BLR-012	*East Power Plant*	*12,517*	*Natural Gas*	*10,000*	*MMBtu*
	Natural gas and #2 fuel oil for boiler syste	138,150	Natural Gas	17,200	MMBtu

GHG Emissions

Total Organization-Wide Stationary Source Combustion by Fuel Type

Fuel Type	Quantity Combusted	Units
Anthracite Coal	0	short tons
Bituminous Coal	0	short tons
Sub-bituminous Coal	0	short tons

Lignite Coal	0	short tons
Natural Gas	16,764,133	scf
Distillate Fuel Oil No. 2	0	gallons
Residual Fuel Oil No. 6	0	gallons
Kerosene	0	gallons
Liquefied Petroleum Gases (LPG)	0	gallons
Wood and Wood Residuals	0	short tons
Landfill Gas	0	scf

Total Organization-Wide CO_2, CH_4 and N_2O Emissions from Stationary Source Fuel Combustion

Fuel Type	CO_2 (kg)	CH_4 (g)	N_2O (g)
Anthracite Coal	0.0	0.0	0.0
Bituminous Coal	0.0	0.0	0.0
Sub-bituminous Coal	0.0	0.0	0.0
Lignite Coal	0.0	0.0	0.0
Natural Gas	912,639.4	17,267.1	1,676.4
Distillate Fuel Oil No. 2	0.0	0.0	0.0
Residual Fuel Oil No. 6	0.0	0.0	0.0
Kerosene	0.0	0.0	0.0
Liquefied Petroleum Gases (LPG)	0.0	0.0	0.0
Total Fossil Fuel Emissions	**912,639.4**	**17,267.1**	**1,676.4**
Wood and Wood Residuals	0.0	0.0	0.0
Landfill Gas	0.0	0.0	0.0
Total Non-Fossil Fuel Emissions	**0.0**	**0.0**	**0.0**
Total Emissions for all Fuels	**912,639.4**	**17,267.1**	**1,676.4**

Total CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**913.6**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**0.0**

Back to Intro | Back to Summary | Help

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Scope 1 Emissions from Mobile Sources

Guidance

(A) Enter annual data for each vehicle or group of vehicles (grouped by vehicle type, vehicle year, and fuel type) in ORANGE cells in **Table 1**. Example entry is shown in first row (GREEN *Italics*). Only enter vehicles owned or leased by your organization on this sheet. All other vehicle use such as employee commuting or business travel is considered a scope 3 emissions source and should be reported in the corresponding scope 3 sheets.

- Select "On-Road" or "Non-Road" from drop down box to determine the Vehicle Types available. **Must select before picking vehicle type.**
- Select "Vehicle Type" from drop down box (closest type available).
- Enter "Fuel Usage" in appropriate units (units appear when vehicle type is selected).
- If mileage or fuel usage is unknown, estimate using approximate fuel economy values (see **Reference Table** below).
- Vehicle year and Miles traveled are not necessary for non-road equiment.

(B) When using biofuels, typically the biofuel (biodiesel or ethanol) is mixed with a petroleum fuel (diesel or gasoline) for use in vehicles. Enter the biodiesel and ethanol percentages of the fuel if known, or leave default values.

Biodiesel Percent:	20	%
Ethanol Percent:	80	%

(C) Biomass CO_2 emissions from biodiesel and ethanol are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Mobile Source Fuel Combustion and Miles Traveled

Source ID	Source Description	On-Road or Non-Road?	Vehicle Type	Vehicle Year	Fuel Usage	Units	Miles Traveled
Fleet-012	*HQ Fleet*	*OnRoad*	*Passenger Cars - Gasoline*	*2019*	*500*	*gal*	*12,065*
Construction Equipment (non-road g	Construction Equipment	NonRoad	Construction/Mining Equipment - Gasoline (2 stroke)	2007	26,453	gal	0
Passenger Cars	Construction Equipment	OnRoad	Passenger Cars - Gasoline	2007	90	gal	4,368
Construction Equipment (non-road d	Construction Equipment	NonRoad	Construction/Mining Equipment - Diesel	2007	94,476	gal	0
Medium- and Heavy- Duty Trucks	Construction Equipment	OnRoad	Medium- and Heavy-Duty Vehicles - Diesel	2007	189	gal	1,560
Light Trucks	Construction Equipment	OnRoad	Light-Duty Trucks - Gasoline	2007	176	gal	1,560

Back to Intro | Back to Summary | Help | Help - Market-Based Method

Scope 2 Emissions from Purchase of Electricity

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Guidance

The Indirect Emissions from Purchased Electricity Guidance document provides guidance for quantifying two scope 2 emissions totals, using a **location-based method** and a **market-based method**. The organization should quantify and report both totals in its GHG inventory. The location-based method considers average emission factors for the electricity grids that provide electricity. The market-based method considers contractual arrangements under which the organization procures electricity from specific sources, such as renewable energy.

(A) Enter total annual electricity purchased in kWh and each eGRID subregion for each facility or site in ORANGE cells of **Table 1**.
(B) If electricity consumption data are not available for a facility, an estimate should be made for completeness.
See the "Items to Note" section of the Help sheet for suggested estimation approaches.
(C) Select "eGRID subregion" from drop box and enter "Electricity Purchased."
- Use map (Figure 1) at bottom of sheet to determine appropriate eGRID subregion. If subregion cannot be determined from the map, find the correct subregion by entering the location's zip code into EPA's Power Profiler:
https://www.epa.gov/egrid/power-profiler#/
(D) See the market-based emission factor hierarchy on the market-based method Help sheet. If any of the first four types of emission factors are applicable, enter the factors in the yellow cells marked as "<enter factor>". If not, leave the yellow cells as is, and eGRID subregion factors will be used for market-based emissions.
Example entry is shown in first row (*GREEN Italics*) for a facility that purchases RECs for 100% of its consumption, and therefore has a market-based emission factor of 0.

Help - Market-Based Method

Tips: Enter electricity usage by location and then look up the eGRID subregion for each location.
If you purchase renewable energy that is less than 100% of your site's electricity, see the example in the market-based method Help sheet.

Table 1. Total Amount of Electricity Purchased by eGRID Subregion

					Market-Based *Use these cells to enter applicable market-based emission factors*						Location-Based		
					Emission Factors			Emissions			Emissions		
Source ID	Source Description	Source Area (sq ft)	eGRID Subregion *where electricity is consumed*	Electricity Purchased (kWh)	CO_2 Emissions (lb/MWh)	CH_4 Emissions (lb/MWh)	N_2O Emissions (lb/MWh)	CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)	CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)
Bldg-012	*East Power Plant*	*12,517*	*HIMS (HICC Miscellaneous)*	*200,000*	*0*	*0*	*0*	*0.0*	*0.0*	*0.0*	*228,640.0*	*22.0*	*3.4*
	Arena	138,150	MROW (MRO West)	3,440,000	<enter factor>	<enter factor>	<enter factor>	3,369,480.0	357.8	51.6	3,369,480.0	357.8	51.6
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
					<enter factor>	<enter factor>	<enter factor>						
Total Emissions for All Sources				3,440,000				3,369,480.0	357.8	51.6	3,369,480.0	357.8	51.6

GHG Emissions

CO_2 Equivalent Emissions (metric tons)	
Location-Based Electricity Emissions	**1,539.4**
Market-Based Electricity Emissions	**1,539.4**

Notes:
1. CO_2, CH_4 and N_2O emissions are estimated using methodology provided in EPA's Center for Corporate Climate Leadership Greenhouse Gas Inventory Guidance

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Scope 3 Emissions from Waste

Guidance

(A) Enter annual waste data in ORANGE cells. Example entry is shown in first row (*GREEN Italics*).

(B) First, choose the appropriate material then the disposal method from the drop down options. For the average-data method, use one of the mixed material types, such as mixed MSW. If the exact waste material is not available, consider an appropriate proxy. For example, dimensional lumber can be used as a proxy for wood furniture.

(C) Choose an appropriate disposal method. Note that not all disposal methods are available for all materials. If there is a #NA or # Value error in the emissions column, you must pick a new material type or appropriate disposal method.

Table 1. Waste Disposal Weight by Waste Material and Disposal Method (CO_2, CH_4 and N_2O)

Source ID	Source Description	Waste Material	Disposal Method	Weight	Unit	CO_2e Emissions (kg)
Bldg-012	*East Power Plant Finished Goods*	*Copper Wire*	*Landfilled*	*1,000*	*metric ton*	*22,040*
		Mixed MSW municipal solid waste	Combusted	870	metric ton	*412,258*
		Mixed Recyclables	Recycled	1,202	metric ton	*119,214*

Total Emissions by Disposal Method

Waste Material	CO_2e (kg)
Recycled	119,214
Landfilled	-
Combusted	412,258
Composted	-
Anaerobically Digested (Dry Digestate with Curing)	-
Anaerobically Digested (Wet Digestate with Curing)	-

Total CO_2 Equivalent Emissions (metric tons) - Waste	**531.5**

Appendix D

Traffic Impact Analysis

University of St. Thomas (UST) Multipurpose Arena EAW

Transportation Study

Prepared for:

City of St. Paul

June 9, 2023

SRF No. 2316489

Table of Contents

List of Figures

List of Tables

Introduction

SRF has completed a transportation study in conjunction with an EAW for the proposed University of St. Thomas (UST) multipurpose arena development in the City of St. Paul. The proposed arena is generally located in the southwest quadrant of the Cretin Avenue/Grand Avenue intersection within UST's south campus (see Figure 1: Project Location). The multipurpose arena is expected to have capacities ranging from 4,000- to 5,500-event patrons, depending on the event, and will primarily be utilized by the UST men's and women's hockey and basketball teams. Other events, such as university commencements, high school/youth sports, and conventions may also be held at the venue. In addition to holding events, the proposed arena is anticipated to include an auxiliary ice rink, separate men's and women's basketball practice facilities, and coaches offices/training facilities. As part of construction, three buildings are expected to be demolished, which include the Cretin Residence Hall, McCarthy Gymnasium, and a Service Center, as well as a net loss of approximately 265 surface parking spaces. The development is anticipated to be fully constructed and open by Fall of 2025.

The main objectives of the study are to evaluate the existing operations and parking within the study area, identify any transportation/parking impacts associated with the proposed arena during event and non-event conditions, and recommend potential mitigation to address any issues. The study summarizes various event related information pertaining to the arena and evaluates both typical (average) and maximum (worst-case) event conditions to identify issues areas and potential mitigation strategies. The following information provides the assumptions, analysis, and study findings offered for consideration.

SRF

Project Location

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 1

02316489
May 2023

Existing Conditions

Existing conditions were reviewed to establish a baseline to compare to future conditions, as well as identify current issues from a safety and capacity perspective. The evaluation of existing conditions includes various data collection efforts, such as traffic volumes and parking utilization counts, as well as a review of current transportation characteristics (roadways, pedestrians, bicycles, and transit), crashes/safety, and intersection operations, which are outlined in the following sections.

Study Intersections

The following study intersections represent the primary focus of the transportation study. These intersections were identified through discussions with UST and City staff as they relate to potential development impacts, as well as future area infrastructure needs. It should be noted that these intersections generally encompass the entire UST St. Paul campus.

- Cretin Ave N/Marshall Ave
- Cretin Ave N/Selby Ave
- Cretin Ave N/Mississippi River Blvd
- Cretin Ave N/Summit Ave
- Cretin Ave N/Grand Ave
- Cretin Ave N/Goodrich Ave
- Cleveland Ave N/Selby Ave
- Cleveland Ave N/Summit Ave
- Cleveland Ave N/Grand Ave
- Summit Ave/Mississippi River Blvd
- Summit Ave/UST South Campus Access
- Mississippi River Blvd/Goodrich Ave

Other regional intersections and access locations were also included as part of the future event operations analysis as needed to help identify event traffic impacts and any potential infrastructure/traffic control needs. These other regional locations primarily consisted of signalized intersections along Cretin Avenue and Cleveland Avenue from I-94 to the north to TH 5 to the south.

Traffic Volumes

Vehicular turning movement and pedestrian/bicyclist counts were collected at the study intersections on Thursday, March 30, 2023, during a.m. and p.m. peak periods of the study intersections (7 to 9 a.m. and 4 to 6 p.m.), as well as anticipated pre- and post-event peak hours (i.e., 6 to 7 p.m. and 9 to 10 p.m.). In addition, data was collected at the Cretin Avenue/Grand Avenue intersection on Friday, March 31, 2023, and Saturday, April 1, 2023, to understand differences in traffic volumes on weekends. It should be noted that the counts were collected while most area schools (i.e., St. Paul Public Schools) and universities (i.e., UST, St. Catherine's, Macalester College) were in session. To determine if the traffic counts were representative of an average day in the study area, MnDOT detector data was reviewed at the I-94/Cretin Avenue interchange from October 2022 to March 2023. Results of the review, shown in Appendix A, indicate that March 30, 2023, was representative (if not slightly higher) of an average day for the study area, therefore, no adjustments were made to the counts. In addition, turning movement counts were either collected or estimated at the regional intersections based on a combination of the newly collected data or modifying historical traffic count data.

Roadway Characteristics

A field assessment was completed to identify various roadway characteristics within the transportation system study area, such as functional classification, general configuration, posted speed limit, and presence of on-street parking. A summary of these roadway characteristics is shown in Table 1. Note that these are general characteristics and that there are some deviations within the segments of the roadways.

Table 1. Existing Roadway Characteristics

Roadway	Functional Classification (1)	General Configuration	Speed Limit (mph)	On-Street Parking
Cretin Avenue	Major Collector	Four-Lane Undivided (2)	25	Yes (2)
Cleveland Avenue	A Minor Arterial	Two-Lane Undivided	30	Yes
Mississippi River Blvd	Local Street	Two-Lane Undivided	25	No
Marshall Avenue	A Minor Arterial	Three-Lane Divided (3)	30	Yes
Selby Avenue	Local Street	Two-Lane Undivided	25	Yes
Summit Avenue	Major Collector	Two-Lane Divided	25	Yes
Grand Avenue	Other Arterial	Three-Lane Undivided	25	Yes

(1) Functional Classification based on the City of Saint Paul 2040 Comprehensive Plan.

(2) Note various locations along Cretin Avenue contain on-street parking with time-of-day restrictions. Therefore, depending on the time of day, the corridor may operate as a two-lane roadway with parking.

(3) Generally a three-lane roadway with medians present in various locations. Note Marshall Avenue has two lanes in the westbound direction, west of Cretin Avenue.

In addition to the general roadway characteristics, there are varying types of traffic controls within the transportation system study area. The following study intersections are signalized:

- Cretin Ave /Marshall Ave
- Cretin Ave /Summit Ave
- Cretin Ave /Grand Ave
- Cleveland Ave /Summit Ave
- Cleveland Ave /Grand Ave

The Mississippi River Boulevard/Goodrich Avenue intersection is all-way stop controlled. The remining study intersections are unsignalized with side-street stop control. Existing geometrics, traffic controls, and volumes are shown in Appendix A.

Multimodal Facilities

The study area is well served with sidewalks and all signalized intersections surrounding campus are programmed with leading pedestrian interval (LPI) timing, which helps improve pedestrian safety. Note there is a sidewalk gap on the north side of Goodrich Avenue and there is not currently a direct pedestrian connection between Goodrich Avenue and south campus (i.e., pedestrians need to walk to/from Cretin Avenue to access Goodrich Avenue).

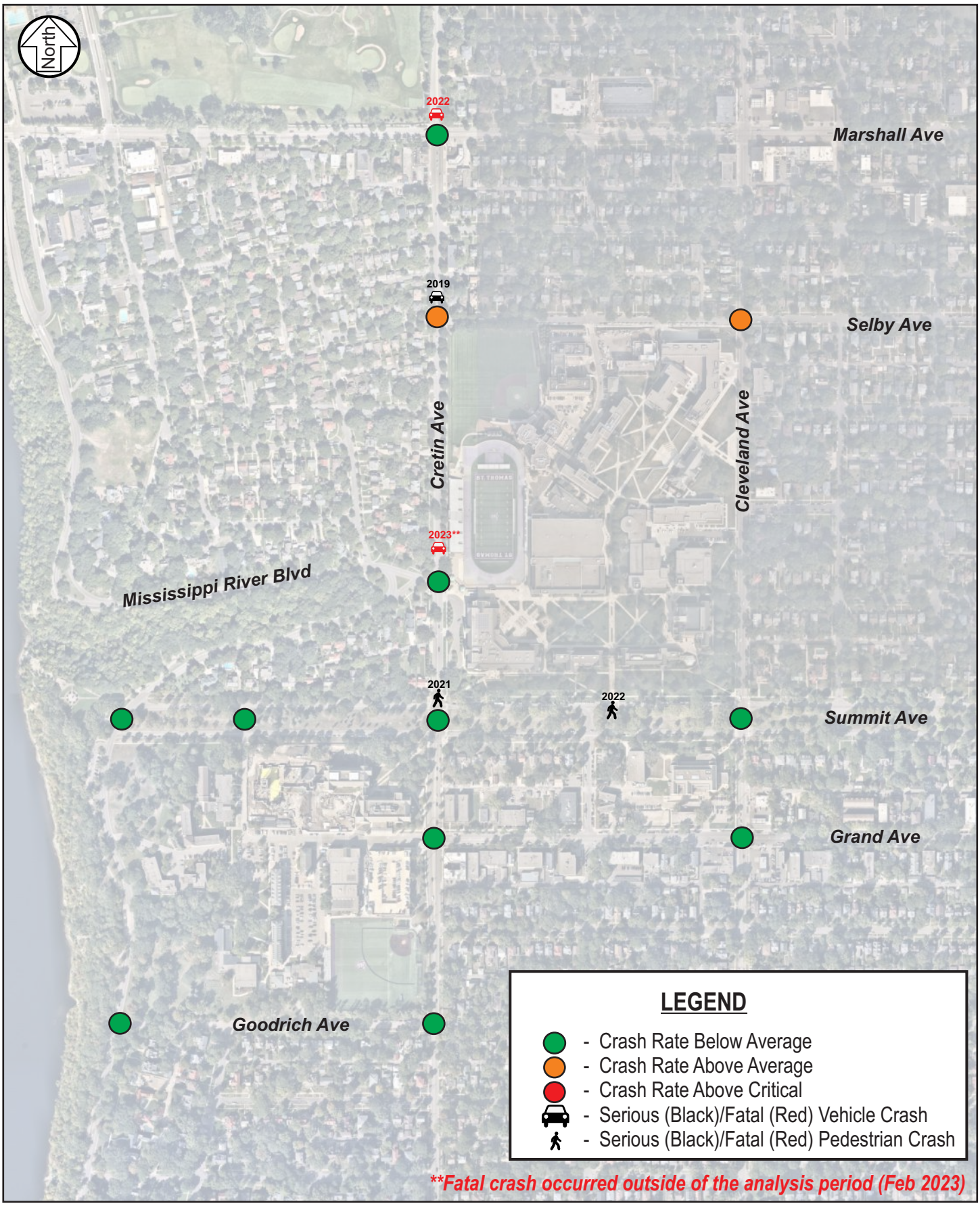
From a bicycle perspective, there is an off-street trail along the west side of Mississippi River Boulevard, and on-street bicycle lanes along Summit Avenue and Cleveland Avenue, as well as the west side of Mississippi River Boulevard. Note that Summit Avenue is currently undergoing a public visioning process to determine the long-term layout of the corridor.

As shown in the inset, there are various Metro Transit stops on (or near) the St. Paul Campus. The Metro Transit Bus Routes include routes 21, 63, and 87, which run every 15-20 minutes and are summarized below. In addition, UST runs a shuttle bus between the St. Paul and Minneapolis campuses. The shuttle runs every 20-30 minutes and is free for all UST staff/students.

- **Route 21** – Primarily operates east-west along Marshall Avenue/Lake Street from downtown St. Paul to Uptown, providing key stops near Allianz Field that serve as a feeder to the METRO Green Line.
- **Route 63** – Primarily operates east-west along Grand Avenue and 3rd Street, serving key destinations such as the METRO Green Line, Macalester College, downtown St. Paul, and the Sun Ray Transit Center.
- **Route 87** – Primarily operates north-south along Cleveland Avenue from Ford Parkway to the Rosedale Transit Center, providing key stops at the University of Minnesota St. Paul Campus and the METRO Green Line.

