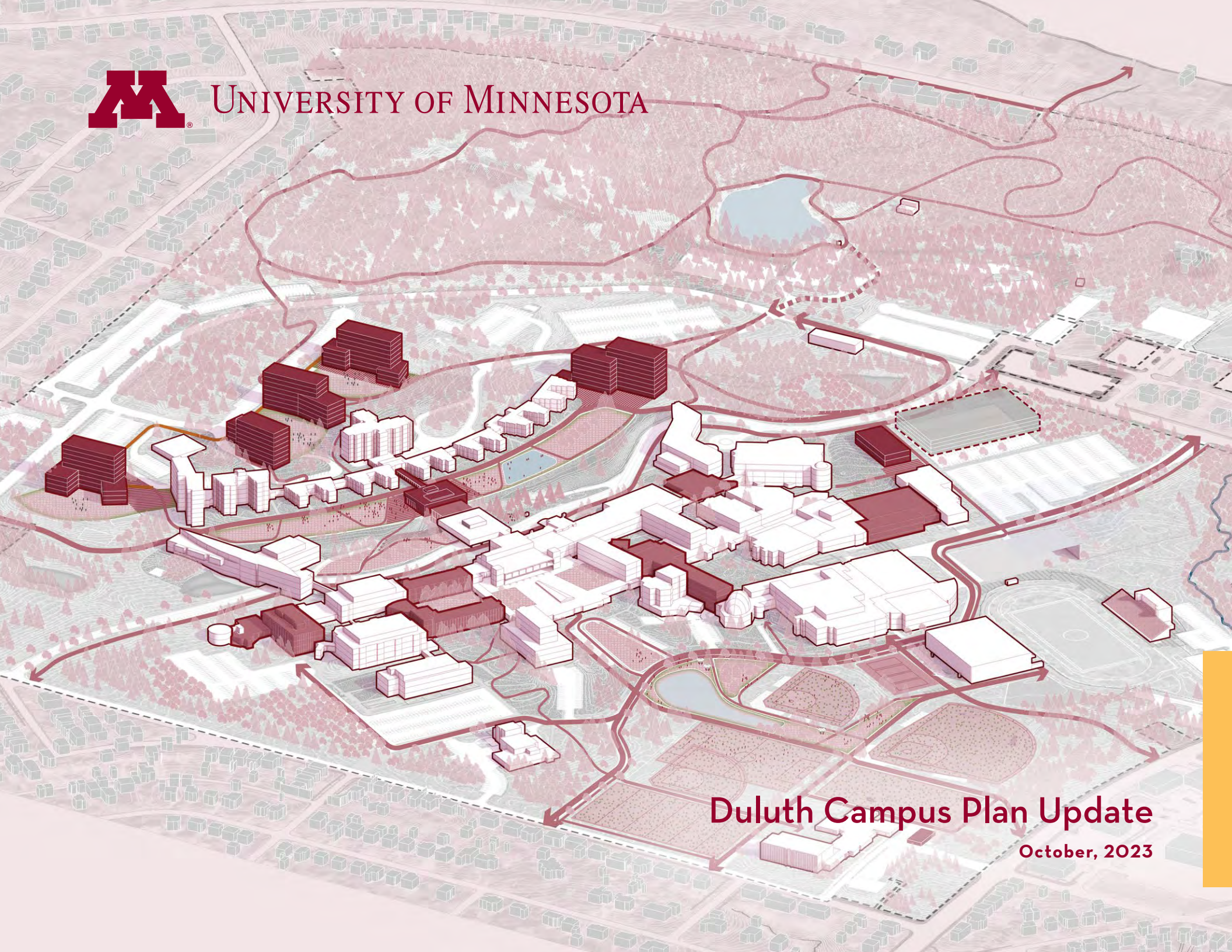
UNIVERSITY OF MINNESOTA



Duluth Campus Plan Update

October, 2023

Approved by the Regents of the University of Minnesota

October 12, 2023

The University of Minnesota Duluth's Land Acknowledgement

We collectively acknowledge that the University of Minnesota Duluth is located on the traditional, ancestral, and contemporary lands of Indigenous people. The University resides on land that was cared for and called home by the Ojibwe people, before them the Dakota and Northern Cheyenne people, and other Native peoples from time immemorial. Ceded by the Ojibwe in an 1854 treaty, this land holds great historical, spiritual, and personal significance for its original stewards, the Native nations and peoples of this region. We recognize and continually support and advocate for the sovereignty of the Native nations in this territory and beyond. By offering this land acknowledgment, we affirm tribal sovereignty and will work to hold the University of Minnesota Duluth accountable to American Indian peoples and nations.

Table of Contents

Introduction 1

Purpose of the Campus & Climate Action Plans Framework

The University of Minnesota set out to develop an integrated, seamless set of campus and climate plans to shape the future of each campus in terms of physical changes and alignment with the System's climate action commitment. The purpose of completing a campus plan is to develop consensus around a shared vision for the future of the campus, establishing a framework with a set of actionable steps that the institution can take to realize this vision in a way that advances its goals and mission. The University of Minnesota Duluth's (UMD's) coordinated Campus and Climate Action Plans describe the vision and key recommendations for the campus. The plans were developed from primary drivers and reflected the values of the institution at a systemwide and campus-specific level. The plans also serve as a foundation to guide and inform near- and long- term planning for capital investments.

The UMD Campus Plan presents an overview of plan drivers, existing campus conditions, and community input that have informed the inception of four "Big Ideas" for the future campus. These Big Ideas are strategic opportunities for meaningful and positive change for the UMD community experience and campus operations. These Big Ideas are supported by planning frameworks, which present a vision for how campus improvements may be made at a systems level. Finally, the plan presents suggestions on which capital projects UMD should prioritize to maximize efficiency and impact over a fifteen- and thirty-year time horizon.

A Systems Approach

Each campus of the University of Minnesota System plays a pivotal role in fulfilling the tripartite mission of the University, advancing learning, research, and outreach throughout Minnesota. Each has its own unique identity, valued by students, faculty, staff, and the surrounding community. This integrated planning effort will provide each campus with a framework for future decision-making and implementation to support each individual institution's needs while advancing goals identified in the system-wide strategic plan, MPact 2025.

Planning Purpose and Goals

The purpose of this campus plan is to establish consensus and outline an approach to achieving shared goals in mobility, infrastructure, community connection, and resilience over a thirty-year time horizon. The recommendations that follow reflect UMD's unique needs as identified during the campus analysis stage, input and ideas shared by the UMD campus community, and areas for further study and evaluation. All of these recommendations are intended to support MPact 2025's commitment to building a fully sustainable future for UMN campuses. In a parallel effort, the project team has identified steps that UMD may take to eliminate greenhouse gas emissions by 2050; they are described in a companion document, "University of Minnesota Duluth Climate Action Plan."