Safety Analysis

While not a requirement of the EAW process, a safety analysis was requested by UST to understand any trends or geometric issues at the study intersections. The safety analysis was based on reported crashes using MnDOT's Crash Mapping Analysis Tool (MnCMAT) from January 1, 2018, through December 31, 2022, which represents the most recent five-year period available. Results of the safety analysis are summarized below and shown in Figure 2, while detailed crash type/rate information is included in Appendix B.



SRF

Safety Analysis Summary (2018-2022)

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 2

02316489
May 2023

- There was a total of 47 crashes reported within the study area during the analysis period. The number of crashes ranged from a high of 19 crashes at the Cretin Avenue/Marshall Avenue intersection to a low of zero (0) crashes at the Cretin Avenue/Goodrich Avenue intersection.
- In order to determine the significance of the crashes, crash rates were calculated for each intersection and compared to average crash rates published by MnDOT for intersections with similar characteristics (i.e., traffic control, traffic volumes, lighting, environment, etc.) A higher than average rate does not necessarily indicate a significant crash problem. Therefore, critical rates were calculated to determine the statistical significance. If the actual rates are below the critical rates, crashes that occurred may be due to the random nature of crashes and not necessarily a geometric design or traffic control issue. Based on the results of analysis, which is illustrated in Figure 2, no study intersections are above the critical crash rate, indicating that no study intersections have a statistically significant crash problem.
- It should be noted that one (1) fatal and three (3) serious injury crashes have occurred within the study area during the analysis period, and an additional fatal accident also occurred outside of the analysis period (i.e., February 2023). Descriptions of the fatal/serious injury crashes, which are based on the police reports, are summarized below:
    - Cretin Avenue/Marshall Avenue – Fatal angle crash. Driver ran a red light, colliding with a vehicle crossing the intersection. Based on the police reports, drugs/alcohol may have played a role in the crash.
    - Cretin Avenue/Mississippi River Blvd – Fatal head-on crash. Driver crossed the centerline, colliding with oncoming traffic. Based on the police reports, drugs/alcohol may have played a role in the crash.
    - Cretin Avenue/Selby Avenue – Serious injury angle crash. Side-street vehicle failed to observe right-of-way and pulled out into oncoming traffic.
        - Note the intersection also has an above average crash rate. Two other angle crashes have occurred at the intersection within the analysis period and all three (3) angle crashes have occurred when on-street parking may be present on Cretin Avenue. On-street parking may be encroaching on sight lines at the intersection.
    - Cretin Avenue/Summit Avenue – Serious injury pedestrian crash. A pedestrian failed to yield right-of-way and walked into oncoming traffic.
    - Summit Avenue/Pedestrian Crossing (near Finn St) – Serious injury pedestrian crash. Vehicle traveling westbound failed to see pedestrian crossing the intersection.
        - Note during data collection efforts, vehicles were observed to park and/or stop within the no parking zone prior to the pedestrian crossing. Vehicles parked in this zone may block the visibility of pedestrians. While not associated with the arena project, future consideration could be made towards constructing a curb bump out for the pedestrian crossing and/or implementing yellow pavement markings to help reinforce the no-parking zone and improve pedestrian visibility.

Operations Analysis

An intersection capacity analysis was conducted to determine how traffic is currently operating at the study intersections during typical weekday a.m. and p.m. peak hour conditions. All intersections were analyzed using Synchro/SimTraffic software, which is an industry standard. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are graded from LOS A through LOS F. The LOS results are based on average delay per vehicle, which corresponds to the delay threshold values shown in Table 2. LOS A indicates the best traffic operation and LOS F indicates an intersection where demand exceeds capacity. Overall intersection LOS A through D is generally considered acceptable within the Twin Cities Metropolitan Area, although longer delays for short periods of time and/or for specific movements are often considered acceptable as well. In urban areas, it is common for intersections to operate at LOS E or LOS F for short periods of time, particularly when balancing other transportation modal priorities.

Table 2. Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

For side-street stop-controlled intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop control can be described in two ways. First, consideration is given to the overall intersection level of service. This takes into account the total number of vehicles entering the intersection and the capability of the intersection to support these volumes.

Second, it is important to consider the delay on the minor approach. Since the mainline does not have to stop, the majority of delay is experienced on the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high levels of delay (poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions.

Results of the existing intersection capacity analysis, shown in Table 3, indicate that all study intersections currently operate at an acceptable overall LOS D or better during the weekday a.m. and p.m. peak hours. Queuing and operational observations are discussed on Page 10, however, there are no significant operational or safety issues that would warrant improvements within the study area.

Table 3. Existing Conditions Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
Cretin Avenue S / Marshall Avenue	C	26 sec.	D	53 sec.
Cretin Avenue S / Selby Avenue (1)	A/A	10 sec.	A/B	11 sec.
Cretin Avenue S / Mississippi River Boulevard (1) (3)	A/A	5 sec.	A/A	6 sec.
Cretin Avenue S / Summit Avenue	A	8 sec.	B	14 sec.
Cretin Avenue S / Grand Avenue	B	10 sec.	B	14 sec.
Cretin Avenue S / Goodrich Avenue (1)	A/A	9 sec.	A/C	16 sec.
Cleveland Avenue S / Selby Avenue (1)	A/A	6 sec.	A/B	12 sec.
Cleveland Avenue S / Summit Avenue	B	13 sec.	B	19 sec.
Cleveland Avenue S / Grand Avenue	B	15 sec.	B	15 sec.
Mississippi River Boulevard / Summit Avenue (1)	A/A	4 sec.	A/A	5 sec.
Mississippi River Boulevard / Goodrich Avenue (2)	A	4 sec.	A	4 sec.

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.
(2) Indicates an unsignalized intersection with all-way stop control, where the overall LOS is shown.
(3) The eastbound left-turn movement is restricted.

The following information summarizes the operational and/or queuing observations identified as part of the existing capacity analysis:

- **Cretin Avenue/Marshall Avenue:** While the intersection operates at an acceptable overall LOS D, the southbound and eastbound approaches were observed to have 95th percentile queues of 650 feet during the p.m. peak hour. In addition, the westbound approach was observed to have queues of 450 feet or greater during the p.m. peak hour.
- **Summit Avenue at Cretin Ave and Cleveland Ave:** Due to the median width and signal limitations, there is limited storage/capability for side-street left-turn movements to enter the intersections. Of note, the westbound left-turn movement at the Summit Avenue/Cretin Avenue intersection operates at LOS F (77 seconds) with 95th percentile queues of approximately 150 feet during the p.m. peak hour.
- **Cretin Avenue:** Left-turn movements and time-of-day on-street parking were observed to cause abrupt lane changes and friction along the corridor.

Parking

UST Campus Parking/Utilization Counts

A summary of the UST campus parking supply is shown in Figure 3. Note that each lot is generally assigned/restricted to either a resident, commuter, faculty/staff, and/or visitor. The figure highlights in purple the parking locations that are open for event patrons during expected game times and are expected to be utilized for events. In addition, on-street parking locations that are adjacent to campus and do not require a city permit are also highlighted in purple. The project limits are referenced (i.e., dashed orange line) to highlight the surface parking lots that are expected to be removed by the project.

Parking utilization counts were collected on/near the UST Campus in the Spring of 2023 during two (2) different timeframes by two (2) different sources, as summarized below. Note the parking utilization counts were the basis of the non-event and event parking demand analysis, which is discussed later in this document. Detailed parking utilization count information is included in Appendix C.

1) UST Parking Counts: Parking utilization counts were collected at all St. Paul campus lots from Monday, February 27, 2023, to Friday, March 3, 2023. The counts were collected in hourly intervals from 12 a.m. to 10 p.m. Monday through Thursday, and 12 a.m. to 6 p.m. on Friday.

2) SRF Parking Counts: Parking utilization counts were collected by SRF from Thursday, March 30, 2023, to Saturday, April 1, 2023. The focus of the SRF parking counts was to collect data that was not captured by UST, such as on-street parking adjacent to campus (that do not require a city parking permit) and visitor lots on Friday and Saturday nights (i.e., 6 - 7 p.m.) that are expected to be utilized for events.

While the weather was generally clear during the week of UST parking counts, there was a snowstorm on Friday night (3/31) into Saturday morning (4/1) during the SRF parking counts. However, the storm started after the Friday afternoon counts and the Saturday weather (40 degrees and sunny) generally cleared the roadways by the time of the Saturday afternoon counts, therefore, the parking counts as it relates to event availability are considered representative of typical conditions for the campus area.

Permit Parking Locations

Numerous public neighborhood streets surrounding the UST campus currently have city permit parking restrictions. Given that UST students/staff may currently be parking on the local streets, it is important to understand where/when permit parking is located surrounding the campus. Therefore, a graphic summarizing the residential permit parking locations was developed and is shown in Figure 4. Note the graphic is based on information provided on the City of St. Paul website.

Given the proposed development will be holding events, it is important to monitor parking and the potential surrounding neighborhood impacts. Note various factors may contribute to event traffic parking on local streets, which include but are not limited to, parking supply, proximity to the arena, cost of parking, etc.

Restricted Resident Parking

MRH R3, MRH R2, Lot U

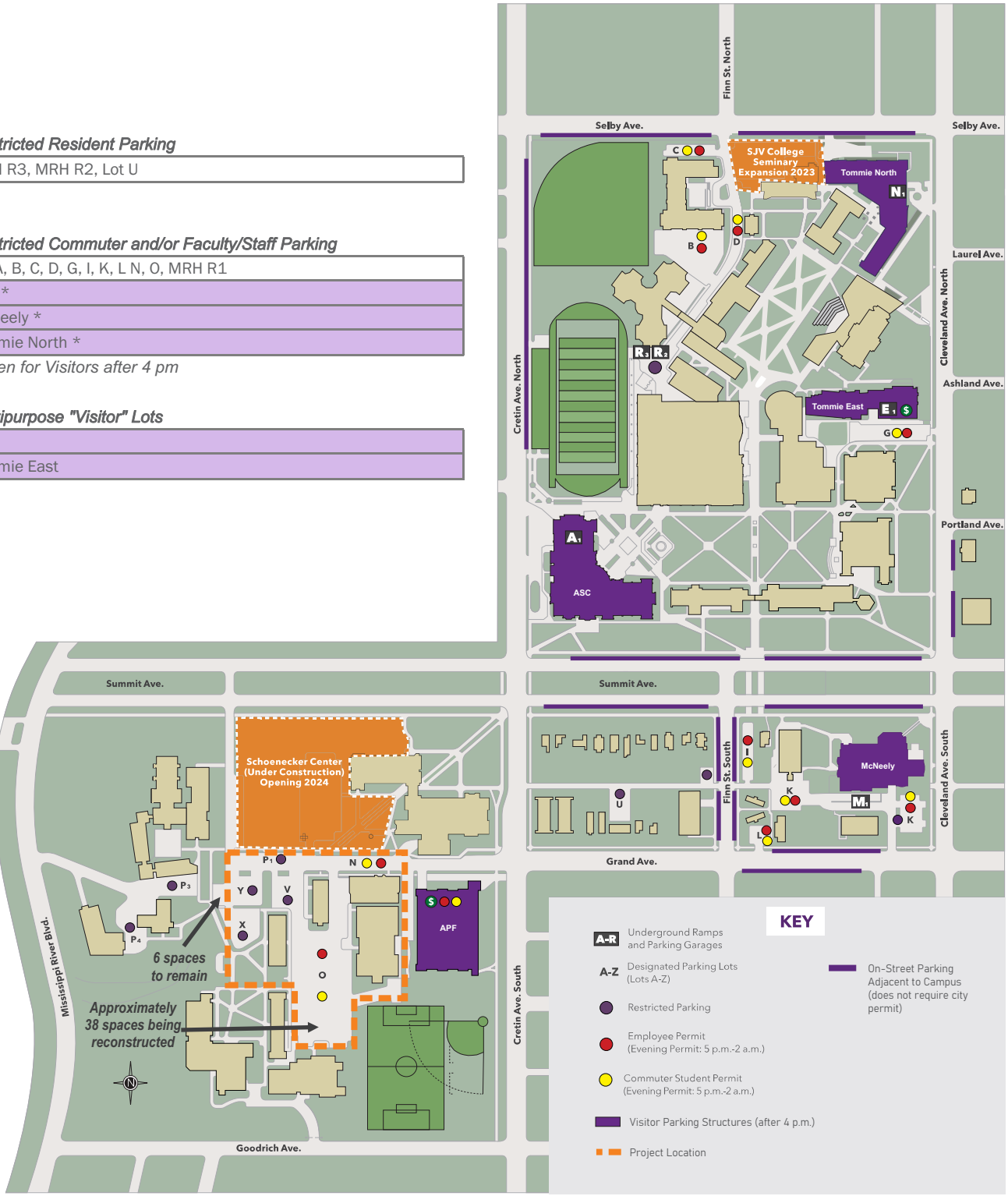
Restricted Commuter and/or Faculty/Staff Parking

Lot A, B, C, D, G, I, K, L N, O, MRH R1
ASC *
McNeely *
Tommie North *

**Open for Visitors after 4 pm*

Multipurpose "Visitor" Lots

APF
Tommie East



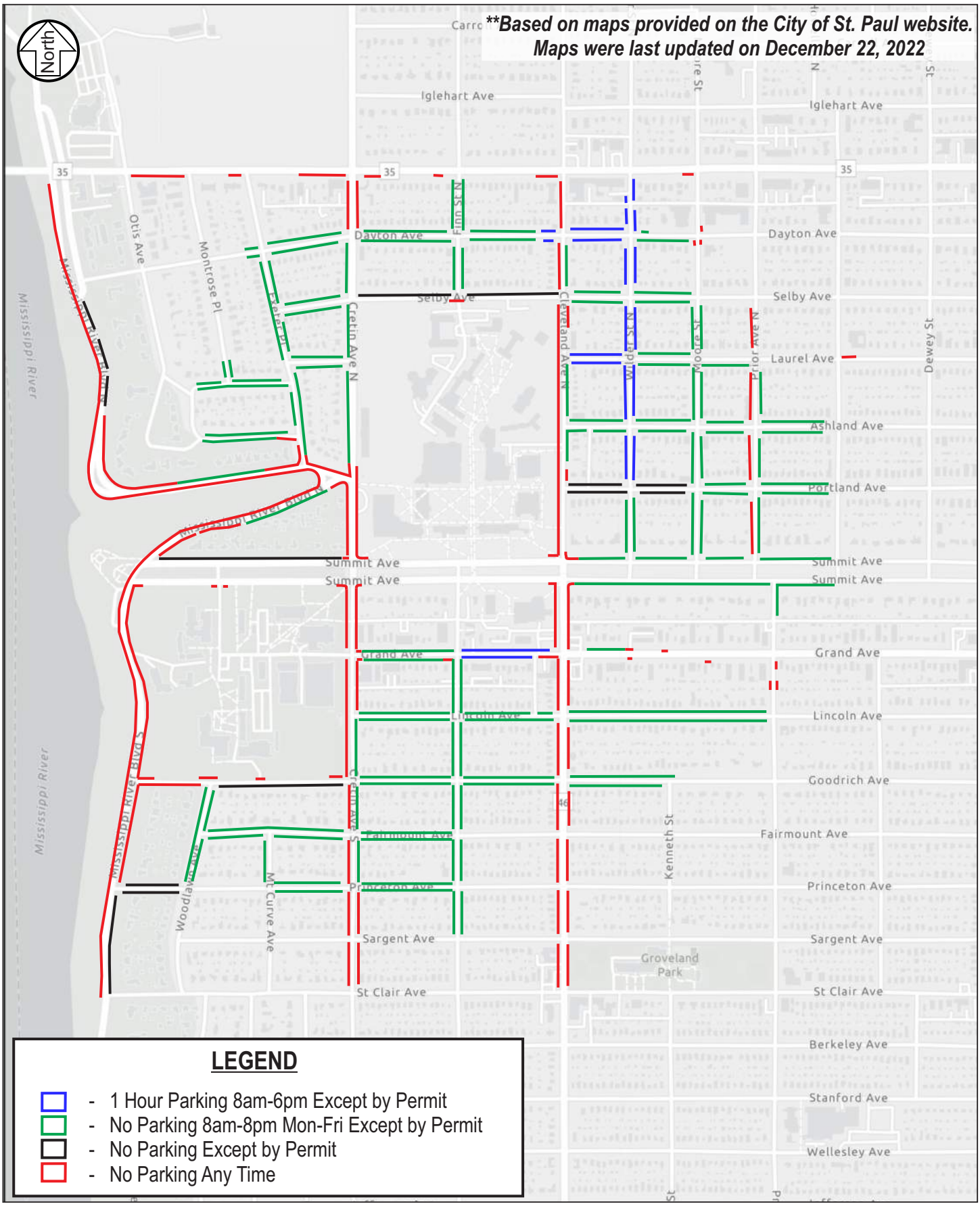
Produced by the University of St. Thomas-Minnesota. Updated July 2022.
Modified by SRF Consulting in April 2023.

UST Campus Parking Summary

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 3

02316489
May 2023



SRF

Residential City Permit Parking Locations

UST Multipurpose Arena EAW Transportation Study

City of St. Paul

Figure 4

02316489
May 2023

Proposed Development

The proposed multipurpose arena development is located immediately west of the Anderson Parking Facility (APF) in the southwest quadrant of the Cretin Avenue/Grand Avenue intersection. A preliminary site plan for the proposed arena is illustrated in Figure 5, which was used as the basis for this transportation study. As mentioned previously, the multipurpose arena will primarily be utilized by the UST men's and women's hockey and basketball teams. The expected capacity for basketball/hockey events is summarized below, whereas estimated event times, schedules, and attendances are discussed later in this document.

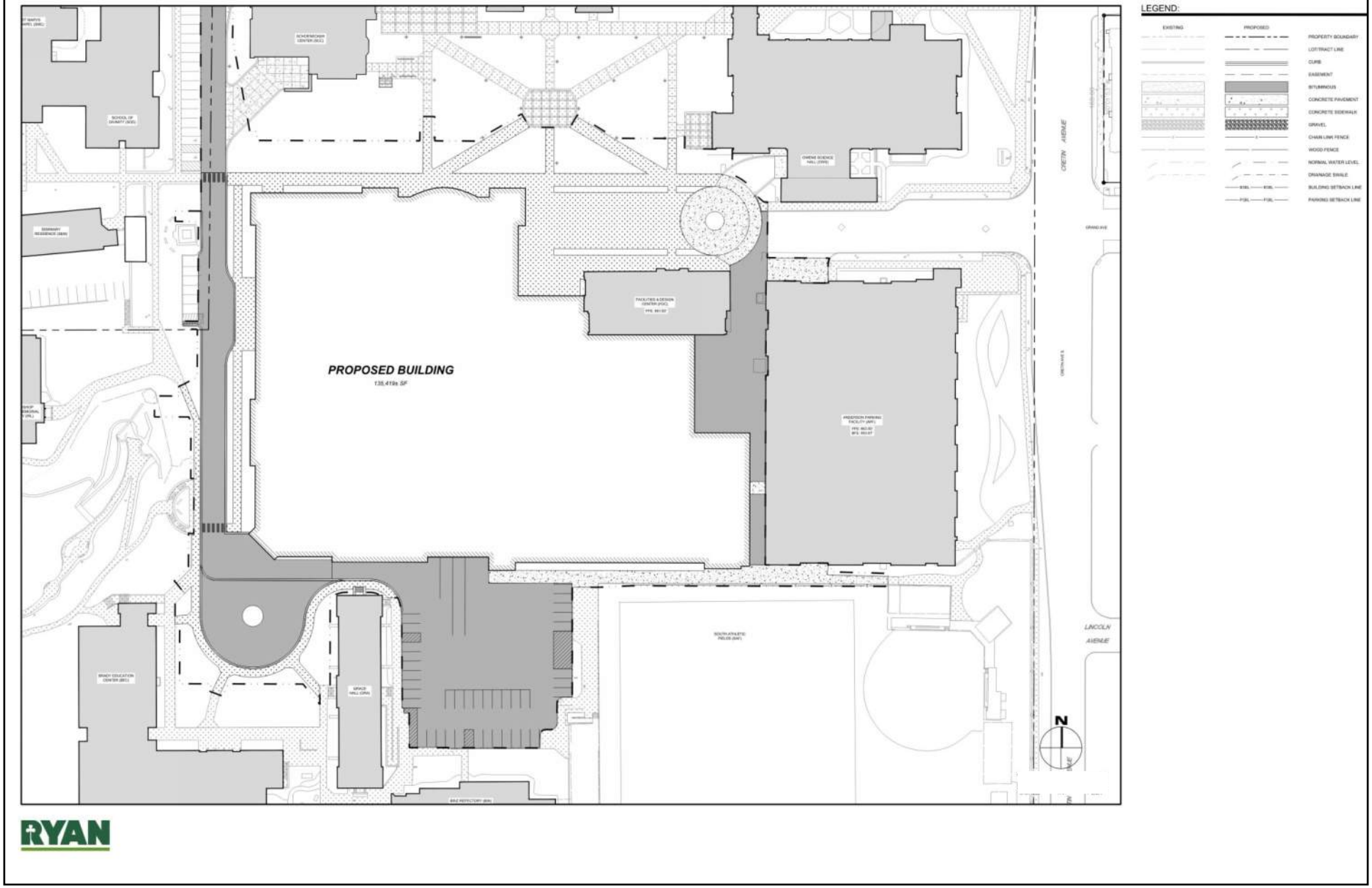
- **Basketball** – 5,500-capacity
- **Hockey** – 4,000-capacity

Other events, such as university commencements, high school/youth sports, and conventions may also be held at the venue. While other event types could have larger capacities (if floor seating is included), due to the infrequency and unknown nature of these other events, the reoccurring hockey/basketball events were the focus of this study. In addition to holding events, the proposed development is also anticipated to include an auxiliary ice rink, separate men's and women's basketball practice facilities, and coaches offices/training facilities.

The proposed arena is expected to begin construction in 2024 and open by Fall of 2025. As part of construction, three buildings are expected to be demolished, which include the Cretin Residence Hall, McCarthy Gymnasium, and a Service Center. In addition, commuter/staff lots (N, O) and School of Divinity (P, V, X, Y) surface parking lots are expected to be removed. Lot O, however, is expected to be reconstructed on the south side of the arena to provide 40 parking spaces, resulting in a total net loss of approximately 265 surface parking spaces.

The project will also result in the discontinuation of the South Campus internal roadway connection from Summit Avenue to Cretin Avenue, and a pedestrian plaza will be provided outside of the arena to enhance pedestrian facilities and safety. Vehicular access will still be provided at both access locations; however, the Summit Avenue access will only provide access to the reconstructed Lot O, and the Cretin Avenue/Grand Avenue access will only provide access to the APF. Vehicle turnarounds are expected to be constructed near both access locations. It should be noted that the Summit Avenue/South Campus intersection is also expected to be modified to better accommodate larger vehicles, as the access is expected to be utilized by team buses and delivery vehicles.

While pedestrian access will be provided at various locations surrounding the building, the primary event entrances are located in the north quadrant, near the proposed plaza area, whereas a secondary access will also be provided on the east side, near the APF. The west side of the APF is expected to be modified to provide a pedestrian entrance/exit. This access modification is expected to serve as a direct connection for APF users and the Arena. It is expected to be utilized by event users, students, staff, as well as potential parent pick-up/drop-off for youth sports. In addition, the arena has a pedestrian access in the south quadrant, that is expected to be utilized by staff, coaches, and media.



SRF

Preliminary Site Plan

UST Multipurpose Arena EAW Transportation Study

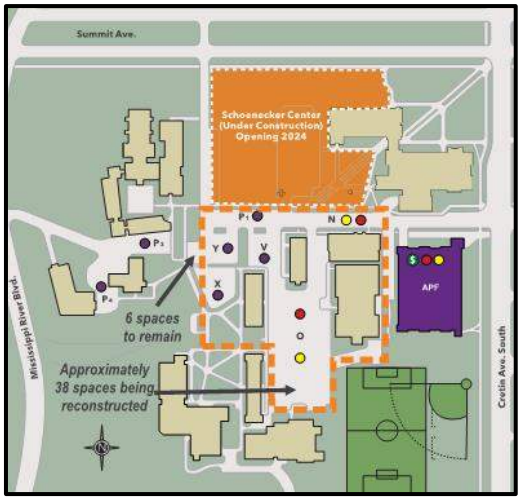
City of St. Paul

Figure 5

02314689
May 2023

2025 Non-Event Conditions

Parking Analysis



The proposed arena development is expected to result in the net loss of approximately 265 parking spaces (308 removed + 38 reconstructed Lot O + 6 Lot Y to remain = 264). Therefore, to identify potential impacts associated with the loss of parking, a parking demand analysis was performed during peak non-event conditions. Note that the peak parking demand on the UST campus is between 11 a.m. and 1 p.m. on a weekday. The peak parking demand of the impacted lots, which is shown in Table 4, indicates that on average 173 vehicles will be displaced as a result of the project.

Table 4. Parking Demand of Impacted Lots

Lot ID	Total Parking Spaces	Peak Parking Demand
		Weekday 1:00 pm
Commuter and Staff/Faculty Parking		
N	9	9
O (1)	196	85
Total (N,O)	**205**	**94**
School of Divinity (SOD) Parking		
P1 (South)	18	16
V	33	20
X	21	14
Y (2)	31	29
Total (SOD)	**103**	**79**
Total	**308**	**173**

(1) Lot O is expected to be reconstructed and provide approximately 38 spaces.
(2) Six (6) spaces from Lot Y are expected to remain.

To determine if alternative campus parking sources can accommodate the displaced parking, the available parking supply on campus was reviewed. The review was focused on other non-resident parking lots and on-street parking (no permit required) adjacent to campus. Based on the parking utilization data, which is summarized in Table 5, approximately 259 parking spaces are available on average during the UST peak parking demand. Note that approximately 44 spaces are expected to be reconstructed or remain (Lot O and Lot Y) that were included in the available parking supply. In addition, Lot A (56 unrestricted spaces) is currently closed for construction and could provide additional parking spaces.

Table 5. Available Parking Supply

Lot ID	Total Unrestricted Parking Spaces (2)	Available Parking Supply
		Peak Weekday 1:00 pm
APF	691	78
ASC (1)	118	24
McNeely (1)	104	53
Tommie North (1)	112	25
Other Commuter/Staff Lots (A, B, C, D, G I, K, L)	248	0
On-Street (Adjacent)	369	35
Lot O and Lot Y (3)	44	44
Total	1,686	259

(1) Parking structure restricted during the day for contract faculty/staff parking only.
(2) Restricted parking spaces include, but are not limited to, Electric Vehicle, 15-minute parking, faculty vehicles, etc. that were not included in the general parking supply.
(3) Lot O is expected to be reconstructed and provide approximately 38 spaces. Six (6) spaces from Lot Y are expected to remain.

Table 6. Parking Demand Analysis

Available Supply	Relocated Parking	Surplus Parking
259	173	86

Results of the parking demand analysis, which is summarized in Table 6, indicate that the alternative parking supply sources can accommodate the increased parking demand associated with the impacted lots. While a surplus is expected, the following parking operations should be considered:

- The APF and Lot O/Y are expected to be full between 11 a.m. and 1 p.m. on a daily basis. Given the displaced vehicles likely have a desire to be on the south campus, these lots are expected to be fully utilized before using other alternative parking sources.
    - Note it is generally good practice for the parking supply of a visitor parking facility to equal the peak parking demand plus an additional five (5) to 15 percent. This extra supply reduces the unnecessary circulation of vehicles looking for parking and the perception of inadequate parking.
- The ASC, McNeely, and Tommie North parking structures are all restricted during the day for contract faculty/staff only. Note the impacted lots consist of a combination of commuter, faculty/staff, and School of Divinity (SOD) users, therefore, may not be a direct comparison.
- On-street parking may be difficult to find and/or not in a desirable area for south campus users.

It should be noted that UST has implemented strategies in the past to help decrease parking demand:

- In Fall of 2021, UST implemented a new policy requiring full-time, undergraduate, first and second-year students to live on campus. In Fall of 2022, there were over 2,600 students living on campus, and only 795 resident parking permits were issued. Therefore, a majority of students living on campus do not have vehicles on campus.
- UST subsidizes the cost of a Metro Transit bus pass, making them less expensive for students, faculty, and staff. Student Metro Transit College Passes (C-Pass), Faculty/Staff Metropass, and stored value cards/10-ride passes can all be purchased through the University. For reference, 700 C-Passes were purchased in the 2022-2023 calendar year.

Additional strategies to help decrease parking demand are summarized below. Constructing additional parking on campus could also be considered and is discussed later in this document.

- Issue less commuter, faculty/staff, or SOD parking permits to ensure there is adequate parking capacity within the APF for visitor parking.
- Reduce the number of student resident parking permits and discontinue resident parking in the APF (note approximately 100 resident permitted vehicles utilize the APF).
- Continue to inform and educate students of the discounted bus passes and metro transit routes/schedules. Consider providing each student with a 10-ride pass at the start of the year, to help students to familiarize themselves and/or try transit. Consider reducing C-pass/Metropass costs (increasing subsidization), particularly if students/staff purchase multiple semester passes.
- Consider expanding the UST Campus Shuttle Service to provide stops at known or desirable off-campus living locations. The shuttle expansion could be accomplished by conducting a survey to determine where off-campus students are living and whether they would utilize the service. In addition to serving the St. Paul campus students, the expansion could also capture students who are utilizing the St. Paul campus as a "park-and-ride" to get to the Minneapolis campus.
    - Note off-site parking lots could be investigated to provide shuttle services to/from.
- Issue more Minneapolis Harmon Ramp permits and/or review potential strategies to increase student/staff parking at the Minneapolis campus. These strategies would be designated towards students/staff that are traveling to/from the west metro and/or have a majority of their curriculum at the Minneapolis campus.
    - Note one potential strategy is shifting staff members to the Minneapolis campus.
- Ensure there are adequate indoor and outdoor bicycle parking spaces and facilities on campus.

Event Background/Assumptions

Various event-related assumptions were developed through discussions with UST and the City of St. Paul throughout the study process. These assumptions lay the framework for the event conditions analysis, to help identify problem areas and potential mitigation. The following event background/assumptions are summarized in the following sections.

UST Current Events

As mentioned previously, the proposed multipurpose arena is a state-of-the-art facility that will host men's and women's hockey and basketball events, as well as other events. Currently, UST hosts several events on the St. Paul campus, which are summarized below for reference:

- Men's football games are currently played at O'Shaughnessy Stadium, which is located in the north campus and has a seating capacity of approximately 5,000, but often has attendances that range from 4,000 to 6,500.
- Men's/women's basketball and women's volleyball games are currently played at Schoenecker Arena, which has a seating capacity of approximately 2,000 event patrons.
- Men's/women's soccer and women's softball games are currently played at the South Athletic Fields, just south of the APF. Seating capacities of the South Athletic Fields range from 150 to 800.
- Men's baseball games are currently played at Koch Diamond in the North Campus, which has a seating capacity of 250.
- Commencements, conventions, career fairs, etc. are often hosted on the North Campus.

Event Schedule/Times

Regular season event schedules and times were estimated based on a combination of the current UST sports schedules, as well as numerous similar programs, including two (2) programs with multipurpose (hockey/basketball) arenas. The estimated event schedule for the multipurpose arena is shown in Figure 6 and Table 7. Note that men's and women's basketball games are highlighted in gray since they are currently played on-campus, whereas men's and women's hockey games were highlighted in purple to represent "new" games/events expected on campus.

Figure 6. Estimated Event Schedule

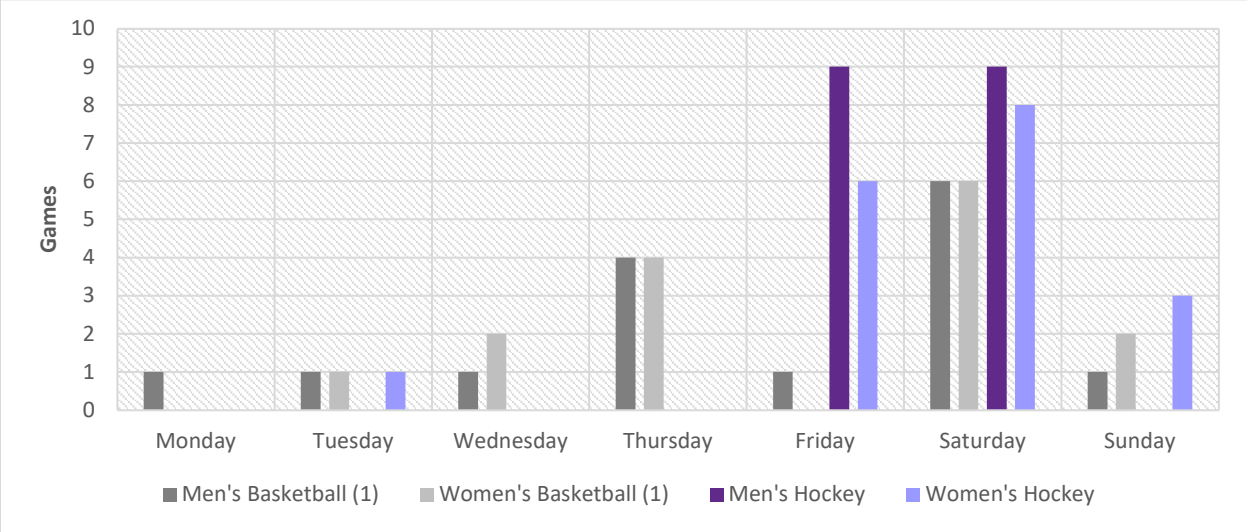


Table 7. Estimated Event Schedule

Event	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Total
Men's Basketball (1)	1	1	1	4	1	6	1	15
Women's Basketball (1)	0	1	2	4	0	6	2	15
Men's Hockey	0	0	0	0	9	9	0	18
Women's Hockey	0	1	0	0	6	8	3	18
Total	**1**	**3**	**3**	**8**	**16**	**29**	**6**	**66**

(1) Note men's and women's basketball games are currently played on-campus.

While event times can vary, based on the comparison of UST and similar multipurpose arena programs, they generally follow a pattern as shown in Table 8. Men's hockey generally plays at 7:07 p.m. on Fridays and 6:07 p.m. on Saturdays, men's basketball generally plays at 7:00 p.m. regardless of the night, and women's basketball/hockey event times can often vary, generally playing at 6 or 7 p.m. on weeknights, and in the afternoon on weekends. Note that men's hockey/basketball may have day games sporadically throughout the season, either on a weekend or holiday. If a men's and women's game are scheduled on the same day, the women's game is generally shifted to earlier in the day. On average, hockey and basketball games were assumed to last approximately two (2) hours.

Table 8. Event Time Assumptions

Men's Hockey	Men's Basketball	Women's Hockey	Women's Basketball
• Fri – 7:07 pm • Sat – 6:07 pm (1)	• All days – 7:00 pm (1)	• Fri – 6:00 or 7:00 pm (2) • Sat/Sun – 1:00 or 2:00 PM	• Mon – Fri – 6:00 or 7:00 pm (2) • Sat/Sun – 1:00 or 2:00 PM

(1) May have day games sporadically throughout season, either on a weekend or holiday

(2) If a game is scheduled on the same day as a men's game, the women's game is generally shifted to earlier in the day.

Event Attendances

Attendance data was collected for numerous similar programs during the 2022-2023 regular season to help estimate the event attendances expected at the new arena. Similar programs mostly consisted of teams that are currently in UST's conference (i.e., CCHA, WCHA, Summit League), excluding both the top and bottom capacity men's programs to eliminate outliers. The attendance data is shown in Figure 7, and stadium capacities of the similar programs are summarized in Appendix D. Note the UST attendance was included in the graphic for reference, however, was not included in the similar program average attendance, given UST's current facilities are not able to accommodate larger attendances and their recent transition to Division-1 sports. Key takeaways include:

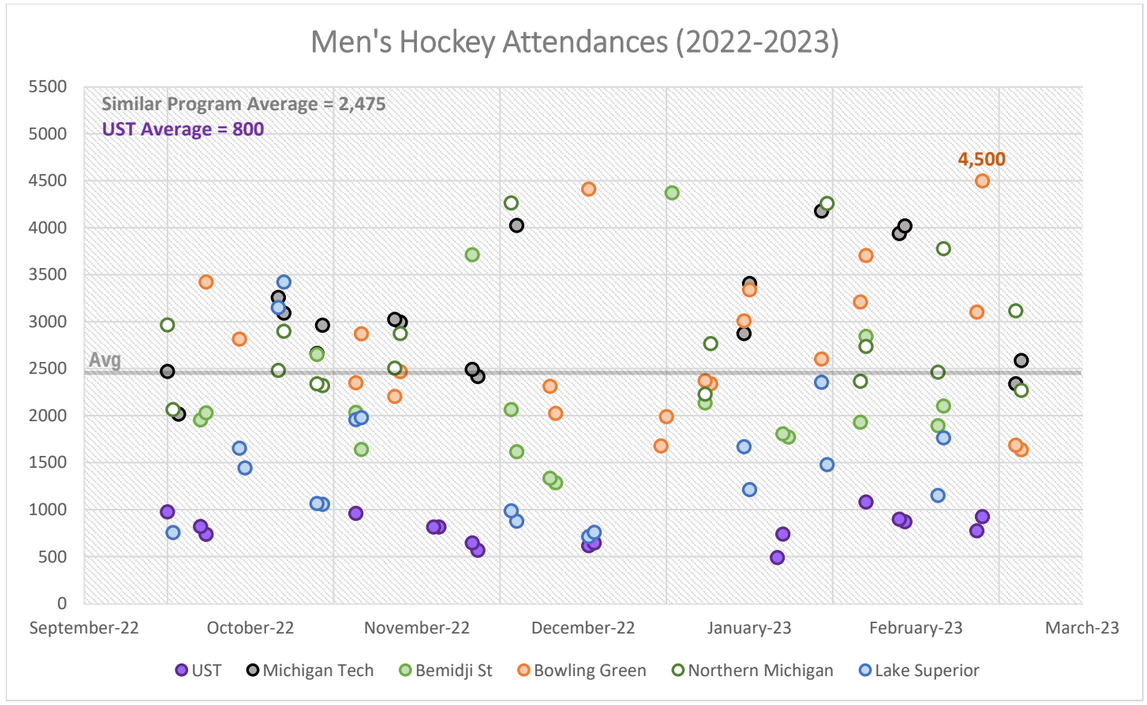
- Men's basketball programs generally have one (1) to two (2) higher attendance games per year.
    - Higher attendance games were generally rivalry games or games later in the season.
    - Note the highest attendance for similar programs was 4,600.
    - Average attendance was 1,800.
- Men's hockey programs generally have two (2) to four (4) higher attendance games per year.
    - Note the highest attendance for similar programs was 4,500.
    - Average attendance was 2,475.
- Women's hockey/basketball programs generally have a maximum attendance of around 3,000.
    - Average attendance ranges from 550 to 1,175.