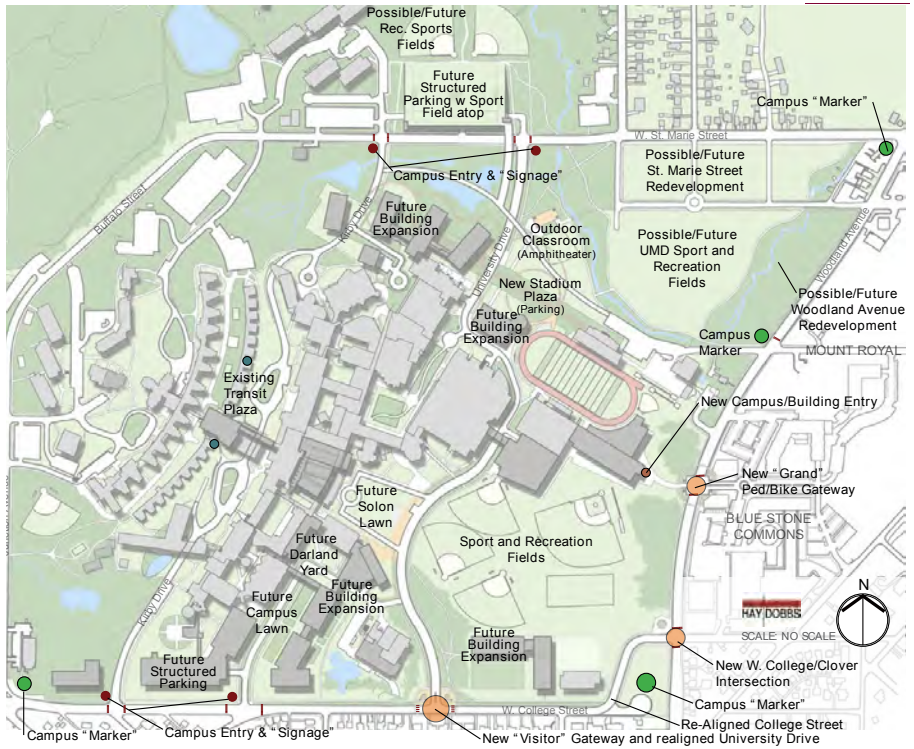
2013 Plan Update

The most recent UMD campus plan update was completed in 2013. A notable accomplishment since the 2013 plan was the 2019 addition of the Heikkila Chemistry and Advanced Materials Science building, which is situated on a site that the 2013 plan had identified for future building expansion. The stated goals for the 2013 plan were:

- Create a "Front Door" for the UMD Campus
- Develop a "Focal Point" for the UMD Campus
- Make the UMD Campus "Visible"
- Enhance the "Visual Quality" of the UMD Campus
- Create a "Pedestrian and Bicycle Friendly" UMD Campus
- Connect and "Integrate" the UMD Campus into the City of Duluth

Though certain priorities have shifted, several of the goals and strategies proposed in 2013 are also supported in the current plan. These include the addition of a visitor gateway off West College Street and proposed realignment of University Drive east of the power plant, the greening of the campus edge through strategic removal of surface parking, and the greening of the Solon Campus Center's entrance courtyard. Further alignments with or departures from the recommendations of the 2013 plan are noted in more detail in the following pages.

The near-term horizon for the UMD Campus Plan is fifteen years, through 2038. Other recommendations for physical change are linked to a long-term horizon of thirty years, to 2053. Geographically, the scope of this effort addresses the core UMD campus, supplemented with information about its facilities located throughout Duluth. Periodic updates to the plan will occur approximately every ten years to accommodate shifting needs and priorities for the UMD campus.



2013 Proposed UMD Master Plan - Long Term Plan

Planning Process

The UMD planning process progressed over the course of nine months, beginning in November 2022 and concluding with the completion of the final draft in August 2023. The planning process for UMD included the following phases of work:

Phase 1: Visioning

This initial phase developed a compelling vision for UMD and a framework for implementation based on input from stakeholders, review of past planning efforts, and MPact 2025 goals. A core component of this phase was conducting an inclusive and informed engagement process which was tailored to each campus in order to define this vision based on input from key stakeholder groups. The visioning phase was carried out in conjunction with leadership, established committees, and other members of each campus community.

The Visioning phase for the UMD plan was the longest of the four project phases. It began in November 2022 with a site visit and building and grounds tour, a comprehensive data collection and inventory process, stakeholder interviews, and community listening sessions. The project team then launched the MyCampus interactive mapping tool and the project website to collect input and share information virtually. Following site reconnaissance and data collection, the consultant team shared campus analysis findings with the UMD community in February. Findings drew upon site visit observations, map and site survey-based analysis, and community input and ideation garnered over the four month period.

Further detail about the UMD community engagement process and outcomes is provided in subsequent sections.

Phase 2: Assumptions, Scenario Planning, and Modeling

During the second phase of work, the project team began to develop and test alternative approaches to addressing the campus needs and community priorities identified in Phase 1. This included developing consensus among campus leadership and stakeholders on assumptions about future changes, including demographic, financial, cultural, and climate system trends that impact campus activities, facilities, and infrastructure. At the conclusion of this phase, the project team reached consensus with campus leadership and community stakeholders on preferred alternatives to refine during Phase 3.

Phase 2 of the UMD planning process began in February 2023 following the presentation of campus analysis findings. During the two month phase, the project team explored and developed a series of alternative approaches to address campus systems including but not limited to student life, mobility and wayfinding, landscape, and infrastructure. The project team also began to model and analyze proposed climate mitigation and adaptation solutions to validate UMD's ability to meet climate targets while adapting to projected climatic changes. These alternatives were shared with campus leadership as well as the broader campus community during a series of in-person meetings and workshops in March 2023. The project team recorded feedback on the concept alternatives and presented preliminary campus plan recommendations during a virtual campus forum in April 2023.

Phase 3: Draft Plan Production

The project team refined preliminary recommendations into a preferred direction during Phase 3, consolidating the selected strategies into a cohesive vision for the future of the campus. With approval from campus leadership, the project team began to develop documentation of their recommendations for preliminary review and feedback from the Board of Regents.

Phase 3 of the UMD planning process spanned two months, and included the development of presentation and docket materials showcasing the project team's recommendations for review by the Board of Regents in May 2023. Based on preliminary comments provided by the Board of Regents, the project team proceeded to draft a coordinated plan for Regent review in September 2023.

Phase 4: Final Plan Production

During the final project phase, the team gathered feedback from UMD stakeholders and University leadership on the draft plan, making final refinements as needed to plan contents and recommendations. The team then prepared the final planning document in both digital and print-ready formats for action to approve by the Board of Regents in October 2023.

Below: Aerial view of University of Minnesota Duluth Main Campus
Right: UMD students at Kirby Student Center

Plan Drivers 2

Each campus plan is informed by a combination of key drivers. The Systemwide Strategic Plan: MPact 2025 is a planning resource common to all of the UMN system campuses, and outlines a vision for the future of the University as a whole. In addition to this document, other drivers which inform each distinctive campus plan include campus-level strategic plans and visions, preceding planning studies, community stakeholder input, and the unique set of conditions at each campus. The key drivers that have informed the UMD campus plan are described below; existing campus conditions are described in further detail in subsequent sections.

Systemwide Strategic Plan: MPact 2025

The UMD campus plan, and the climate action plan, are aligned with the systemwide strategic plan, MPact 2025, related to campus planning (Commitment 5, Action Items 5.3) and climate action planning (Commitment 2, Action Items 3.2). Many of the plans' recommendations embody the commitments outlined in the MPACT 2025 plan, as noted below.

Student Success

Continued investment in housing and wellness to support recruitment and retention. Development of the proposed Sustainability Corridor and Recreation Park will create places of respite and recreation and could be used for applied learning opportunities.

Discovery, Innovation, & Impact

Reinvestment in academic buildings supports innovation and applied research across multiple colleges and units.

MNtersections

This plan provides a decarbonization framework to meet the University's commitment to eliminate carbon emissions by 2050.

Community & Belonging

The proposed Sustainability Corridor and the Recreation Park create places for the UMD Community to gather with each other to foster belonging, and to connect with adjacent city neighborhoods and parks.

Fiscal Stewardship

This plan denotes building divestment and demolition for buildings that no longer adequately serve UMD's mission, and renovate other facilities to advance UMD's commitment to building a sustainable future.

MPact 2025 Sustainability, Climate Action, & Resiliency Goals

Climate change has been referred to as the greatest challenge of the 21st century and an existential threat to humanity that is already causing harm to people, communities, and ecosystems, here in Minnesota and around the world. Those impacts will become more severe and pronounced if the causes and symptoms of climate change go unchecked. In MPact 2025 (Commitment 3, Action Items 3.2), the University committed to building a fully sustainable future and identified three actions to advance this goal:

- Demonstrate state and worldwide leadership in sustainability and environmental teaching, research, and convening power.
- Develop system leadership and governance coordination for sustainability initiatives.
- Establish a next-generation systemwide Climate Action Plan.

Systemwide Planning Principles

The Board of Regents approved campus planning principles in February 2021, listed below. These serve as expectations that ensure the effectiveness of campus plans and are the foundation of Regents' review and ultimate approval of each location's campus plans. The UMN system has a long history of regularly updated campus physical plans, which have traditionally been known as campus master plans.

1. Establish a sustainable vision of how the physical setting of each campus will embody its distinctive history, mission, and future.
2. Create an inclusive and welcoming experience for the increasingly diverse range of people who come to campus.
3. Optimize existing physical assets to facilitate flexible and innovative solutions toward an enduring future.
4. Consider the cost of attendance, investment, and operations when planning for each campus' future.
5. Integrate each campus' master plan with the Systemwide Strategic Plan.
6. Ensure an inclusive, accountable, and forward-looking process for developing and implementing the master plan.

Committments of the Systemwide Strategic Plan: MPact 2025
(Source: Office of the President, MPact 2025: Systemwide Strategic Plan)

UMD Mission and Vision

Mission

The University of Minnesota Duluth integrates liberal education, research, creative activity, and public engagement and prepares students to thrive as lifelong learners and globally engaged citizens.

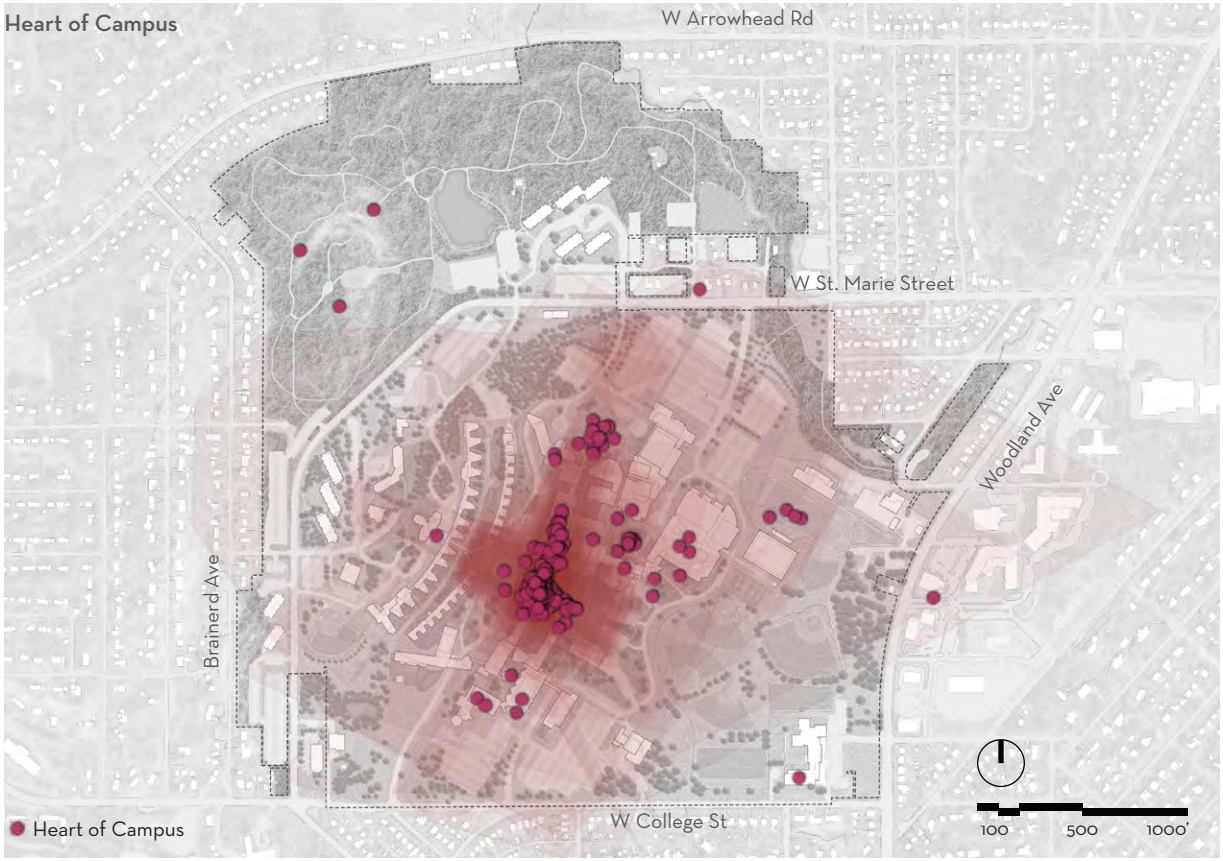
Vision

UMD will be agile in pursuing a dynamic future that builds upon our strengths and successfully confronts evolving challenges and opportunities. UMD will deliver an array of academic programs and student experiences that capitalize on our excellence and impact, as well as our scholarly strengths and external partnerships. In this way UMD will serve as a platform for success and achievement beyond graduation for students from all diverse and cultural backgrounds. By accomplishing this vision UMD assures that Minnesota has a highly qualified and innovative workforce to meet our future economic, environmental, social, and cultural challenges.[1]