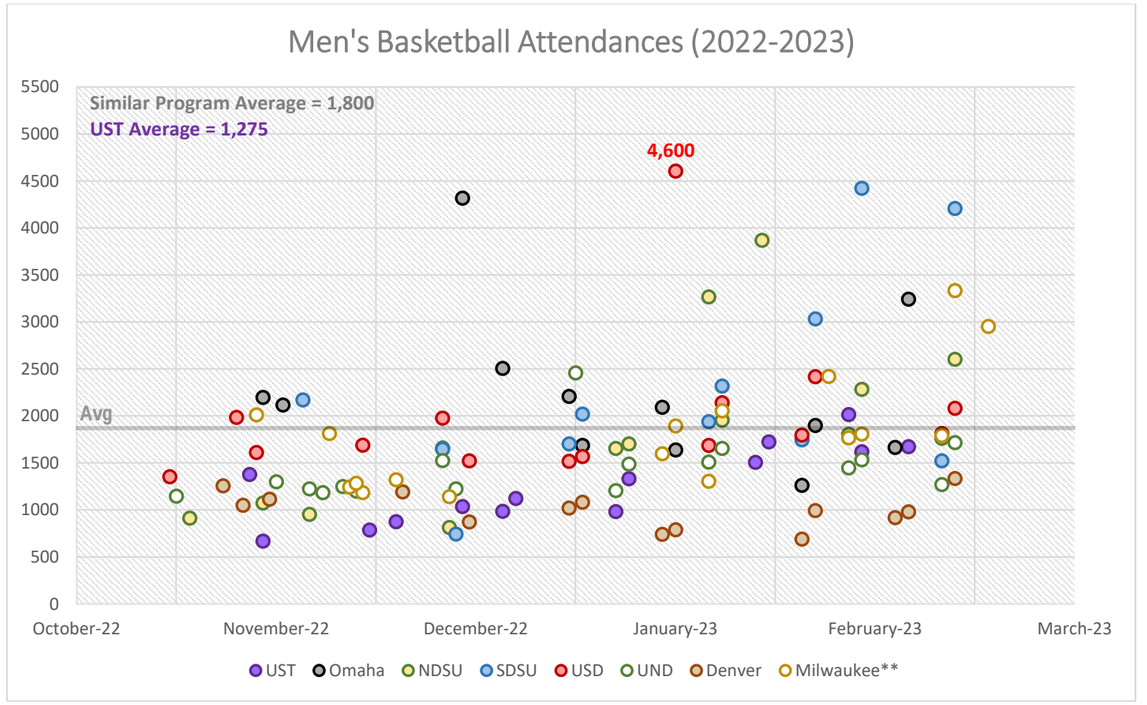
Analysis Scenarios

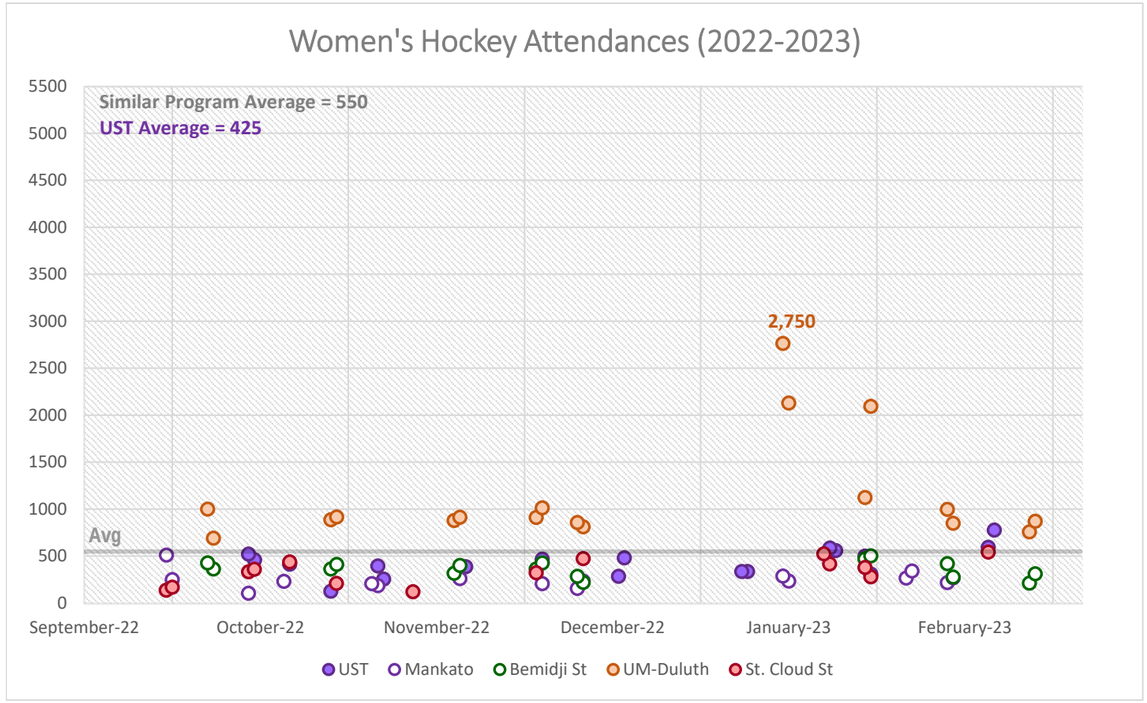
To provide a conservative estimate, the following event scenarios were the focus of the transportation study analysis:

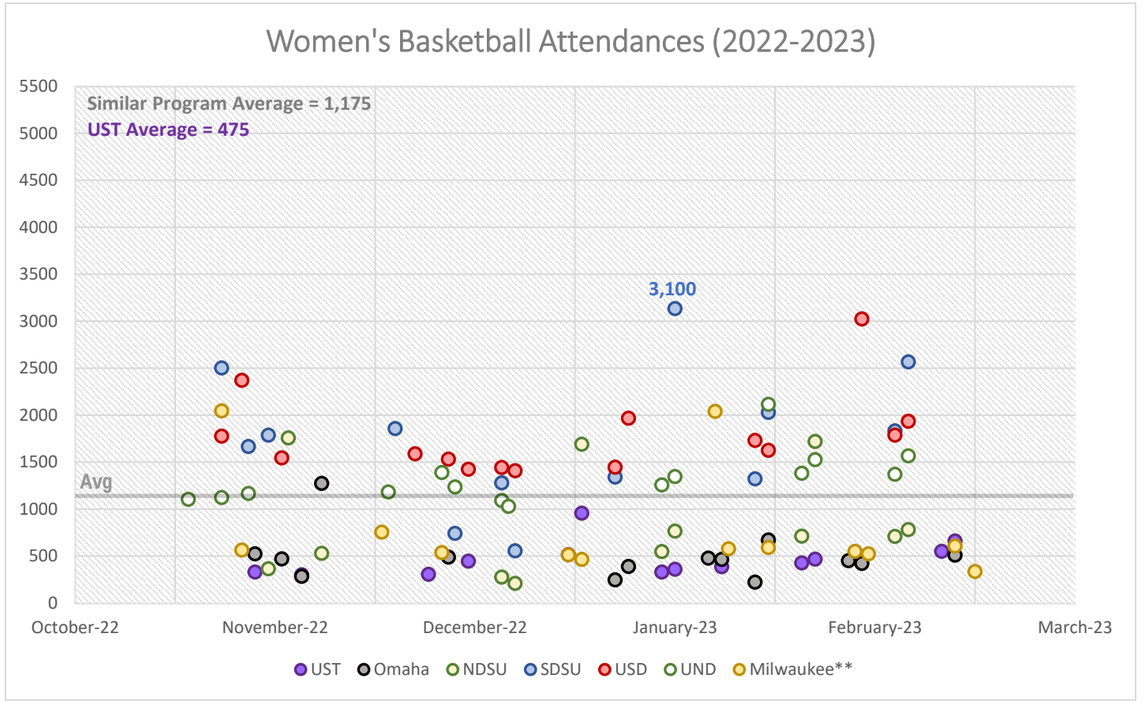
- **Max Capacity (5,500) Basketball Game on a Weeknight**
    - Represents the worst-case from an attendance, parking, and traffic perspective. May only be observed once or twice a year, if at all.
- **Typical Event (3,000) on a Friday Night**
    - Represents a conservative "average" attendance for men's sports and a maximum attendance for women's sports. Friday represents a frequent night for hockey events but is also worse than Saturday from a parking and traffic perspective.

Figure 7 - Attendances at Similiar Programs









** - Not in the Summit League

Event Characteristics

As previously discussed, events are generally expected to occur from 7:00 p.m. to 9 p.m., therefore the pre-event peak hour is assumed to be the hour prior to the game time (6:00 to 7:00 p.m.) and the post-event peak hour is assumed to be the hour immediately following the end of the game (9 to 10 p.m.). It is assumed that not 100 percent of the event traffic is expected to arrive or depart the arena during the one-hour analysis period. Table 9 shows the assumed percent of vehicles arriving/departing during the analysis hour for an event. Note that 10 to 20 percent of the stadium seating will be "premium" seating, which is expected to provide pre-game dinner and drinks. In addition to the premium seating, some event patrons may arrive to the game late. For post-event conditions, five (5) percent of event patrons were assumed to leave early or be family/friends waiting for athletes after the game.

Table 9. Event Traffic During Peak Analysis Hour

Scenario	Weekday
Arrival	90 %
Departure	95 %

Peaks are expected to occur for vehicular and pedestrian traffic within the arrival and departure peak hours. It is anticipated that the arrival peak will be more spread out over the course of about 30 to 45 minutes, whereas the departure peak typically occurs within a 15-to-20-minute interval after the event. In general, pedestrian and vehicular peaks occur at the same time. However, some of the UST parking lots may be a 5 to 10-minute walk from the arena. Therefore, the staggered vehicular/pedestrian peaks associated with the anticipated 5 to 10-minute walk were accounted for during post-event analysis.

Auto-Occupancy

Based on a combination of data collected at multiple events at Allianz Soccer Stadium, local event studies, numerous technical resources, and event travel characteristics around the Twin Cities and the country, an estimate of 2.75 event patrons per vehicle was assumed for average auto occupancy.

Modal Split Assumptions

Modal split assumptions were developed for two demographics: students and non-students. The breakdown between students and non-students was based on the number of student section seats that are currently proposed for the arena (approximately 1,200 for basketball). Student modal split distributions were developed based on the number of students that live within 3/4-mile of the arena and the number of transit passes owned. Non-student distributions were based on historical basketball ticket information and general event characteristics around the Twins Cities Metropolitan Area. These assumptions were discussed and reviewed by UST and the City of St. Paul throughout the study process. A summary of the modal split assumptions and the resultant person trips is shown in Table 10.

Table 10. Max Capacity (5,500 Attendees) Event Modal Split Assumptions

Transportation Modes for Students/Non-Students	Percent by Mode	Person Trips
		5500
Students	22%	1200
Non-Students	78%	4300
Student Modal Split Assumptions		1200
Passenger Vehicle Trips	10%	120
Rideshare (Uber/Lyft/Taxi, etc.)	10%	120
Transit/Shuttle (Local Bus)	5%	60
Walk/Bike	75%	900
Non-Student Modal Split Assumptions		4300
Passenger Vehicle Trips	88%	3784
Rideshare (Uber/Lyft/Taxi, etc.)	5%	215
Transit/Shuttle (Local Bus)	2%	86
Walk/Bike	5%	215

Trip Generation

Using the assumptions outlined in this section, pre-event and post-event peak hour trip generation estimates were developed for a maximum capacity event and shown in Table 11. The trips generated were distributed to the study area based on the directional distribution shown in Figure 8, which was based on hockey/basketball season ticket zip code information, existing travel patterns, and engineering judgement.

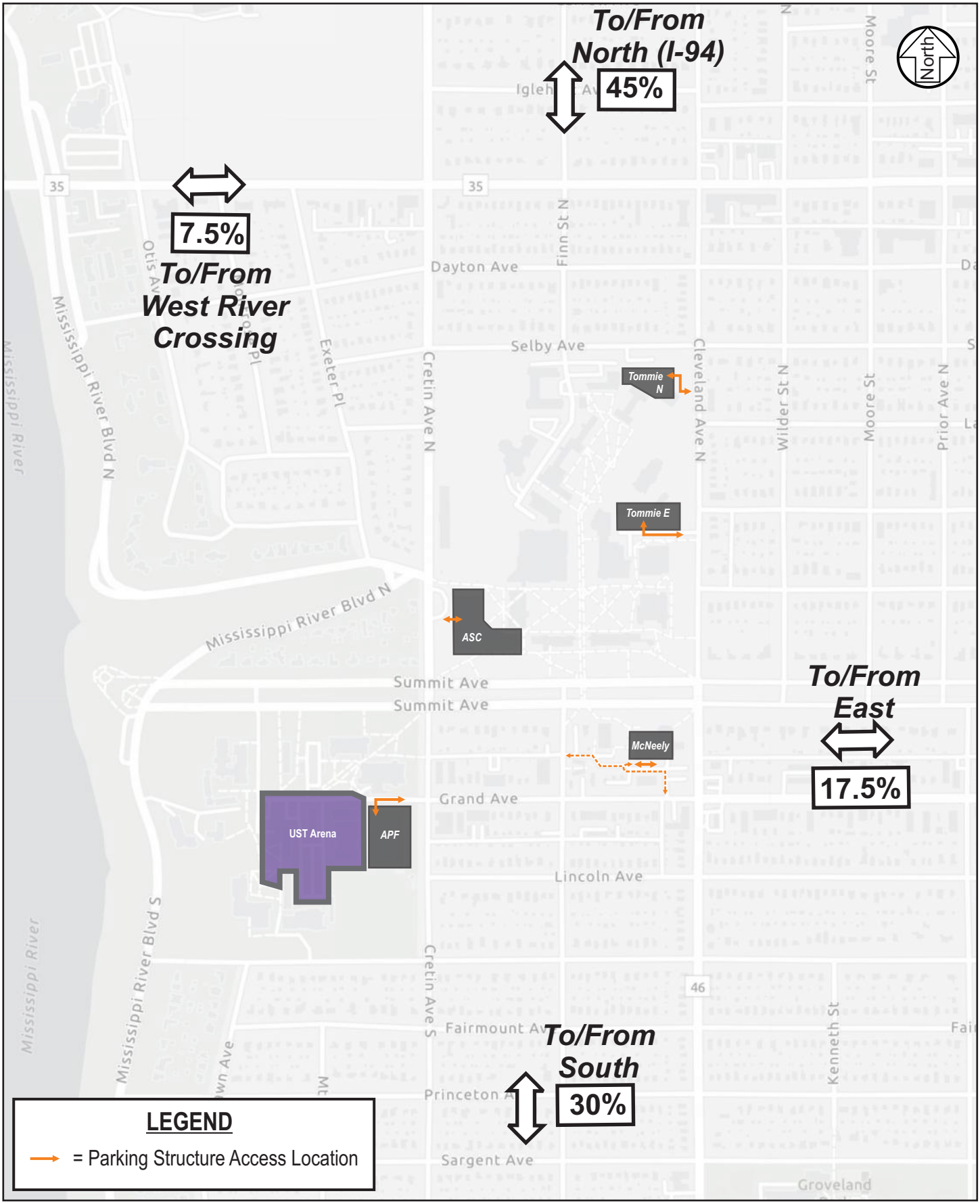
Table 11. Trip Generation Estimate (Maximum Capacity Event – 5,500 Attendance)

Vehicle Type	Vehicle Trips			
	Pre-Event Peak Hour		Post-Event Peak Hour	
	In	Out	In	Out
On-Site Parking	1,278	0 (1)	0 (1)	1,349
Rideshare (Uber/Lyft/Taxi)	110	110	116	116
Total Site Trips	**1,388**	**110**	**116**	**1,465**

(1) While there may be some on-site parking vehicles exiting during pre-event or entering during post-event, these volumes are assumed to be negligible.

Pedestrian Volumes

To determine heavy pedestrian crossing and vehicular/pedestrian conflict locations, the pedestrian volumes were routed throughout the study area based on both on-campus and off-campus parking locations, as well as other multimodal routes/locations such as transit stops, potential rideshare locations, and student/non-student walking distributions. The pedestrian volumes are shown in Appendix D.



SRF

Directional Distribution

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 8

02316489
May 2023

2025 Event Conditions

Event conditions were evaluated to understand any transportation issues and potential mitigation strategies associated with a maximum capacity event. The event conditions evaluation includes a parking demand analysis, operations analysis, and event mitigation strategies/proposed event routing.

Parking Demand Analysis (Issue Identification with No Mitigation)

Figures 3 and 4 were combined to create an overall event parking supply graphic, which is illustrated in Figure 9. Similar to Figure 3, the graphic highlights in purple the UST campus parking areas (either visitor parking structures or on-street parking adjacent to campus) that are expected to be utilized for events. A 1/2-mile is generally considered walking distance for the general public, therefore, a 1/2-mile radius from the arena was included in the graphic. City permit parking locations are shaded in gray, to help visualize the distance/locations event patrons may seek public on-street parking.

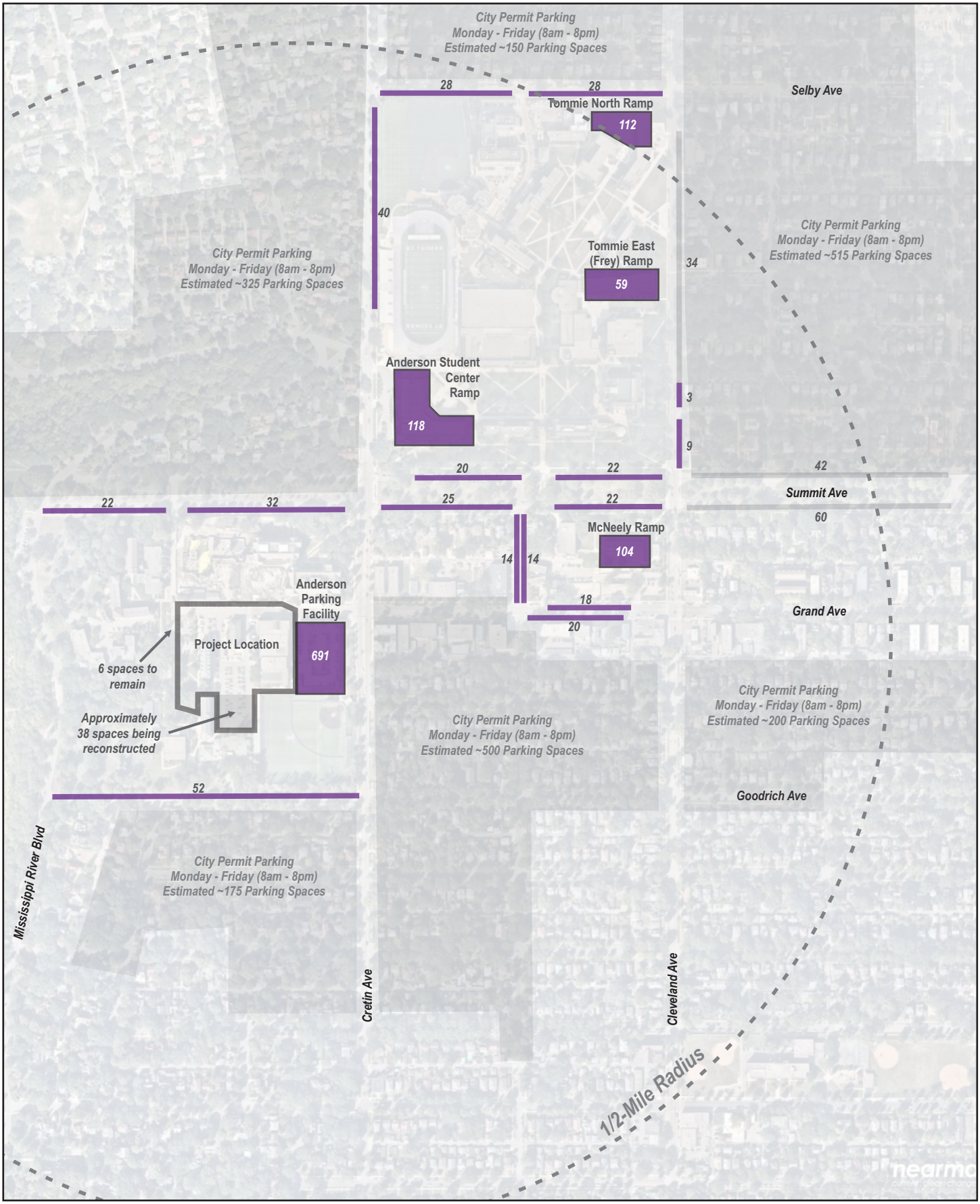
The available parking supply for each of the event parking locations is summarized in Table 12. The available parking supply is based on the parking utilization surveys completed by UST/SRF, but also accounts for the parking loss caused by the arena footprint. The parking utilization surveys were completed from 6 to 7 p.m., which is when event traffic is expected to arrive. As shown in Table 12, parking is much more available on the weekend than during the week.

Table 12. Available Parking Supply Before Events

Lot ID	Total Unrestricted Parking Spaces	Available Parking Supply (1)		
		Thursday/Weeknight 6:00 pm	Friday 6:00 pm	Saturday 6:00 pm
APF	691	302	526	569
ASC	118	96	100	108
McNeely	104	86	96	96
Tommie East	59	50	48	44
Tommie North	112	60	61	59
On-Street (Adjacent)	369	84	185	214
Total	**1453**	**678**	**1016**	**1090**

(1) Includes parking supply adjustments to account for parking loss caused by the arena footprint.

Using the modal split assumptions outlined in the Event Background/Assumptions section, an event parking demand analysis was completed and is shown in Table 13. The estimated parking demand for a maximum (5,500) basketball, maximum (4,000) hockey, and typical (3,000) event are estimated to be approximately 1,420, 1,050, and 775 vehicles, respectively.



SRF

Event Parking Supply

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 9

02316489
May 2023

Table 13. Event Parking Demand Analysis

	Total Number of Games (1)	Estimated Frequency	Available Supply	Demand (2)	Deficit/Surplus
Thursday/Weeknight Night Event					
Max Basketball (5,500)	4 to 7 BBall No Hockey	0 - 1	678	1420	-742
Typical (3,000)		6		773	-95
Friday Night Event					
Max Basketball (5,500)	1 BBall 9 Hockey	0	1016	1420	-404
Max Hockey (4,000)		2		1053	-37
Typical (3,000)		8		773	243
Saturday Night Event					
Max Basketball (5,500)	6 BBall 9 Hockey	0 - 1	1090 (3)	1420	-330
Max Hockey (4,000)		2		1053	37
Typical (3,000)		13		773	317

(1) Based on expected men's hockey and basketball schedules.

(2) UST players/coaches and event staff are expected to park in the reconstructed lot O or other commuter and faculty/staff lots.

(3) Note nearby city permit parking restrictions are generally not in effect on Saturday.

Key takeaways from the event parking demand analysis are as follows:

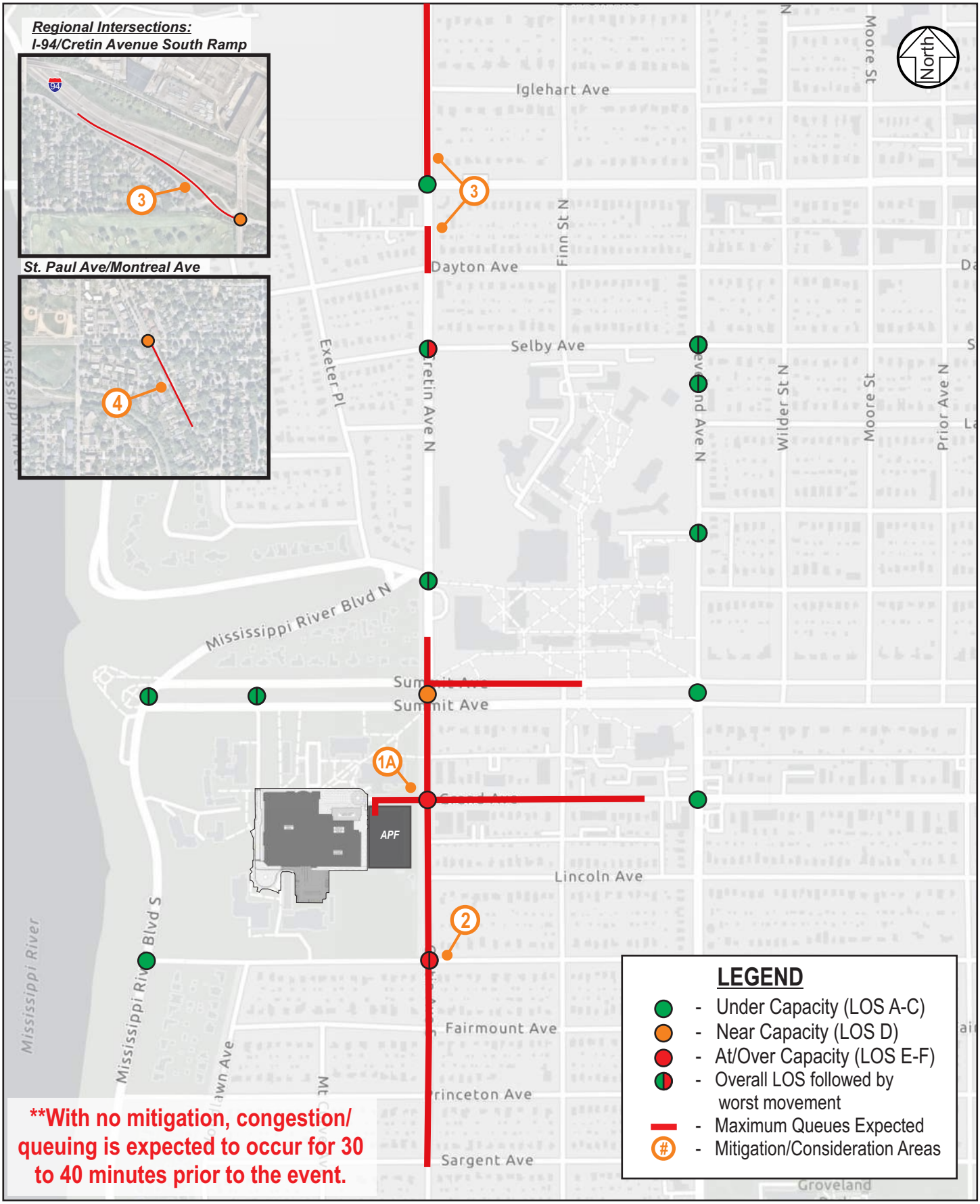
- Maximum basketball events are expected to have a deficit of approximately 330 to 740 spaces. These vehicles will likely utilize public parking in the neighborhood.
    - Based on similar programs, maximum basketball events may only occur one (1) or two (2) times a year, if at all.
- Maximum hockey events are generally expected to be accommodated on campus. However, some vehicles may choose to park on public streets in the neighborhoods over parking in the northeast quadrant of the north campus, especially on Saturdays when city permit parking restrictions are lifted.
    - Based on similar programs, maximum hockey events are only expected to occur two (2) to four (4) times a year.
- Typical or "average" attendance events are expected to have a parking deficit of approximately 100 spaces on a weeknight and a parking surplus of approximately 240 to 320 spaces on the weekends. For typical events on weekends, event patrons will likely be able to park at either the APF, ASC, or McNeely ramps, or on-street parking near the arena. These are all desirable locations and will likely be utilized over public streets, particularly on Friday nights when city permit parking restrictions are in effect.
    - Typical events represent the majority of men's sporting events and the maximum women's sporting events.
    - Note the typical attendance was a conservative estimate compared to other similar program averages.

Operations Analysis (Issue Identification with No Mitigation)

An operations analysis was conducted for both pre-event and post-event conditions during a maximum capacity weeknight event (i.e., basketball game), to determine the potential transportation impacts associated with the increased pedestrian and vehicular traffic. Note that a maximum capacity weeknight event is considered a worst-case scenario based on a combination of less available parking and higher background traffic when compared to a weekend. The operations analysis was completed using Synchro/SimTraffic software and assumed no mitigation besides the following base assumptions:

- Year 2025 no build volumes were utilized as background traffic. Year 2025 no build volumes were developed by both applying a background growth rate of 0.25 percent to the existing pre- and post-event volumes and included trip generation estimates for the Highland Bridge development.
- Prepaid entry to the APF parking facility. Parking tickets are either expected to be checked by a parking consultant or inserted into a machine upon entry.
- For a worse-case traffic operations analysis, all event traffic was routed to the UST campus parking facilities or on-street parking locations adjacent to campus. Assuming parking further away from the campus would reduce potential traffic impacts.
- Event patrons generally know where they plan to park prior to the event and there is minimal circulation looking for parking spaces.
- On-street parking is assumed to be present along Cretin Avenue (as parking restrictions are generally lifted after 6 pm). Therefore, Cretin Avenue was modeled to have one lane of travel at the on-street parking locations.

An illustrative summary of the pre-event and post-event operations is shown in Figures 10 and 11, respectively, with traffic volumes and a summary table of results in Appendix D. Based on the operations analysis, the following issue/consideration areas were identified. The following paragraphs correspond to the numbers shown on the graphics.



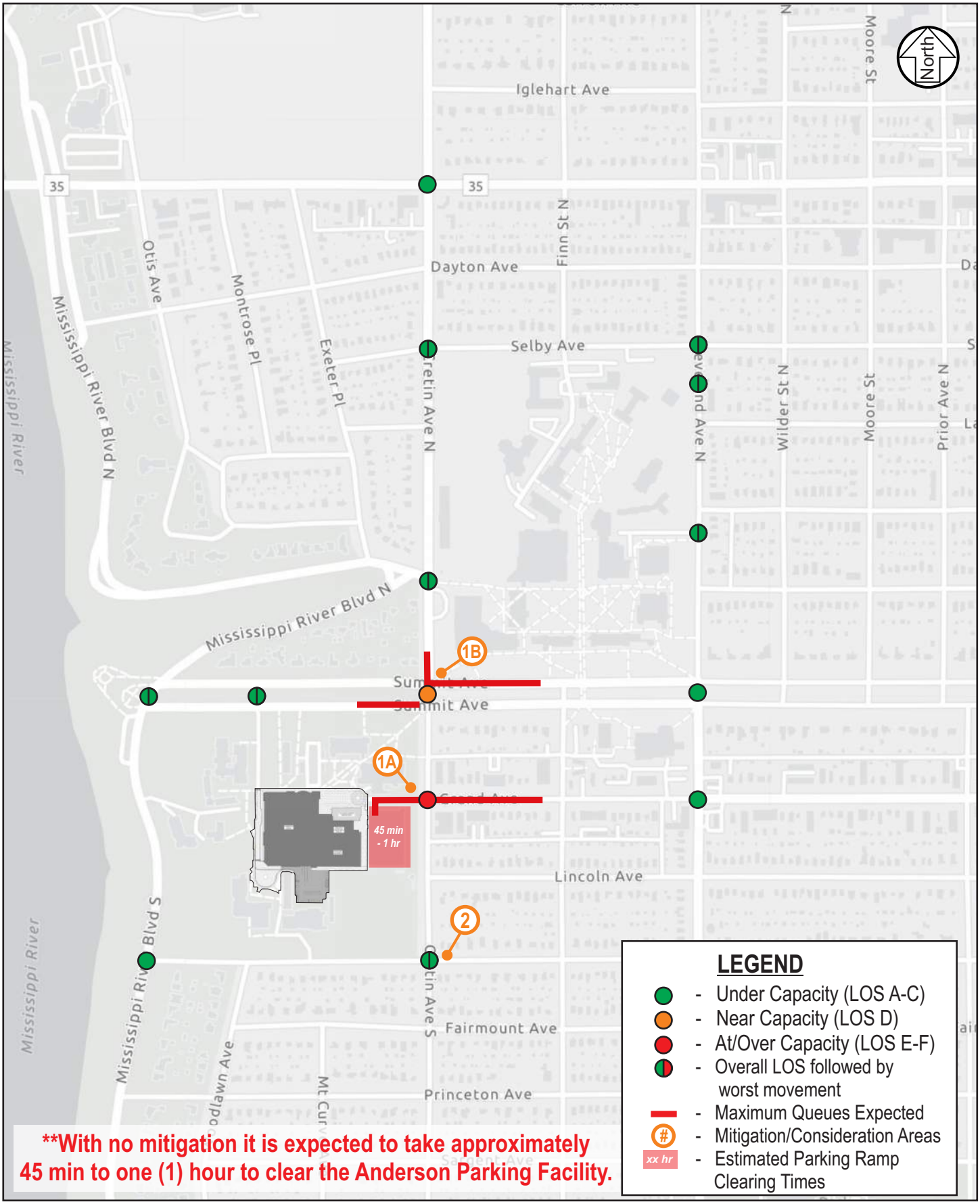
SRF

Max Capacity - Pre-Event Operations (No Mitigation)

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 10

02316489
May 2023



SRF

Max Capacity - Post-Event Operations (No Mitigation)

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 11

02316489
May 2023

1A) APF Entrance and High Pedestrian Conflicts (No Mitigation)

- Approximately 800 to 1,200 pedestrians are expected to cross the vehicular entrance to the APF and the Cretin Avenue/Grand Avenue intersection.

Pre-Event:

- As mentioned previously, a service time (i.e., checking/inserting parking tickets) is expected for event patrons entering the APF ramp and most event patrons are expected to arrive within a 30-minute window prior to the start of the game. In addition, there is limited vehicular storage (approximately 200 feet or 10 vehicles) between the APF entrance and the Cretin Avenue/Grand Avenue intersection.
- The heavy pedestrian conflicts combined with the limited vehicle storage are expected to result in queues extending onto Cretin Avenue and extending into other adjacent intersections. Event patrons will have difficulty entering the site during the peak 15-minute window prior to the game starting, and the queues on Cretin Avenue will block non-event through traffic.

Post-Event:

- No protective signal phases are provided for the eastbound approach of the Cretin Avenue/Grand Avenue intersection. Pedestrians will be condensed during post-event conditions, which will make it difficult for eastbound left- or right-turn vehicles to find gaps until the majority of pedestrians have cleared the site.
- These pedestrian conflicts will delay the ability to clear the APF parking ramp. With no mitigation, it is expected to take approximately 45 minutes to one (1) hour to clear the ramp when at capacity.

1B) Cretin Avenue/Summit Avenue (No Mitigation)

- Approximately 2,000 pedestrians are expected to cross through the approaches of the Cretin Avenue and Summit Avenue intersection during pre- and post-event conditions. For reference, approximately 750 to 1,200 pedestrians cross through the intersection during each non-event a.m., midday, and p.m. peak hours. However, a majority of these crossings occur within a peak 15-minute window during class changeovers.
- Pre-event conditions will likely operate similar to non-event peak hours at the intersection. During post-event conditions, pedestrians will likely be more condensed, and it will likely be dark outside.

2) Pedestrian Crossing at Cretin Avenue/Goodrich Avenue

- There is currently a pedestrian crossing on the south side of the Cretin Avenue/Goodrich Avenue intersection. While most pedestrians are expected to cross Cretin Avenue at the signalized intersections of Summit Avenue and/or Grand Avenue, Goodrich Avenue may be a desirable crossing location for event patrons coming to/from the southeast.

- The number of pedestrian crossings at this location will be heavily dependent on where event patrons are parking.

3) Entering Volumes from I-94 (No Mitigation)

- Approximately 45 percent of event traffic is expected to be coming from I-94. These volumes result in eastbound right-turn queues at the I-94/South Ramp intersection extending to a maximum distance of approximately 1,800 feet. Congestion will continue to occur along the corridor at the Marshall Avenue intersection, as well as after the intersection when on-street parking is expected to be present.
- While the eastbound right-turn queues are expected to take up most of the off-ramp storage, the "rolling" queues are not expected to extend onto I-94 and are only expected to last for approximately 15 to 20 minutes prior to the game.

4) St. Paul Avenue/Montreal Avenue

- During pre-event conditions, northbound queues at the St. Paul Avenue/Montreal Avenue intersection are expected to extend a maximum distance of approximately 700 feet. Similar to the I-94/South Ramp intersection, queues are only expected to last approximately 15 minutes prior to the game.
- Note on-street bicycle lanes were recently implemented along St. Paul Avenue, which resulted in the removal of vehicular travel lanes in each direction. The *Highland Bridge AUAR Update* recommended traffic control improvements at the intersection that would reduce the queueing impacts.

Mitigation Strategies

Parking

The event parking demand analysis identified that UST may have a parking deficit ranging from 40 to 740 vehicles, depending on the event size and night of the week. While the larger parking deficits (over 100 vehicles) are only expected to occur once or twice a year, it is important to understand that when parking on campus become full, inconvenient, or costly, event patrons will begin to park in the public parking spaces in the neighborhood. Therefore, the following mitigation strategies and improvements were identified to help reduce on-street public parking in the neighborhoods during events.

Potential Strategies

Restrict Campus Parking Areas for Event Parking

- Time-of-day restrictions and/or "no park" days/nights could be implemented for the APF and other campus lots. Clearing/restricting the APF could provide an additional 120 to 165 parking spaces on the weekend and as many as 390 spaces on a weeknight. While the APF would be the most effective lot, restricting other parking structures and lots could be considered as well.
- To reduce essentially "shifting" student/staff parking to the public streets, early communication/notification would need to be provided prior to enforcing the event parking restrictions in UST facilities. Online classes/telecommuting may also need to be implemented simultaneously to ensure the strategy is effective.

Require Pre-Paid Event Parking Tickets (Mobile) for All Visitor Lots

- Assigning parking would ensure that event patrons know their destination prior to the event, which could eliminate any potential frustration/circulation looking for a parking space.
- While hardcopy parking tickets/passes could be distributed, most event venues currently utilize digital tickets through mobile applications. Note mobile parking applications pair well with mobile ticketing apps and could help keep all event related information completely mobile.
- Parking applications could inform event patrons what lots are sold out/full for each event. If event patrons are aware that all lots are sold out in advance, they may be more inclined to utilize transit/rideshare or carpool rather than deal with the hassle of looking for parking and/or walking further distances.
    - Note mobile parking applications could also provide transit options (bus routes and links to buy a pass) or a potential shuttle pass for larger attendance games (if implemented - see potential improvements section).
- Note parking management systems/applications could potentially be utilized by students/staff on a daily basis. Parking application capabilities and logistics would need to be further evaluated.

Schedule Higher Attendance Games on Weekends

- There may be scheduling flexibility for non-conference games, to help limit higher attendance games on weeknights, when there is less available parking on campus.

Provide Transit Incentives with the Purchase of a Ticket

- Incentives such as discounted or free bus passes could be considered.

Utilize Restricted Commuter and Faculty/Staff Parking Lots

- Strategy would likely require updated lot signage, communication, and parking operations.

Formal Partnership with a Rideshare Company

- A formal partnership with a rideshare company could be pursued to offer reduced pricing for event ticket holders.

Communicate Bicycle Parking Locations on the University Website

- Note internal bicycle parking spaces are provided within the southwest quadrant of the APF.

Provide Overflow Parking on the South Athletic Fields

- Overflow parking could be considered on the South Athletic Fields. Note this would only be able to be provided when soccer and softball seasons are not in session. Given that vehicular access to the fields would likely be provided via the reconstructed Lot O and backside of the building, the overflow parking would likely be designated for coaches, players, and event staff only. Field preservation and snow removal would need to be further evaluated.

Study Area After Constructed

- As mentioned previously, attendances can and will vary for the new multipurpose arena. Note that various assumptions within this document are considered conservative, and some of the larger event attendances and associated parking impacts may or may not actually occur. In addition, some of the strategies identified within the study could provide benefits and reduce parking demand during events. Therefore, a parking and operations field observation study could be completed during a higher capacity event within the year of opening to quantify actual impacts. A stakeholder team, including UST, the City of St. Paul, and other various stakeholders, could be developed to discuss the results of the study/observations to determine if additional mitigation strategies/improvements are needed.

Potential Improvements

Provide a Shuttle Service

- Potential shuttle service locations include, but not limited to, the UST Minneapolis Campus (Harmon Ramp), Highland Bridge (potential UST baseball/softball development parking - not currently built), and other potential off-site parking locations. It should be noted that UST has had preliminary discussions with alternative off-site parking locations.

Expand the Anderson Parking Facility (APF)

- The APF is designed with the potential to be expanded by two (2) floors. A parking lot expansion could potentially add an additional 300 parking spaces. This expansion, however, may not be compliant with the USTs conditional use permit. An expansion would also bring more vehicles near the arena where pedestrian activity is the highest, ingress into the arena may cause more queuing on Cretin Avenue, and ramp clearing times post-event would likely be longer.

Construct a Surface Parking Lot in the SW Quadrant Adjacent to Mississippi River Boulevard

- Based on a high-level estimate of stalls per square foot, this location could potentially support a 100-space parking lot. Access to the parking lot would likely be provided along Mississippi River Boulevard, and a new pedestrian connection would be required for attendees to walk to/from the lot and the arena.