1 https://about.d.umn.edu/strategic-plan/vision

Campus Community Input

Consistent with the Regents' approved campus planning principles, the planning work completed for UMD was designed to ensure an inclusive, accountable planning process. One of the key features of this work was to engage the campus community with an interactive mapping tool, MyCampus, which asked respondents to designate places of significance (live, eat, study, work, and play, among others). In the fall semester of 2022,



the mapping tool was available for all members of the campus community for three weeks. 671 individuals recorded responses. More than 7,700 campus locations were marked, and the mapping collected close to 2,000 individual comments. Of the participants who identified themselves, the majority were students (60%), with staff and faculty accounting for more than one-third of respondents- 26% staff and 12% faculty - in addition to small numbers of alumni and 'other' affiliation. 92% of student respondents were undergraduate students, with approximately one-third being first year students, and one-third being seniors.

In addition to virtual engagement with the MyCampus tool, the planning team prioritized keeping the campus community apprised of the planning process through virtual and in-person touchpoints. A series of monthly meetings were held for the campus community from October 2022 through April 2023, with the exception of December 2022. November 2022 and March 2023 workshops were held in person at UMD, with the remainder being held virtually.

Below and left: Results from the MyCampus mapping activity, in which each point represents UMD perspectives about campus activities, assets, and conditions

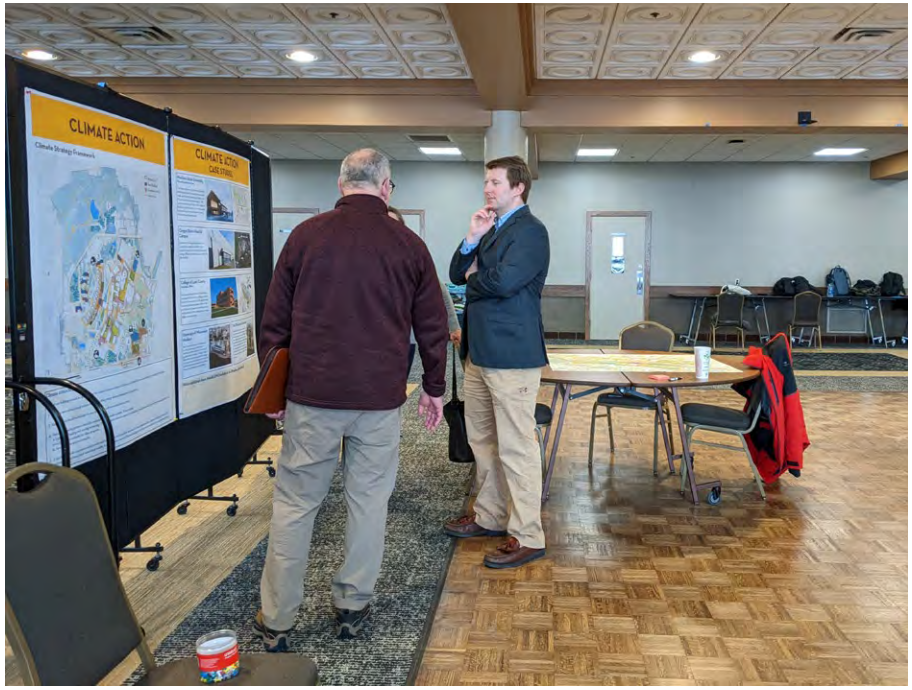
Places to Study

Climate Action Needed

A Climate Action Plan (CAP) Advisory Committee, made up of facilities management and sustainability staff, convened throughout the project to focus on energy systems and UMD infrastructure. Engagement included a meeting with regional and state Department of Natural Resources (DNR) staff to learn more about recent state projects using geothermal and solar technologies.

Supporters and neighbors of UMD were invited to the April 2023 campus forum, and a meeting was held with City of Duluth Planning, Transportation, and Sustainability staff in May 2023 to share the Plan and look for partnership opportunities. The City of Duluth is in the process of constructing a city-wide connector trail which is currently shown along University Drive on campus. The UMD Coordinated Campus and Climate Action Plans' proposed Sustainability Corridor on the Kirby Drive alignment appears to match the City's campus connector trail in purpose and character.

Below (left and right): Campus engagement activities included an open house-format community event, during which the planning team sought feedback on preliminary concepts.



Planning Framework

Above: The Planning Framework was developed as a discussion tool to illustrate all the considerations that a campus plan can make. Many of these topics are given strategic thoughts and commitment under other plans and initiatives at UMD and may not be heavily covered in the plan given these other dedicated efforts.