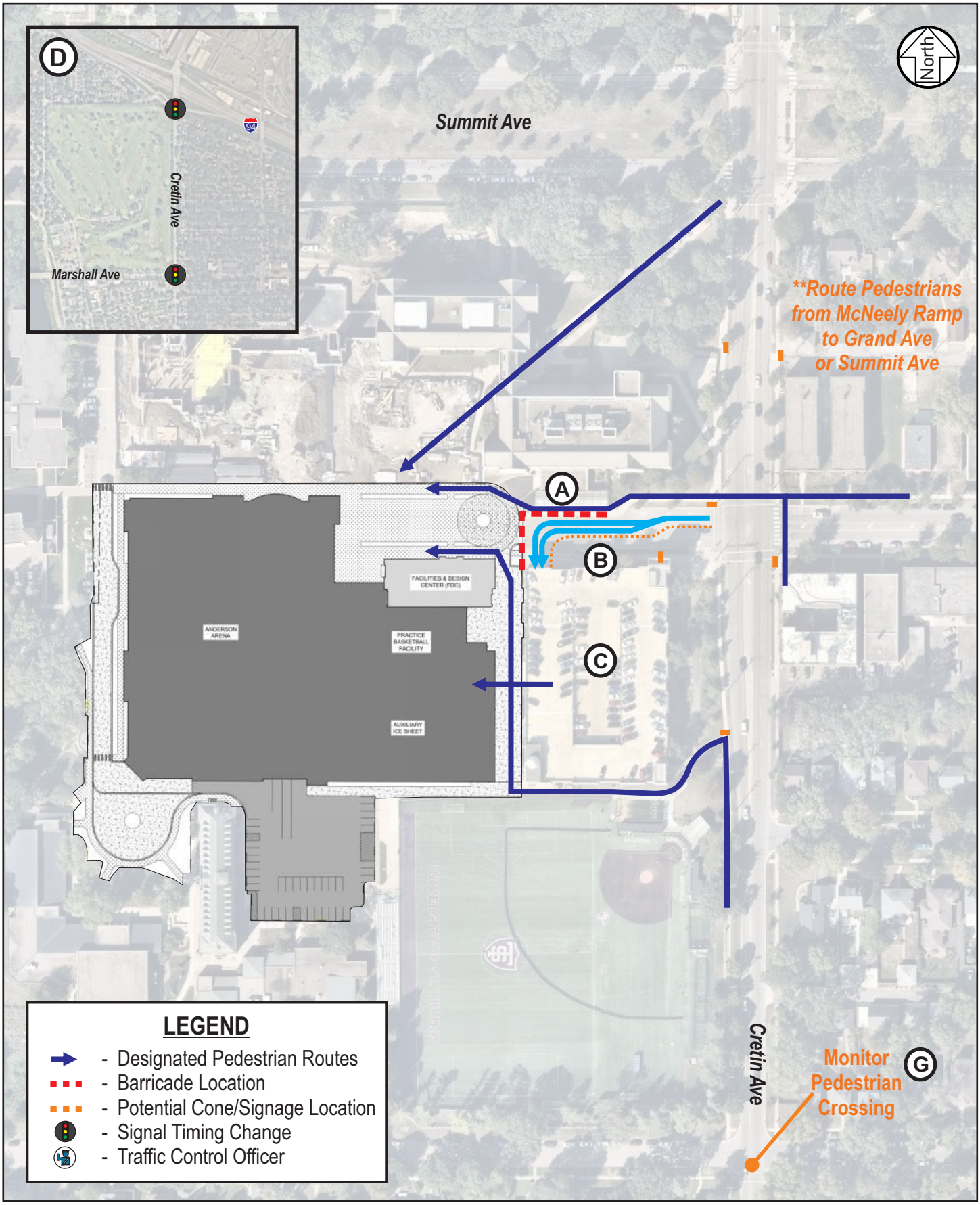
Event Management Recommendations

The following mitigation strategies are recommended to help safely and efficiently manage events and are summarized below and in Figures 12 and 13. Note the mitigation strategies are primarily focused on reducing pedestrian/vehicular conflicts, thus improving pedestrian safety and reducing event congestion.

A) Provide designated pedestrian routes through the use of barricades, cones, and wayfinding signage. The designated pedestrian routes are shown in Figures 12 and 13, and are intended to reduce pedestrian/vehicular conflicts, thus improving pedestrian safety and traffic flow efficiencies during pre- and post-event conditions.

   a. While not shown on the graphic, pedestrian wayfinding should be provided to/from the McNeely Ramp to ensure pedestrians do not route via the alley and cross Cretin Avenue at the mid-block. Pedestrians should be routed from the McNeely Ramp to either Cretin Avenue or Grand Avenue.

B) Utilize cones to provide additional storage for vehicles entering the APF during pre-event conditions. Note that the APF service times/parking payment options will need to be monitored to ensure the system is efficient. If entering queues begin to impact operations along Cretin Avenue, strategies to improve service times and/or shifting parking payment to post-event may be required.



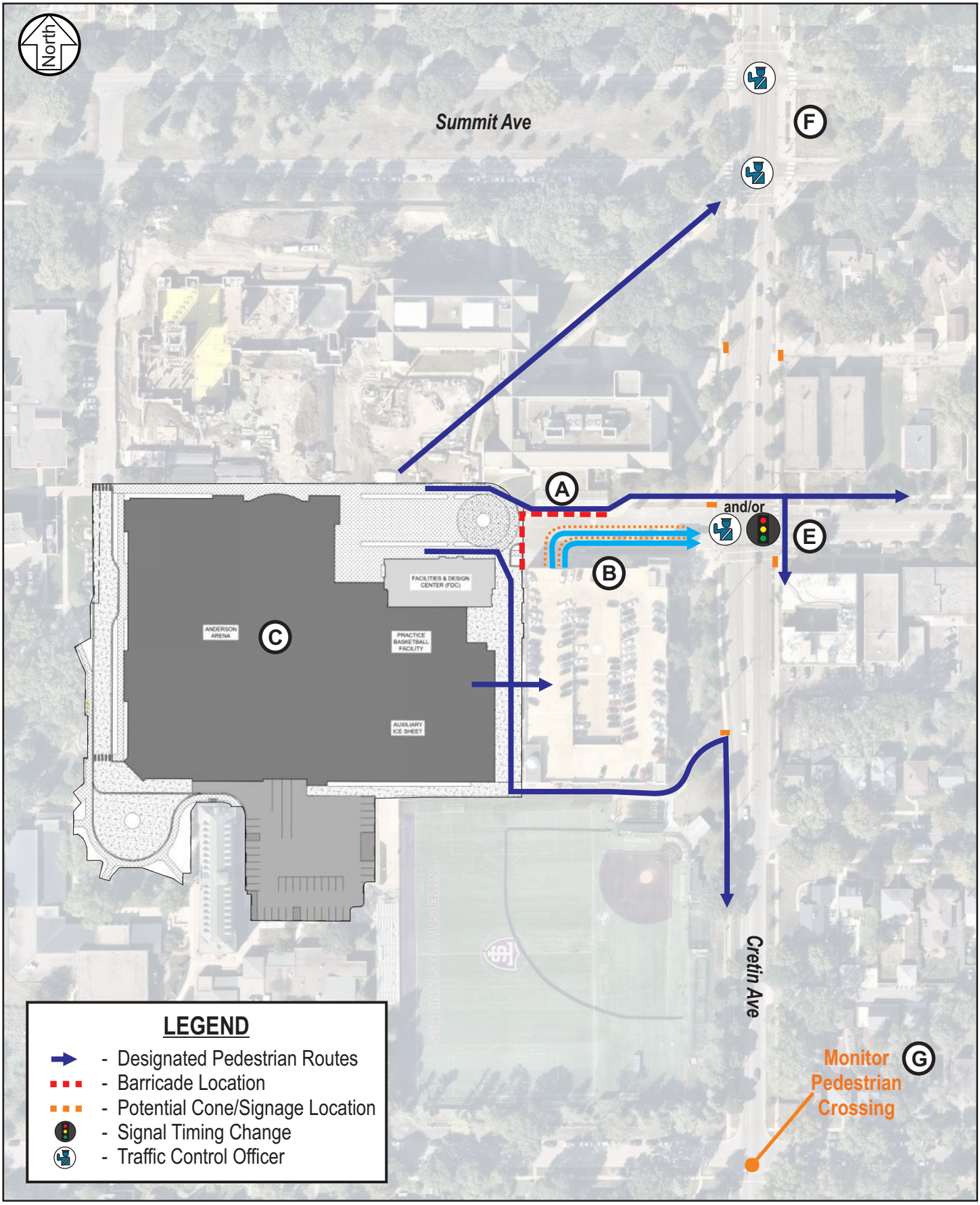
SRF

Max Capacity Pre-Event Mitigation Strategies

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 12

02316489
May 2023



SRF

Max Capacity Post-Event Mitigation Strategies

UST Multipurpose Arena EAW Transportation Study

City of St. Paul

Figure 13

02316489
May 2023

a. During post-event conditions, cones could be considered to eliminate/reduce lane changing/merging exiting the ramp. Coning would improve traffic flow post-event, however, may result in a less direct route for event patrons. In addition, the internal ramp structure configuration should be further evaluated and modified/optimized for event purposes.

C) Provide wayfinding signage to route pedestrians to/from the APF/Arena to utilize the western APF access, thus reducing crossing conflicts with the APF vehicular access. This can be accomplished through permanent signage and pavement markings within the APF and throughout the arena building.

D) Event signal timing modifications could be considered at the Cretin Avenue/I-94 South Ramp and Cretin Avenue/Marshall Avenue intersections during pre-event conditions.

a. Signal timing at Cretin Avenue/Grand Avenue and Cretin Avenue/Summit Avenue should be monitored during pre-event conditions. Note current signal timing plans change at 6:40 p.m.

E) Provide a traffic control officer and/or construct an eastbound left-turn signal head at the Cretin Avenue/Grand Avenue intersection during post-event conditions.

a. Note a protected eastbound left-turn phase could be beneficial during non-event conditions and smaller events (i.e., may reduce the need for traffic control officers).

b. The eastbound left-turn movement could be restricted during post-event conditions. Restricting the movement would greatly reduce pedestrian/vehicular conflicts along Cretin Avenue, however, may result in a less direct route for event patrons. It should be noted that a traffic control officer would likely be required to effectively implement any turn restrictions and signal timing at the Cleveland Avenue/Grand Avenue intersection would need to be further reviewed.

F) Provide traffic control officers at the Cretin Avenue/Summit Avenue intersection to help clear traffic volumes from the APF ramp and improve pedestrian safety.

G) Monitor the pedestrian crossing at the Cretin Avenue/Goodrich Avenue intersection. If the pedestrian crossing is heavily utilized and/or safety/yielding issues occur during pre- and post-event conditions, a traffic control officer or campus crossing guard may be needed.

H) Yearly meetings with the City of St. Paul staff (public works, SPPD), before and after the winter sporting seasons to discuss potential modifications to event management should occur.

Other Considerations

a. Rideshare pick-up/drop-offs are expected to occur on various roadways near the arena. While no issues are expected, rideshare should continue to be monitored to determine if any issues occur for residents or traffic, and if so, a designated rideshare location could be investigated.

b. Consider providing wayfinding signage on the roadway network to direct event patrons to alternative lots. If not ticketed, consider providing DMS signage outside of the APF informing event patrons when the APF is full.

c. Consider providing activities and incentives on-site or nearby for event patrons to arrive early and stay late after an event, to spread out arrival and departure times.

d. Several mitigation strategies identified involve the use of St Paul Police Department (SPPD) traffic control officers. Therefore, further communication with the SPPD should occur to determine the availability, feasibility, and other pertinent information regarding the proposed traffic management strategies.

e. Provide early event communication/notification to local businesses/residents and those who drive/walk/bike or take transit through the area. This can be accomplished through media outlets, email notifications, websites, etc.

f. Develop an emergency plan. Emergency services (police, fire, etc.) will need to develop a plan to ensure safety and maximize efficiency in dealing with incidents on the transportation system or at the facility.

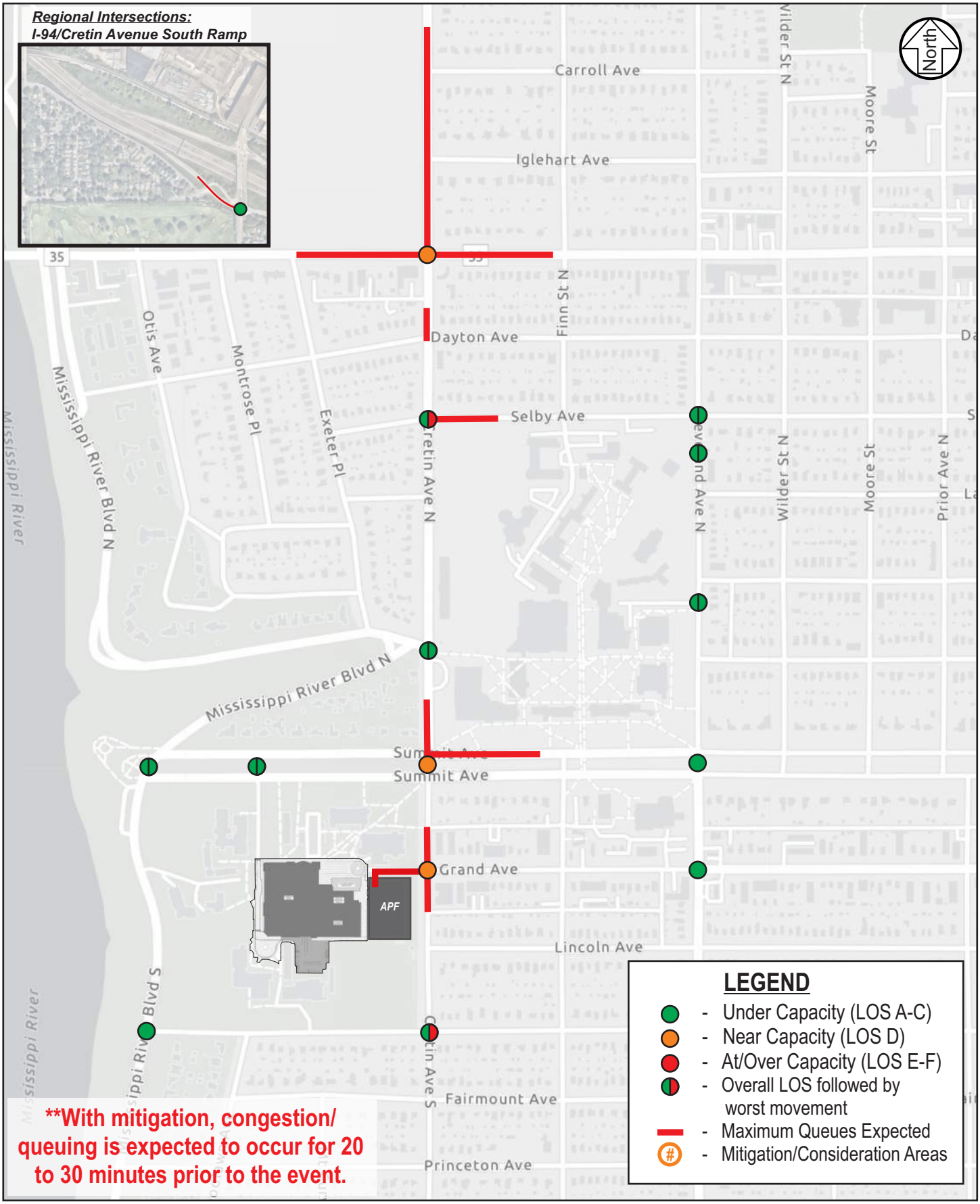
Operations Analysis with Mitigation

An operations analysis was conducted for both pre-event and post-event conditions during a maximum capacity weeknight event with the mitigation strategies and proposed pedestrian routing identified in Figures 12 and 13. An illustrative summary of the pre- and post-event operations with mitigation are shown in Figures 14 and 15, respectively, with a summary table of results in Appendix D.

Note that even with the proposed mitigation strategies, there are still anticipated to be queuing areas, which is expected given the characteristics of events. As mentioned previously, the operations at Cretin Avenue/Grand Avenue will be heavily dependent on the service times/parking payment options entering the APF. These operations will need to continue to be monitored and if queuing impacts occur, strategies to improve service times or shift parking payment to post-event may be required.

During both pre-event conditions, multiple unsignalized side-street approaches on Cretin Avenue will be difficult to make left-turn movements for 15 to 30 minutes. These approaches mostly consist of low-volume residential traffic. As mentioned previously, communication should be made to area residents and other sources of commuter traffic, so they are aware of potential event traffic and the most efficient route to get to/from their destination.

Post-event the APF will remain congested, however, with the mitigation plan the APF is anticipated to be cleared in approximately 15 to 30 minutes, rather than the approximately 45 minutes to one (1) hour anticipated with no mitigation.



Max Capacity - Pre-Event Operations (With Mitigation)

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 14

02316489
May 2023

**With mitigation it is expected to take approximately 15 to 30 min to clear the Anderson Parking Facility (APF). The study area is expected to be cleared shortly after the APF.

Max Capacity - Post-Event Operations (With Mitigation)

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure 15

02316489
May 2023

Typical Event (3,000) Operations and Mitigation

The primary difference between typical and maximum event attendances is that parking under maximum events will be further dispersed from the APF and Arena. During typical events, parking in the APF, ASC, McNeely and nearby will be at capacity, similar to a maximum event. Therefore, the event management strategies recommending pedestrian routing and APF ramp operations should continue for both typical/maximum events. Some of the noticeable differences in the two events from an event management perspective are as follows:

- Mitigation D - Less regional impacts are expected and traffic signal improvements at I-94/Cretin Avenue and Cretin Avenue/Marshall Avenue intersections are likely not needed.
- Mitigation F – Lower pedestrian volumes may reduce the need for traffic control officers at the Cretin Avenue/Summit Avenue intersection during post-event conditions.
- In general, less pedestrian and vehicular traffic may result in less queues and delays along Cretin Avenue.

Conclusion

SRF has completed a transportation study for the proposed University of St. Thomas (UST) multipurpose arena development in the City of St. Paul. In general, no significant operational or safety issues currently occur near campus or at the study intersections.

The proposed development is expected to result in a net loss of approximately 265 parking spaces. The available parking supply during the peak demand periods on campus was reviewed, and alternative parking sources are able to accommodate the increase in parking, however, parking considerations were identified. Potential mitigation strategies to reduce the parking demand on a daily basis were provided.

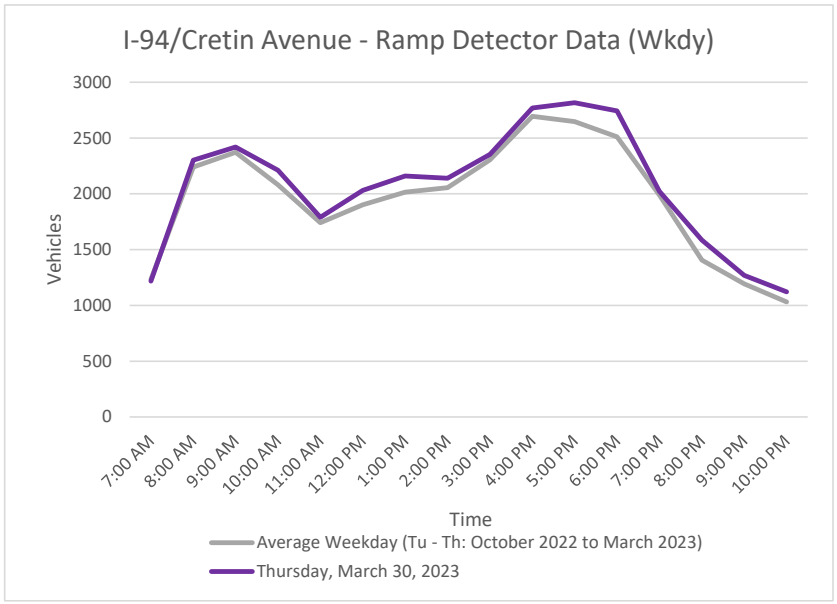
Event conditions were evaluated to understand any transportation and parking impacts and issues. Weeknight and/or larger events are anticipated to have a parking deficit on campus. However, based on similar program attendances, these events are only expected to occur five (5) to ten (10) times per year. Several potential mitigation strategies and improvements were provided to help reduce the parking demand impacts. In addition, event traffic operations were evaluated, and several event management strategies were recommended to help safely and efficiently manage events. The strategies were primarily focused on reducing pedestrian/vehicular conflicts, thus improving pedestrian safety and reducing event congestion.