Existing Conditions Analysis

3

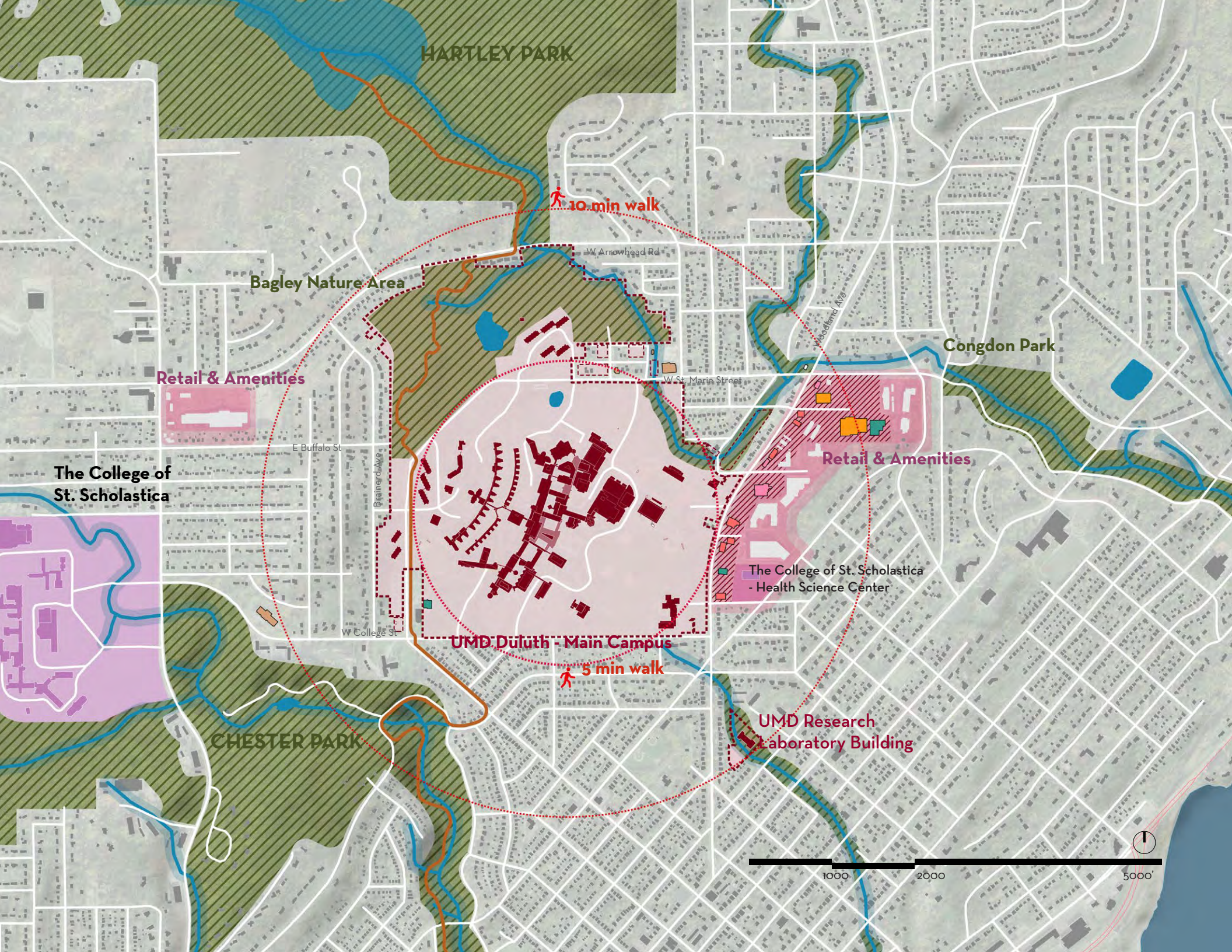
Duluth Campus

The existing conditions analysis occurred during the first phase of the planning process. The project team utilized a combination of stakeholder input, desktop analysis, and on-the-ground observations to develop a synthesized understanding of campus conditions and future needs. Where existing data was limited, the project team made assumptions based on best available information. Any such assumptions are noted below.

The UMD campus is located in the City of Duluth between Hartley Park and Chester Park, and is surrounded primarily by residential neighborhoods, with mixed development to the east and northwest. The campus contains over 50 buildings located on 250 acres overlooking Lake Superior. A prime resource for education, research, and recreation for both campus and the surrounding community is UMD's Bagley Nature Area on 60 acres of land on the north end of campus.

The planning process primarily focused on envisioning the future of the campus core, including the Bagley Nature Center and the Research Lab Building, located on the former UMD lower campus. The campus core does not include the Natural Resource Research Institute (NRRI), Glensheen, Limnology, Research and Field Studies Center (RFSC) or other affiliated properties. Although these properties are not the focus of the plan, they are significant contributors to the UMD experience and their relationships with the campus core was considered. (See Chapter 8 Appendix)

An aerial view of Bagley Nature Area


HARTLEY PARK
10 min walk
W Arrowhead Rd
Bagley Nature Area
Woodland Ave
Congdon Park
Retail & Amenities
W St Marie Street
E Buffalo St
Brainerd Ave
The College of
St. Scholastica
Retail & Amenities
The College of St. Scholastica
- Health Science Center
W College St
UMD Duluth - Main Campus
5 min walk
UMD Research
Laboratory Building
CHESTER PARK
1000
2000
5000'

UMD Campus Community

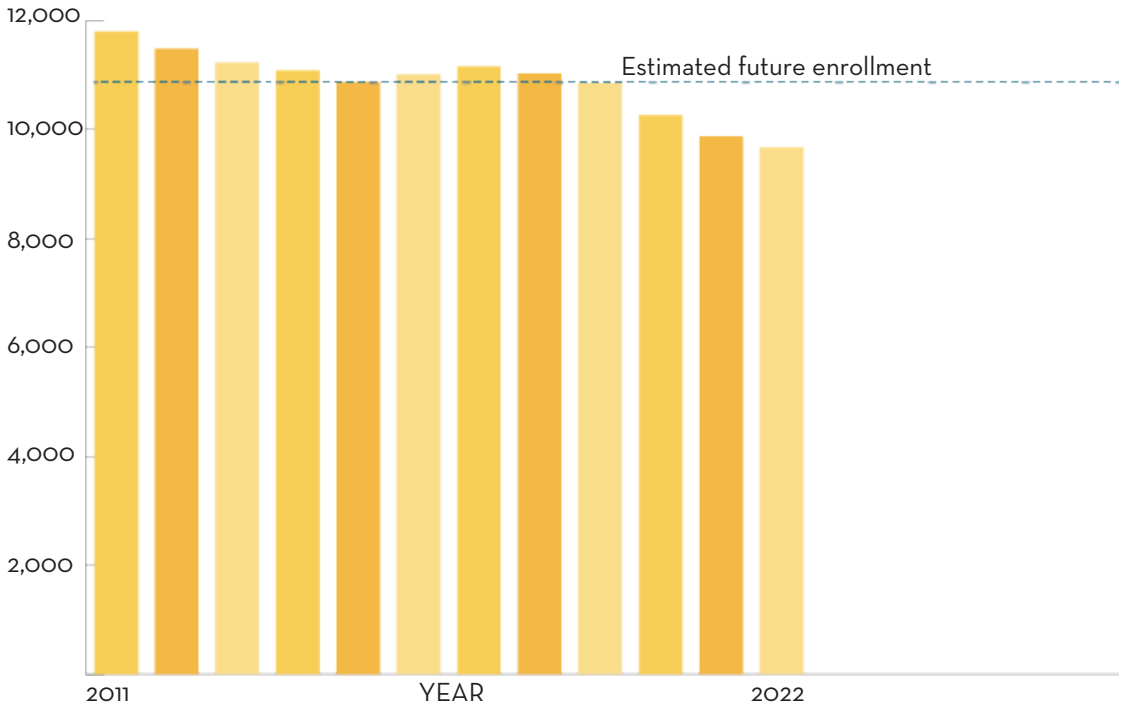
Almost 9,675 students were attending UMD during the fall semester of 2022, including UMD Medical School and Pharmacy students; with 35% living on campus, and 65% living off campus. The number of undergrad students was 8,810. The graduate student population was 865. Prior to the pandemic, the MPact 2025 undergraduate enrollment target for UMD was set at 9,100 total enrollment and future change on campus is linked to the MPact 2025 target population. Faculty and staff will be maintained with adjustments as per requirements for teaching and support services.

Student, faculty, and staff populations are projected to become more racially diverse, with an increase in new transfer enrollment from community and Tribal colleges.

The plan assumes the relative share of undergraduate and graduate students will remain the same. Faculty and staff population will reflect enrollment and supportive services. UMD campus demographics will evolve over time to reflect diversity in the state of Minnesota, within the entering student classes, as well as the transfer cohort of students.

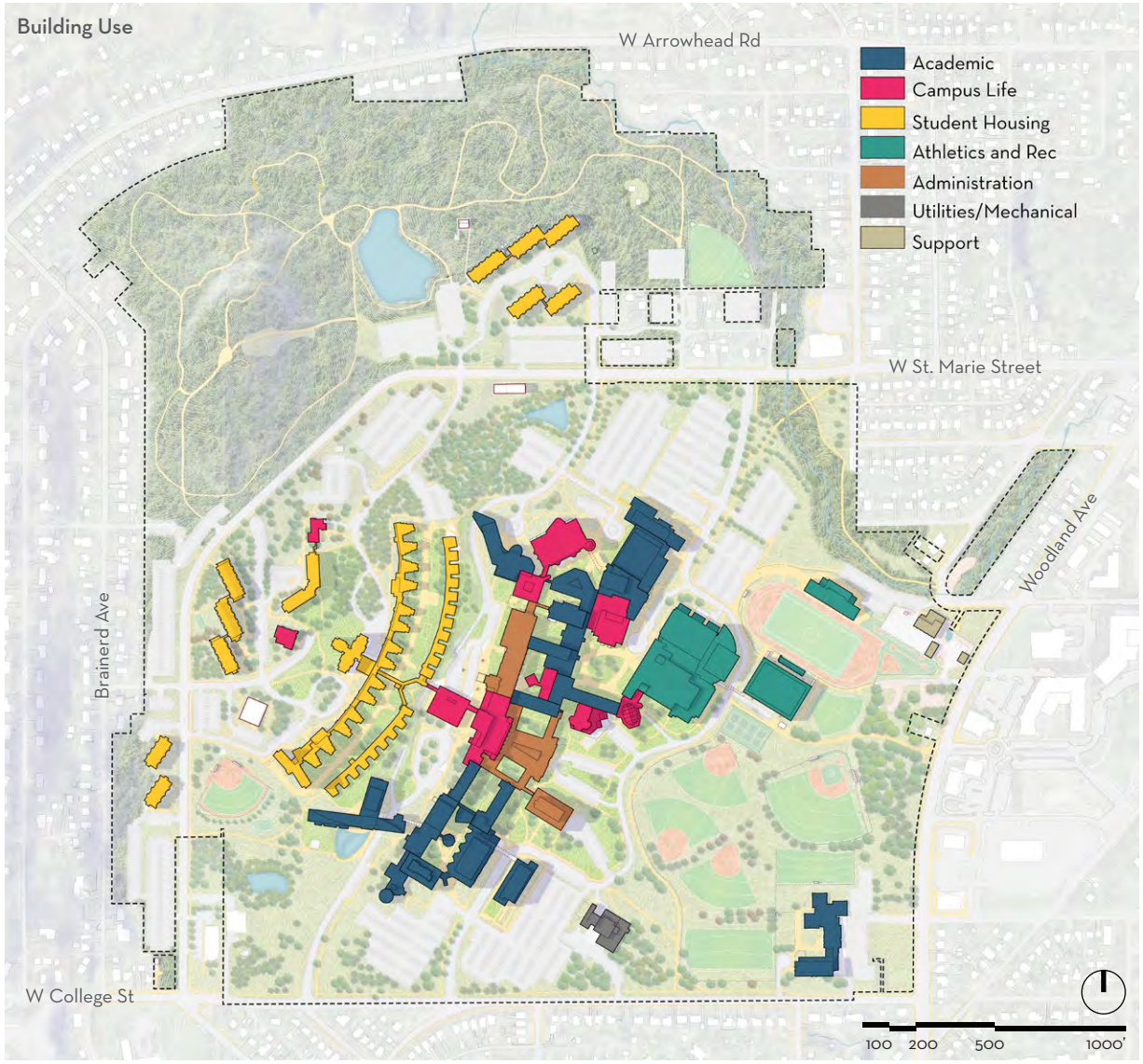
2,700 on campus residents

7,000 off campus residents

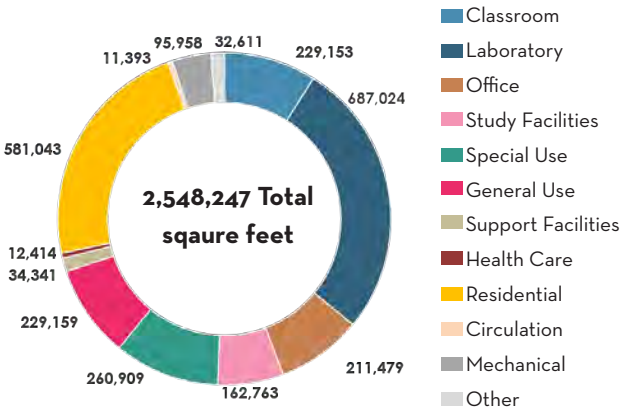


For planning purposes, future enrollment figures represent the mean enrollment from the past 12 fall semesters