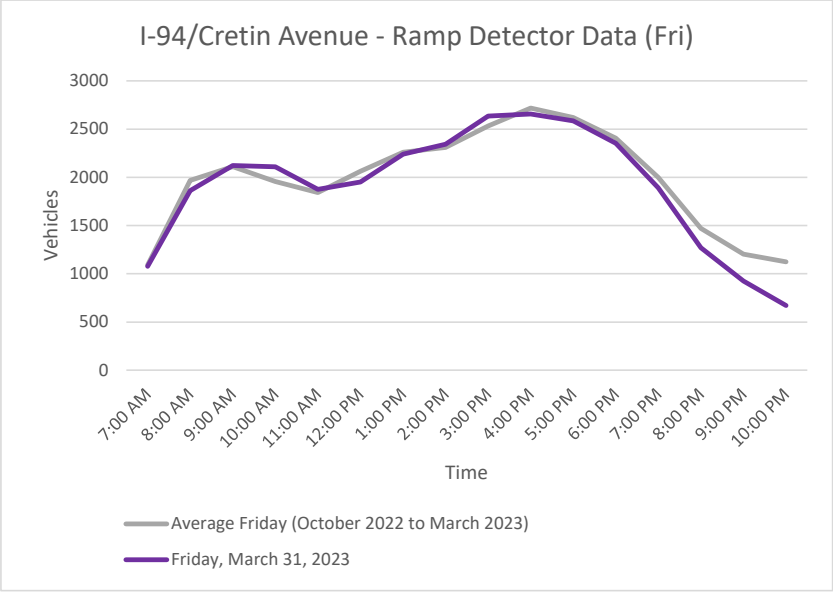
As the project proceeds, further refinement of the potential mitigation strategies is expected. The mitigation/management strategies will continue to be refined as events occur and a better understanding of event operations are experienced.

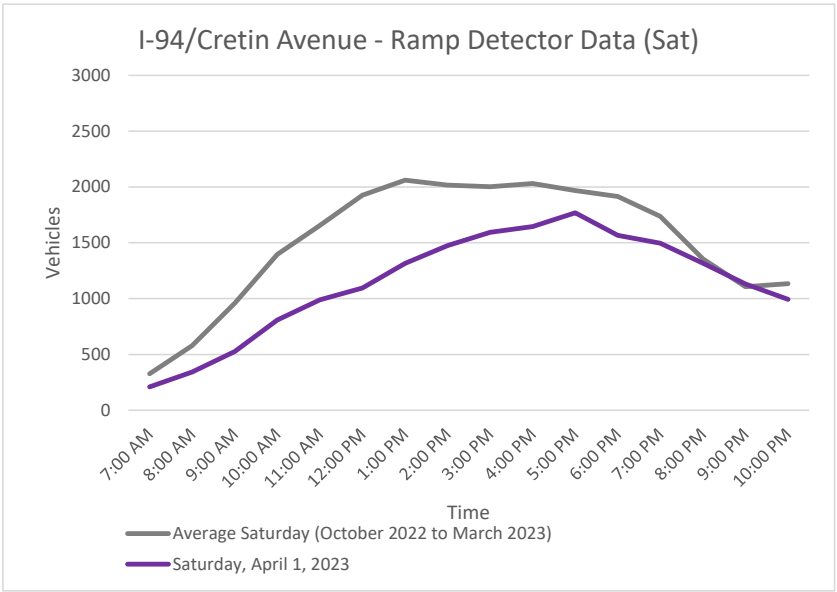
Appendix A

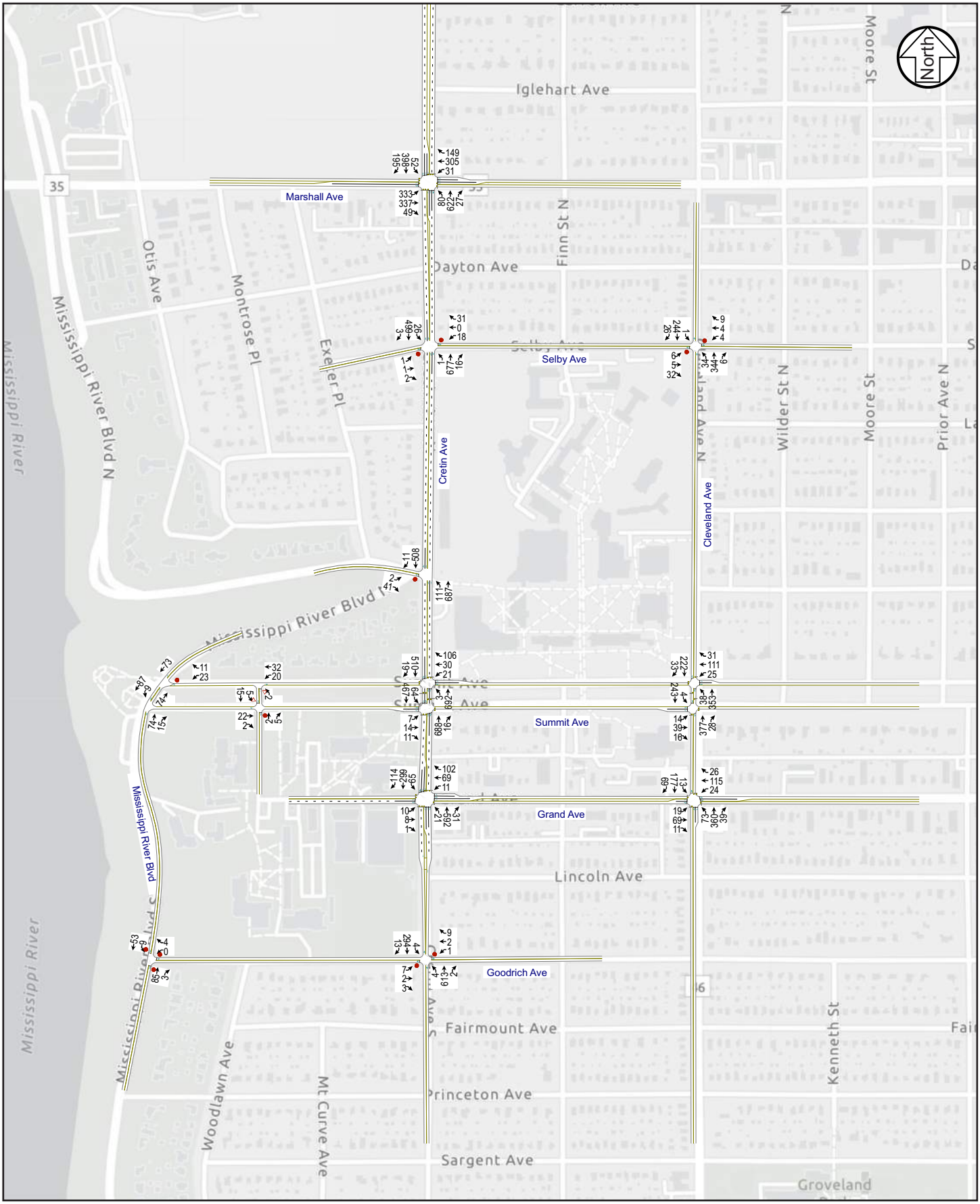
Existing Traffic Volumes

Figure A1


I-94/Cretin Avenue - Ramp Detector Data (Wkdy)
Vehicles
3000
2500
2000
1500
1000
500
0
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
Time
Average Weekday (Tu - Th: October 2022 to March 2023)
Thursday, March 30, 2023


I-94/Cretin Avenue - Ramp Detector Data (Fri)
Vehicles
3000
2500
2000
1500
1000
500
0
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
Time
Average Friday (October 2022 to March 2023)
Friday, March 31, 2023


I-94/Cretin Avenue - Ramp Detector Data (Sat)
Vehicles
3000
2500
2000
1500
1000
500
0
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
Time
Average Saturday (October 2022 to March 2023)
Saturday, April 1, 2023



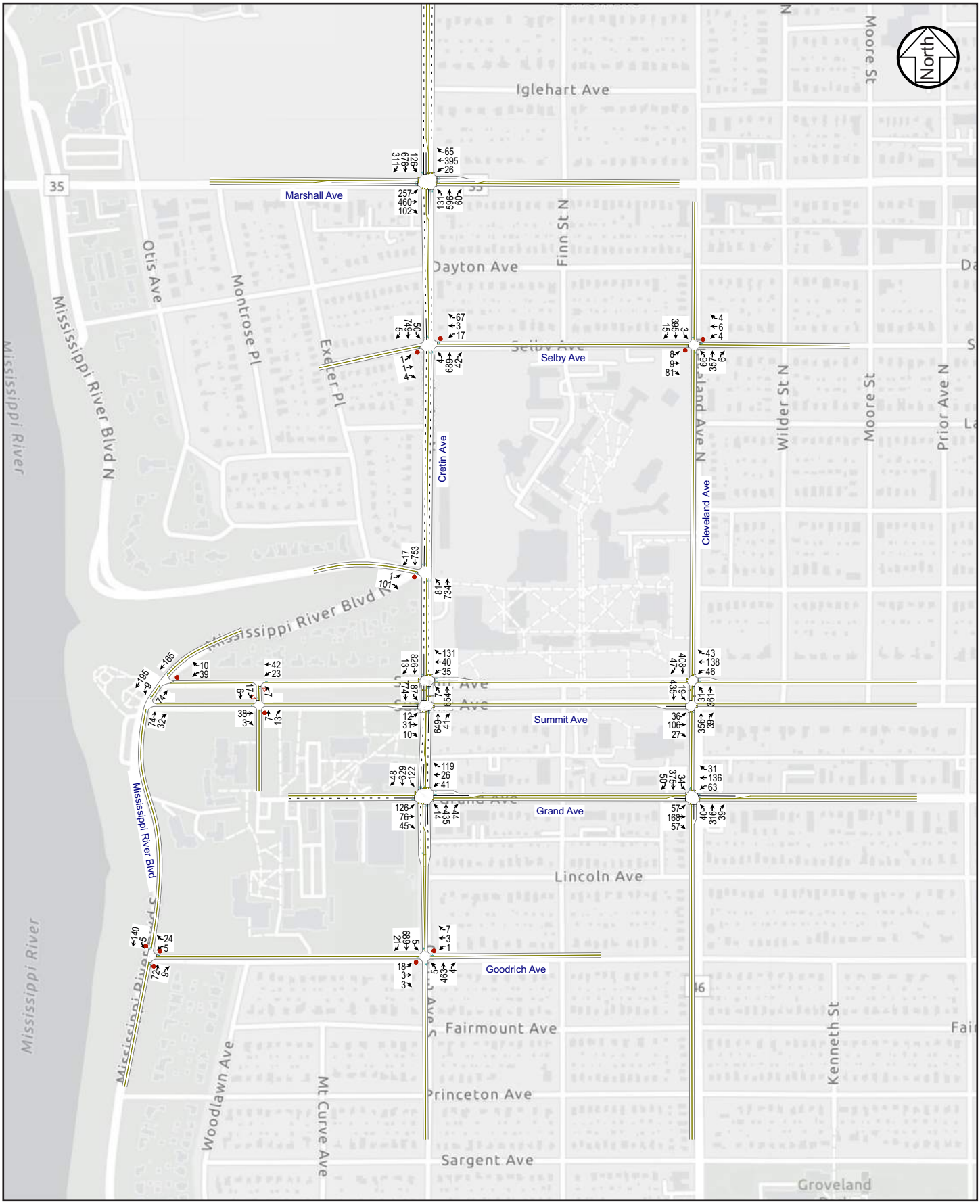
Existing AM Peak Hour (7:30 to 8:30 a.m.)

UST Multipurpose Arena EAW Transportation Study

City of St. Paul

Figure A2

02316489
May 2023



Existing PM Peak Hour (4:45 to 5:45 p.m.)

UST Multipurpose Arena EAW Transportation Study

City of St. Paul

Figure A3

02316489
May 2023

Appendix B

Safety Analysis

Table B1 - Crash Type Summary (Jan. 2018 - Dec. 2022)

Intersections	Single Vehicle Crashes			Multiple Vehicle Crashes					Total
	Bike	Ped	Run Off Road	Left Turn/ Angle	Head On	Rear End	Side Swipe	Other	
Cretin Ave /Marshall Ave	-	1	2	4	3	6	2	1	19
Cretin Ave N / Selby Ave	-	-	-	3	-	-	1	-	4
Cretin Ave N / Mississippi River Blvd	-	-	1	-	-	-	-	-	1
Cretin Ave N / Summit Ave	1	2	-	2	-	2	-	-	7
Cretin Ave N / Grand Ave	-	-	-	2	-	-	1	1	4
Cretin Ave N / Goodrich Ave	-	-	-	-	-	-	1	-	1
Cleveland Ave N / Selby Ave	-	-	-	-	-	1	-	2	3
Cleveland Ave N / Summit Ave	-	1	-	2	-	1	-	-	4
Cleveland Ave N / Grand Ave	-	-	-	-	-	-	1	2	3
Mississippi River Blvd / Summit Ave	-	-	1	-	-	-	-	-	1
Mississippi River Blvd / Goodrich Ave	-	-	-	-	-	-	-	-	0
Total	1	4	4	13	3	10	6	6	47

Table B2 - Intersection Crash Rate Analysis (2018 - 2022)

Intersection	Intersection Type	Crash Rate		
		Average	Actual	Critical
Cretin Ave / Marshall Ave	Urban Signal	0.508	0.272	0.730
Cretin Ave / Selby Ave	Urban Thru-Stop	0.128	0.132	0.310
Cretin Ave / Mississippi River Blvd	Urban Thru-Stop	0.128	0.031	0.300
Cretin Ave / Summit Ave	Urban Signal	0.508	0.174	0.810
Cretin Ave / Grand Ave	Urban Signal	0.508	0.117	0.840
Cretin Ave / Goodrich Ave	Urban Thru-Stop	0.128	0.040	0.330
Cleveland Ave / Selby Ave	Urban Thru-Stop	0.128	0.139	0.350
Cleveland Ave / Summit Ave	Urban Signal	0.508	0.136	0.860
Cleveland Ave / Grand Ave	Urban Signal	0.508	0.118	0.890
Mississippi River Blvd / Summit Ave	Urban Thru-Stop	0.128	0.051	0.360
Mississippi River Blvd/Goodrich Ave	Urban All Way Stop	0.267	0.00	1.390

= Crash Rate is above average rate but below the critical crash rate.

Appendix C

Parking Utilization Counts

Figure C1

Lot ID	Side of Street	Parking Supply	Occupied Spaces							
			Weekday (Wednesday, March 29th)		Weeknight (Thursday, March 30th)		Friday (Friday, March 31st)		Saturday Saturday, April 1st	
			1:00 PM	% Utilized	6:00 PM	% Utilized	6:00 PM	% Utilized	6:00 PM	% Utilized
UST Campus Lots (Visitor Lots or open for visitors after 4 p.m.)										
APF		691	613	89%	308	45%	96	14%	69	10%
ASC		118	94	80%	22	19%	18	15%	10	8%
McNeely		104	51	49%	18	17%	8	8%	8	8%
Tommie East		59	31	53%	9	15%	11	19%	15	25%
Tommie North		112	87	78%	52	46%	51	46%	53	47%
Total		**1084**	**876**	**81%**	**409**	**38%**	**184**	**17%**	**155**	**14%**
On-Street Parking (Adjacent to Campus) (No City Permit Required)										
Summit Avenue (West of UST South Access) [5]	South	22	21	95%	8	36%	0	0%	0	0%
Summit Avenue (West of Cretin Ave)	South	32	30	94%	30	94%	9	28%	1	3%
Summit Avenue (West of Finn St)	North	20	12	60%	18	90%	13	65%	6	30%
	South	25	21	84%	23	92%	23	92%	3	12%
Summit Avenue (West of Cleveland Ave)	North	22	23	105%	23	105%	20	91%	8	36%
	South	22	17	77%	16	73%	16	73%	6	27%
Cleveland Avenue	East	12	13	108%	10	83%	3	25%	4	33%
Goodrich Avenue [5]	North	52	56	108%	51	98%	6	12%	5	10%
Cretin Avenue [1]	East	40	40	100%	4	10%	0	0%	1	3%
Selby Avenue (West of Finn St) [2]	South	28	23	82%	24	86%	23	82%	14	50%
Selby Avenue (East of Finn St) [2]	South	28	22	79%	21	75%	17	61%	13	46%
Grand Avenue (East of Finn St) [6]	North	18	17	94%	17	94%	17	94%	11	61%
	South	20	15	75%	16	80%	17	85%	13	65%
Finn Street [3]	East	14	11	79%	13	93%	6	43%	1	7%
	West	14	13	93%	11	79%	12	86%	2	14%
Total		**369**	**334**	**91%**	**285**	**77%**	**182**	**49%**	**88**	**24%**
Total (Visitor & On-Street)		**1453**	**1210**	**83%**	**694**	**48%**	**366**	**25%**	**243**	**17%**
UST Campus Lots (Commuter, Faculty/Staff, SOD Permit Parking Locations)										
Lot A [7]		56								
Lot B		55	55	100%	27	49%	32	58%	35	64%
Lot C		46	46	100%	27	59%				
Lot D		9	9	100%	5	56%				
Lot G		23	23	100%	21	91%	11	48%	11	48%
Lot I		16	16	100%	11	69%				
Lot K		42	42	100%	30	71%	1	2%	1	2%
Lot L		12	12	100%	5	42%				
MRH Level 1		31	21	68%	15	48%				
Lot N		9	9	100%	6	67%	1	11%	0	0%
Lot O		190	85	45%	43	23%	45	24%	29	15%
Lot P1 (South)		18	16	89%	3	17%	1	6%	0	0%
Lot P1 (NW)		22	20	91%	5	23%	3	14%	1	5%
Lot V		33	20	61%	11	33%	9	27%	7	21%
Lot X		21	14	67%	12	57%	9	43%	8	38%
Lot Y		31	29	94%	24	77%	21	68%	22	71%
Total		**444**								
Total		**558**	**417**	**75%**	**245**	**44%**	**133**	**30%**	**114**	**26%**
On-Street City Permit Parking Locations										
Summit Avenue (East of Cleveland Ave)	North	42	9	21%	2	5%	3	7%	1	2%
	South	60	11	18%	5	8%	0	0%	5	8%
Cleveland Avenue [4]		34	30	88%	31	91%	24	71%	17	50%
Total		**136**	**50**	**37%**	**38**	**28%**	**27**	**20%**	**23**	**17%**
Total Permit (Campus & On-Street)		**694**	**467**	**67%**	**283**	**41%**	**160**	**23%**	**137**	**20%**
All Parking		**2147**	**1677**	**78%**	**977**	**46%**	**526**	**24%**	**380**	**18%**

(1) No Parking or Stopping 7-9 am; 4-6 pm (Mon-Fri)
(2) Snow Plow Route
(3) 2 Hour Parking 8 am to 6 pm - (Mon - Fri)
(4) Numerous Restrictions and Signage Clutter
(5) No parking 10 pm to 6 am
(6) 1 Hour Parking 8 am to 6 pm - (Mon - Fri)
(7) Lot A Closed for Construction

Estimated
Visitor Parking (On-campus or on-street adjacent) expected to be utilized by event patrons
On-Street Parking (City Permit Required)
UST Permit Parking Only
Spring 2023 Parking Utilization Data provided by UST
Impacted by project - parking likely displaced to other lots
Data Not Collected

Appendix D

Event Assumptions/Operations

Figure D1

UST Max Capacity Event Assumptions		
Event Capacity		*5500*
Students	22%	1200
Non-Students	78%	4300
Student Modal Split Assumptions		*1200*
Passenger Vehicle Trips	10%	120
Rideshare (Uber/Lyft/Taxi, etc.)	10%	120
Transit/Shuttle (Local Bus)	5%	60
Walk/Bike Share	75%	900
Non-Student Modal Split Assumptions		*4300*
Passenger Vehicle Trips	88%	3784
Rideshare (Uber/Lyft/Taxi, etc.)	5%	215
Transit/Shuttle (Local Bus)	2%	86
Walk/Bike Share	5%	215
Vehicle Occupancy		2.75
Event Times		
Start		7:00 PM
End		9:00 PM
Event Traffic During Peak Hour Analysis		
Arrival		90%
Departure		95%

Comments:

**Based on number of student section seats proposed*

**Estimated that 4,000 students (~2,600 on-campus, 1,400 off-campus) live within walking distance (3/4-mile from arena). This represents approximately 70 percent of undergraduate students.*

**Approximately 7 percent of students own Metro Transit College Pass (C-pass provides unlimited bus rides)*

**Other factors such as on-campus attendance vs. off-campus attendance, and students meeting up before/after games, may increase walking percentages.*

**15 percent of basketball ticket purchases were from within the McCalster/Groveland Neighborhood. Estimated to be over 650 residential homes within 1/2-mile of the arena, likely near 2,000 homes within 3/4-mile of the arena.*

**Based on Local Event Studies and numerous technical resources*

**10-20 percent of stadium is Premium Seating; pre-game dinner/drinks*

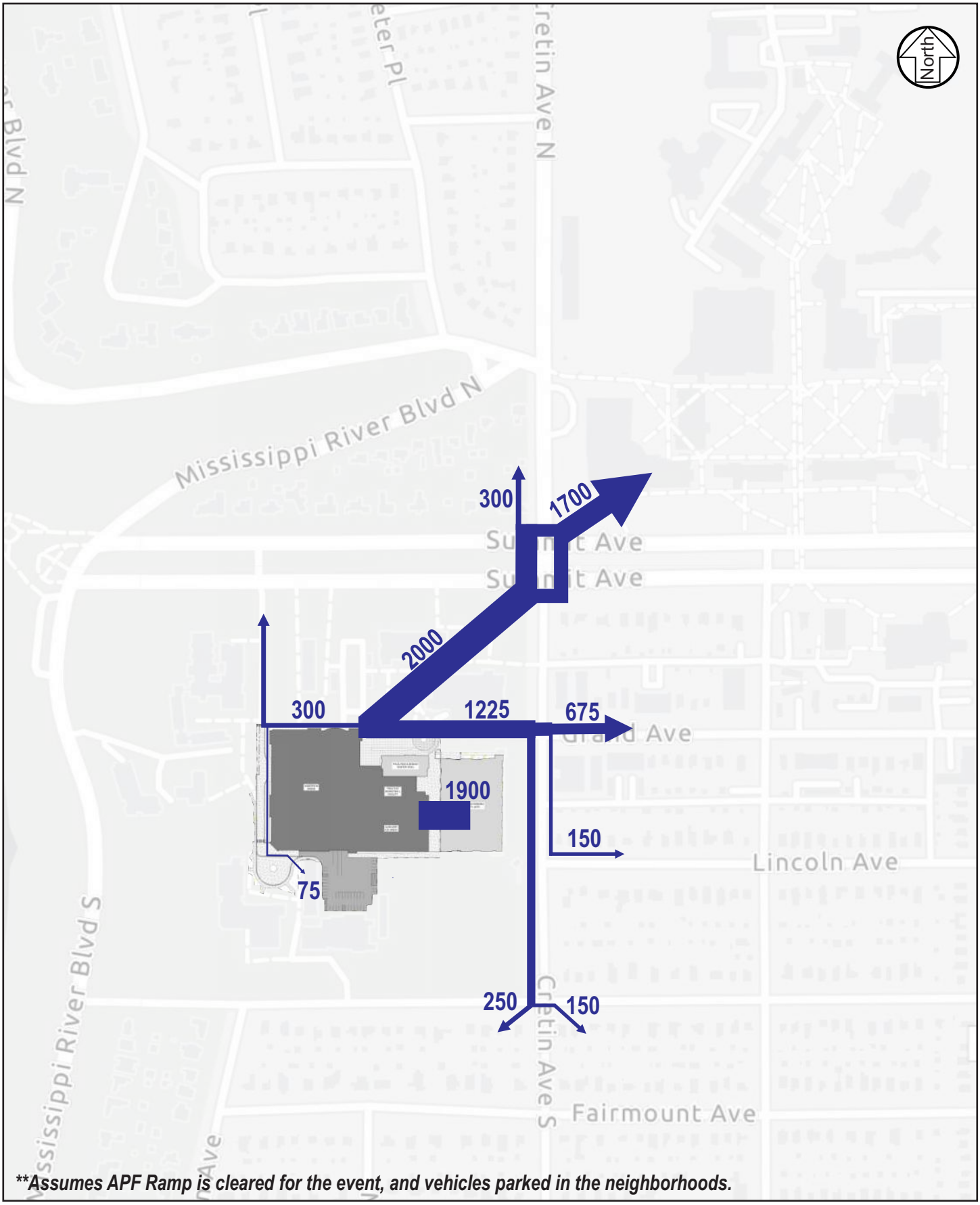
**5 percent accounts for attendance leaving early and/or post-game family/friends*

Figure D2

UST Typical Event Assumptions		
Event Capacity		*3000*
Students	22%	660
Non-Students	78%	2340
Student Modal Split Assumptions		*660*
Passenger Vehicle Trips	10%	66
Rideshare (Uber/Lyft/Taxi, etc.)	10%	66
Transit/Shuttle (Local Bus)	5%	33
Walk/Bike Share	75%	495
Non-Student Modal Split Assumptions		*2340*
Passenger Vehicle Trips	88%	2059
Rideshare (Uber/Lyft/Taxi, etc.)	5%	117
Transit/Shuttle (Local Bus)	2%	47
Walk/Bike Share	5%	117
Vehicle Occupancy		2.75
Event Times		
Start		7:00 PM
End		9:00 PM
Event Traffic During Peak Hour Analysis		
Arrival		90%
Departure		95%

Table D3 – Transportation Network - Peak Hour Volume Comparison

Mode	Existing Weekday		2025 Typical (3,000) Event		2025 Max (5,500) Event	
	AM Peak (7:30-8:30 am)	PM Peak (4:45-5:45 pm)	Pre-Event (6-7 pm)	Post-Event (9-10 pm)	Pre-Event (6-7 pm)	Post-Event (9-10 pm)
Cretin Ave (N of Marshall)	1,750	2,030	1,920	1,185	2,215	1,520
Cretin Ave (S of Goodrich)	920	1,165	1,050	600	1,200	710
Cleveland Ave (S of Goodrich)	685	890	675	420	740	520
Summit Ave (E of Cleveland)	240	390	320	185	360	250
Grand Ave (E of Cleveland)	285	475	400	230	450	300



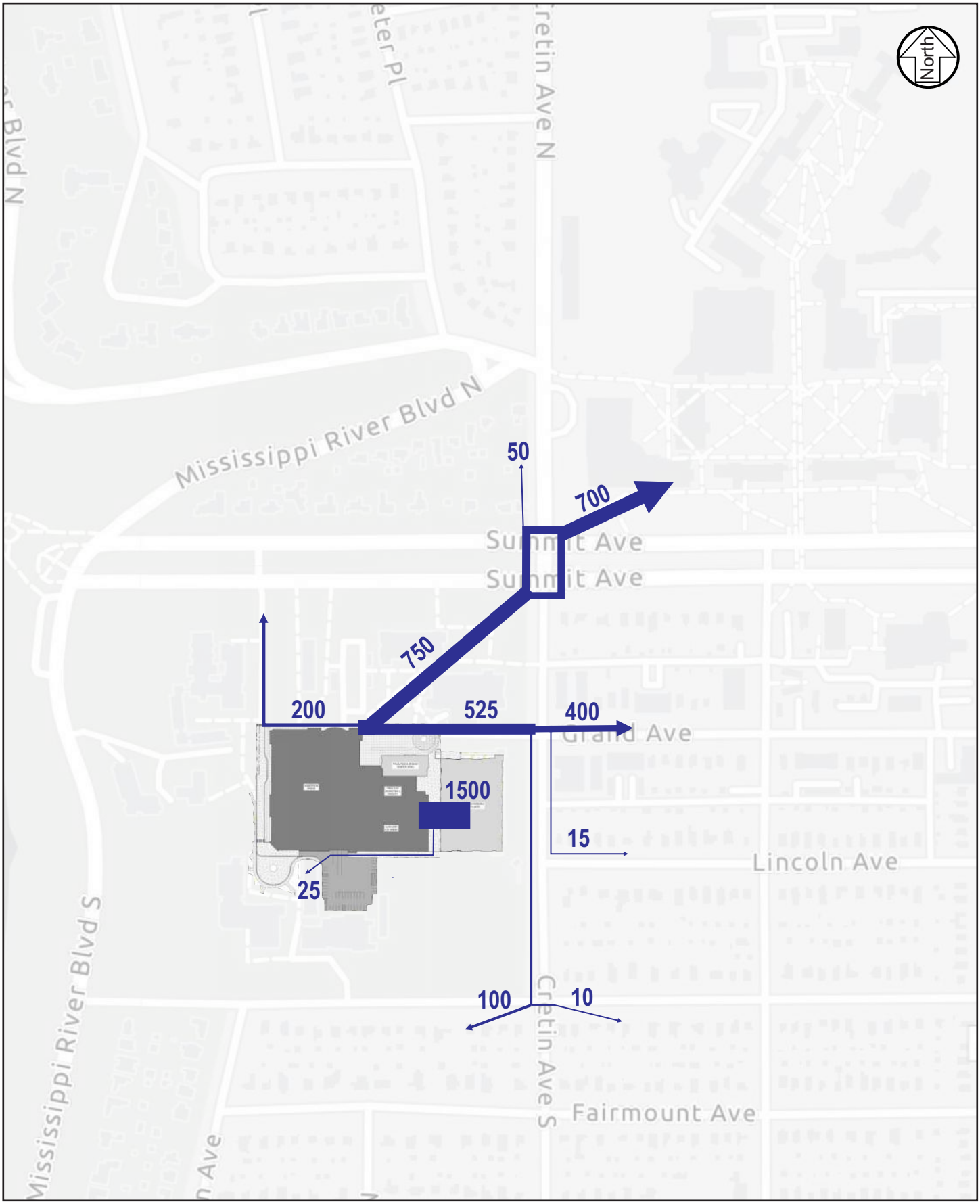
***Assumes APF Ramp is cleared for the event, and vehicles parked in the neighborhoods.*

Max Capacity Event - Estimated Pedestrian Volumes

UST Multipurpose Arena EAW Transportation Study
City of St. Paul

Figure D4

02316489
May 2023



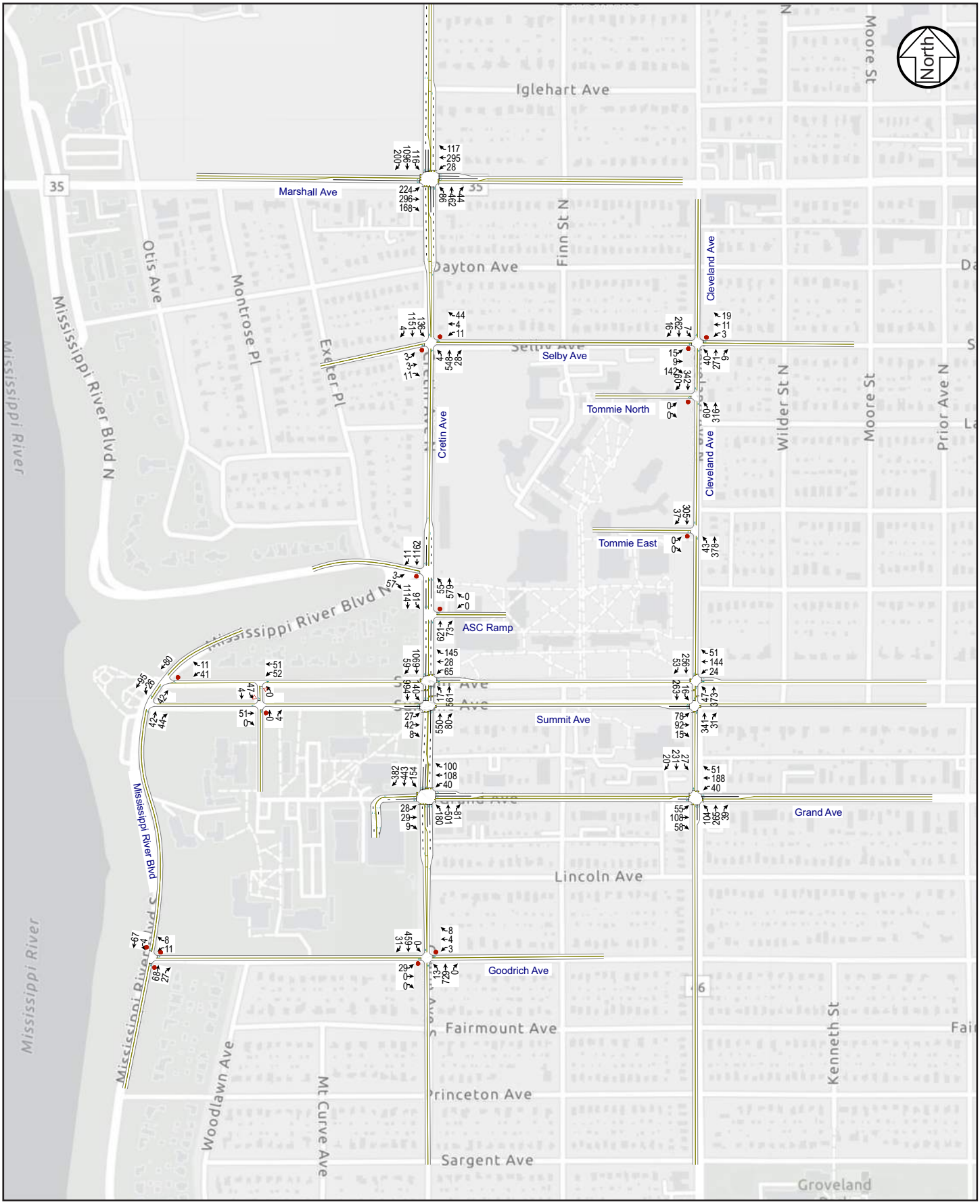
Typical (3,000) Friday Night Event - Estimated Pedestrian Volumes

Figure D5

UST Multipurpose Arena EAW Transportation Study

City of St. Paul

02316489
May 2023



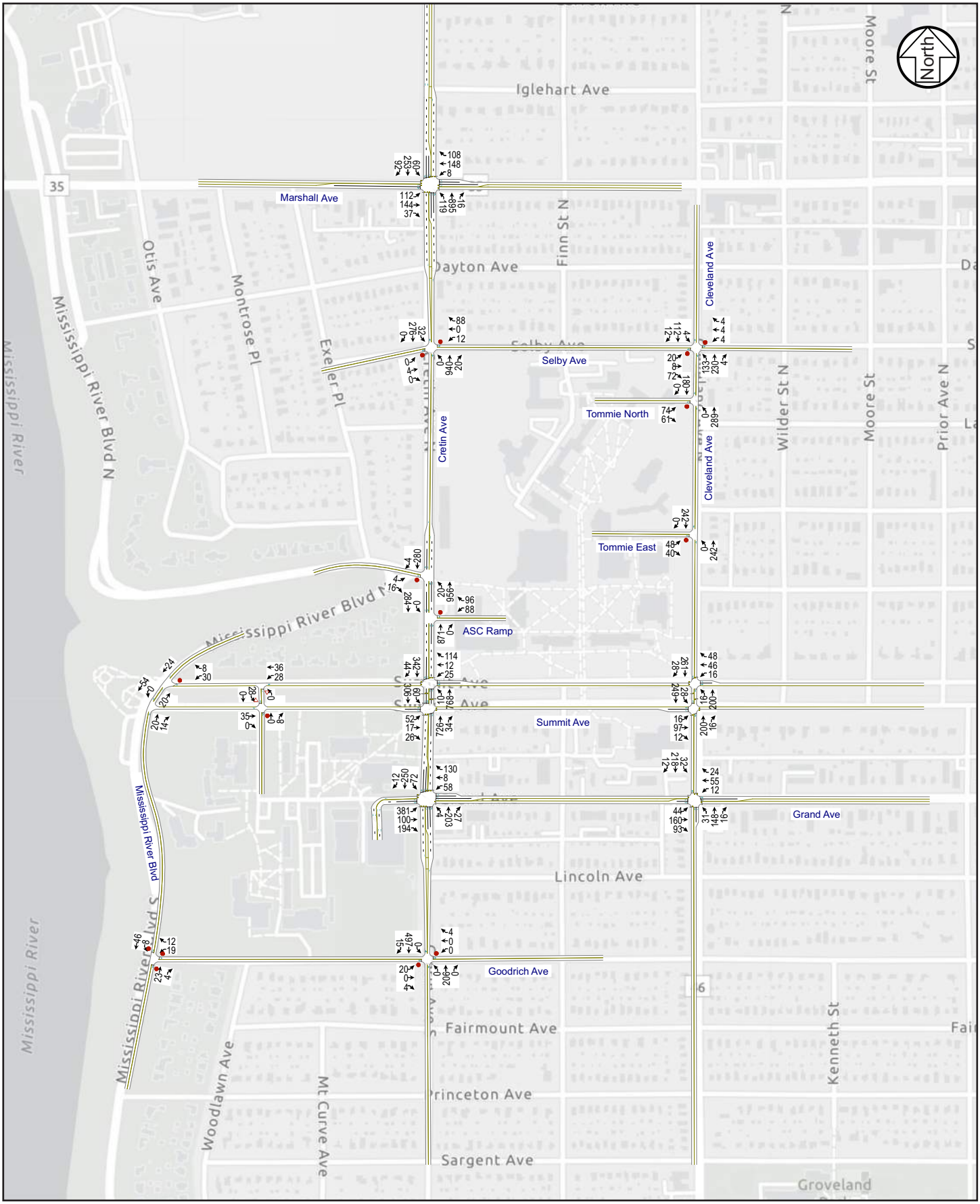
2025 Max Capacity Pre-Event Conditions (6 to 7 pm)

UST Multipurpose Arena EAW Transportation Study

City of St. Paul

Figure D6

02316489
May 2023



2025 Max Capacity Post-Event Conditions (9 to 10 pm)

UST Multipurpose Arena EAW Transportation Study

City of St. Paul

Figure D7

02316489
May 2023

Table D8 - 2025 Build Maximum Capacity (5,500) Event Operations

Intersection	Pre-Event		Post-Event	
	No Mitigation	Mitigation	No Mitigation	Mitigation
Cretin Avenue / Marshall Avenue	C	D	C	C
Cretin Avenue / Selby Avenue (1)	A/E	B/F	A/C	A/B
Cretin Avenue /Mississippi River Boulevard (1)(3)	A/B	A/B	A/A	A/A
Cretin Avenue / Summit Avenue	D	D	D	C
Cretin Avenue / Grand Avenue	E	D	F	D
Cretin Avenue / Goodrich Avenue (1)	F/F	C/F	A/C	A/C
Cleveland Avenue / Selby Avenue (1)	A/A	A/A	A/A	A/A
Cleveland Avenue / Summit Avenue	B	B	B	B
Cleveland Avenue / Grand Avenue	B	B	B	B
Mississippi River Boulevard / Summit Avenue (1)	A/A	A/A	A/A	A/A
Mississippi River Boulevard / Goodrich Avenue (2)	A	A	A	A

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.
(2) Indicates an unsignalized intersection with all-way stop control, where the overall LOS is shown.
(3) The eastbound approach has a no-left turn restriction.

Table D9 - Similar Men's Hockey Program Stadium Capacities

Program	Stadium Capacity
Michigan Tech	4,470
Bemidji St	4,400
Bowling Green	5,000
Northern Michigan	4,200
Lake Superior	4,000
Average	**4,414**

Table D10 - Similar Men's Basketball Program Stadium Capacities

Program	Stadium Capacity
Nebraska-Omaha	7,900
NDSU	5,460
SDSU	5,200
USD	6,000
UND	3,300
Denver	7,200
UW-Milwaukee**	10,780
Average	**6,549**

***Not in the Summit League*