Building Use and Condition

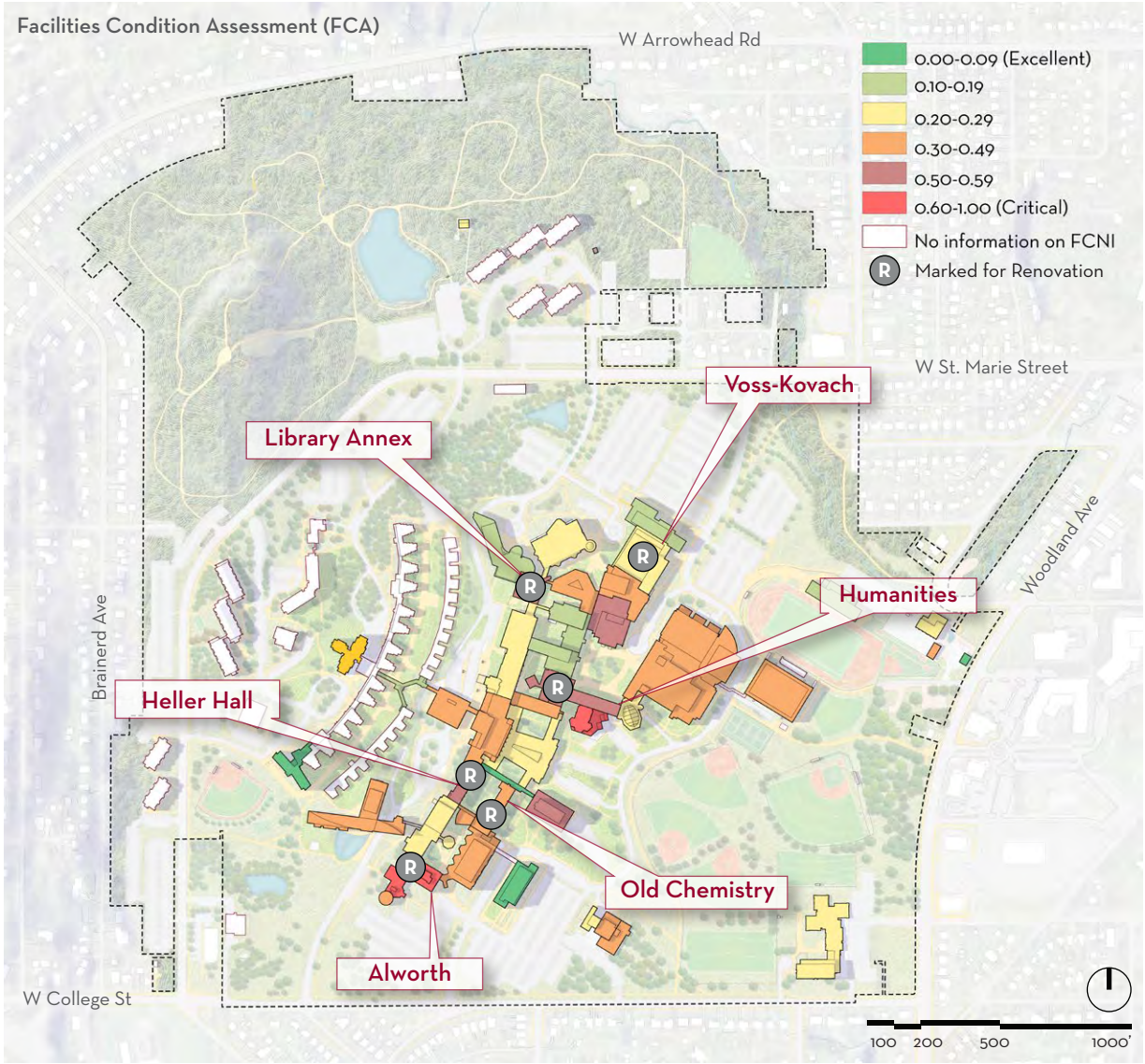


There are presently over 50 buildings on the UMD campus. The location and orientation of the buildings reflect the campus's topographic conditions as well as the climate of Duluth. Many of the buildings in the campus core, which primarily support academic, administrative, and student life functions, are connected by means of an interior corridor system. This reduces the amount of time students, staff, and faculty need to spend outside during the cold winter months. The residence halls, Residence Dining Center, and the Sports and Health Center are also accessible through indoor passageways. Building use distribution is striated, with residential and dining uses primarily concentrated north and west of the campus core and recreational programs concentrated to the south and east. Campus buildings are primarily oriented facing southeast towards Lake Superior; topographic changes on campus allow for views of the lake from certain vantage points. This orientation



is not optimized for solar gain; southern-facing buildings would allow for passive solar gain.

UMD building ages and conditions vary. Campus buildings were noted to be well-constructed, though the majority of buildings are over 30 years old. At the time of this study, a comprehensive facility conditions assessment (FCA) was ongoing. While data was available from a partial assessment in 2021, the most recent comprehensive FCA was completed in 2013. The partial 2021 data noted that AB Anderson Hall and MW Alworth Hall each had a facility conditions need index (FCNI) score over 0.8, indicating critical needs. AB Anderson Hall is currently undergoing comprehensive renovations. Additional buildings the University has identified for future renovations include Heller Hall, Chemistry, Library Annex, Humanities, and Voss-Kovach.



Above: Limnology Building (Source: UMD News Center, https://news.d.umn.edu/news-center/articles/limnology-building-preserved

Cultural Resources

The University of Minnesota is one of the largest owners of historic assets, referred to as cultural resources (cultural landscapes, historic districts, and buildings) in the State of Minnesota.

The University is guided by Board of Regents (BOR) Policy on Historic Preservation and Minnesota State Statute. BOR policy articulates the University's commitment to preserving its historic resources and states that the University will take reasonable measures to ensure such preservation. Minnesota statutes require the University to cooperate with the State Historic Preservation Office (SHPO) to preserve the state's historic resources.

The University of Minnesota Duluth has several buildings that are listed on the National Register of Historic Places (NRHP):

- Glensheen, a.k.a. Chester and Clara Congdon estate - 1905 to 1909
- Limnological Research Station, a.k.a. U.S. Fisheries Station- Duluth - 1880's
- Research Laboratory Building, a.k.a. Model School Building - 1926

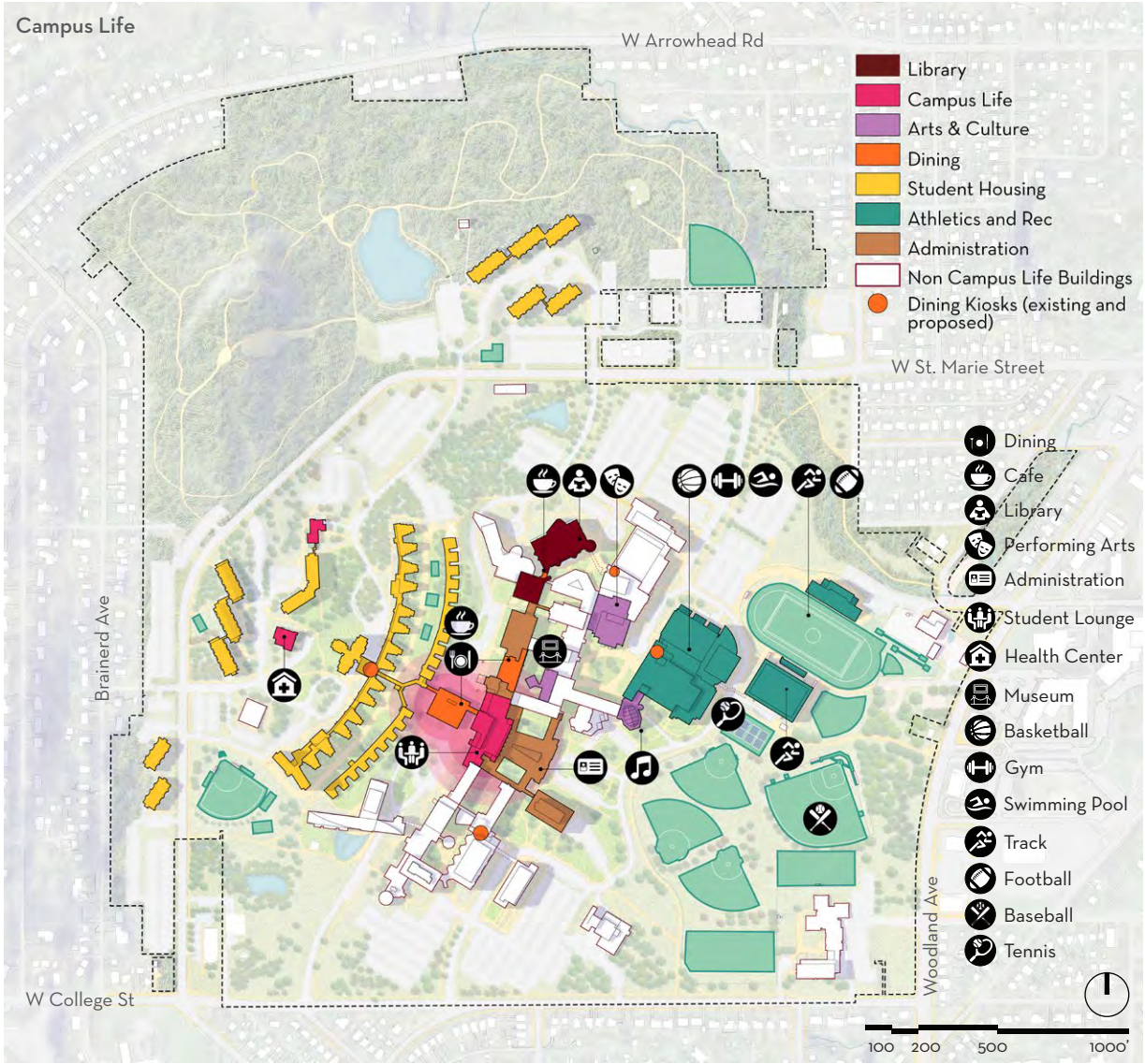
Left: Glensheen in 2015 (Source: https://www.minnpost.com/mnopedia/2017/01/duluth-s-glensheen-estate-one-best-preserved-mansions-its-kind-minnesota/

Campus Life Facilities

UMD has nine residence halls with over 3,000 beds total. Over 90% of first year students live on campus, but only 12-13% of upper division students do. Vermilion Hall and Burntside Hall, constructed in the 1950s, are the oldest residence halls on campus, and also have the lowest bed capacity. There are plans to demolish both Burntside and Vermilion, potentially replacing them with a new residence hall with 351 beds, assuming future enrollment stabilizes. The new residence hall will be located on the northern end of Griggs Hall. While most student housing is co-located on the west side of campus, 490 beds are located in the Oakland Apartments north of West St. Marie Street, abutting the Bagley Nature Area. The Junction Apartments, west of Junction Avenue, have 136 beds.

Multiple dining venues operate on campus. Superior Dining Hall, located on the second floor of the Residence Dining Center, has inadequate seating during peak meal periods and inefficient soiled dish return[1]. The main production kitchen which handles food production for Superior Dining and other food service locations on campus, has not been renovated since its construction in 1971. A campus dining feasibility study was completed in February 2023, which explores renovation alternatives for

1 UMD Campus Dining Master Plan, Oct. 2018, prepared by Envision Strategies



food services venues on campus. UMD has elected to renovate the main production kitchen and is presently in the pre-design phase.

Health and Wellness

Student health services are housed in the former Provost's residence, which is situated among student housing on the west side of campus. The Accreditation Association for Ambulatory Health Care (AAAHC) has cited clinic space as a significant issue to address. The facility is inadequate for the size of the student population, and will need to approximately double to meet existing demand.

UMD has a highly subscribed outdoor recreation and sports programs that engage students year-round. Recreational Sports Outdoor Programs (RSOP) and Applied Human Sciences share the Sports and Health Center facilities with varsity athletic teams. The building is difficult to navigate, and a lack of control points make the facilities challenging to manage. Fitness spaces are reported to be undersized to serve the current student population.

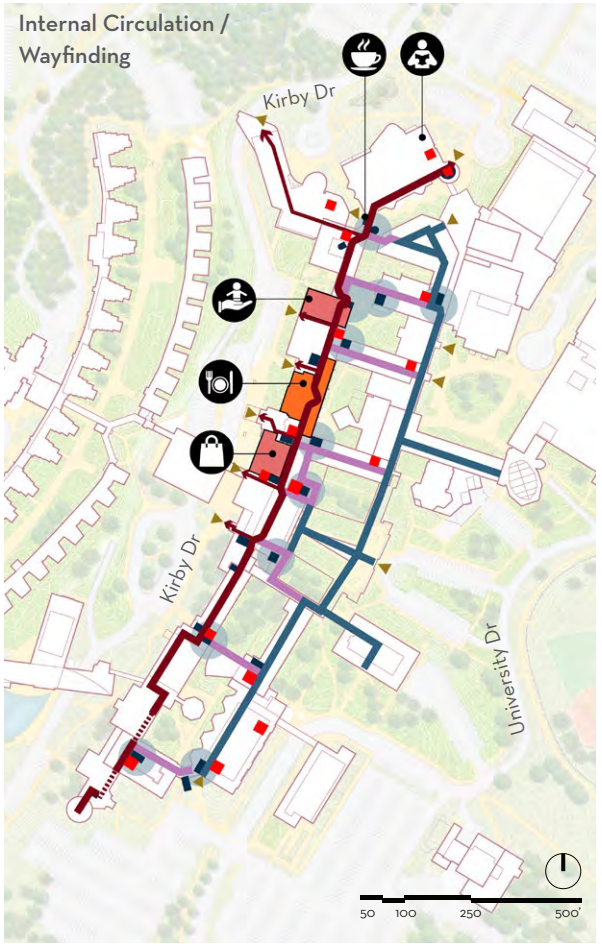
Existing spaces are repurposed to accommodate campus community requests where feasible. Improvements should reflect the diversity of students, faculty, and staff from art selection to wellness spaces.

Accessibility

One of the values of UMD is to create a welcoming and inclusive campus by making it more physically accessible. The accessibility of older buildings, particularly student housing, is a key concern for UMD. As new facilities are constructed and buildings are renovated, accessibility will be a primary goal. When major renovations occur, programming should consider a diversity of needs. The campus' commitment to providing equitable access to all future building, interior, and site design projects would allow for an improved experience by students, employees, and visitors.

Interior Circulation

The UMD campus is notable for its extensive interior system of connected corridors. The system features two major routes that offer consistent accessible connections north to south through the main complex of interconnected academic and administrative buildings. The red concourse is associated with Kirby Drive level of the campus and the blue concourse is roughly associated with the University Drive level of the campus. While at different elevations, these routes serve as the backbone of the interior circulation network and are connected by other interior corridors, stairways and elevators.

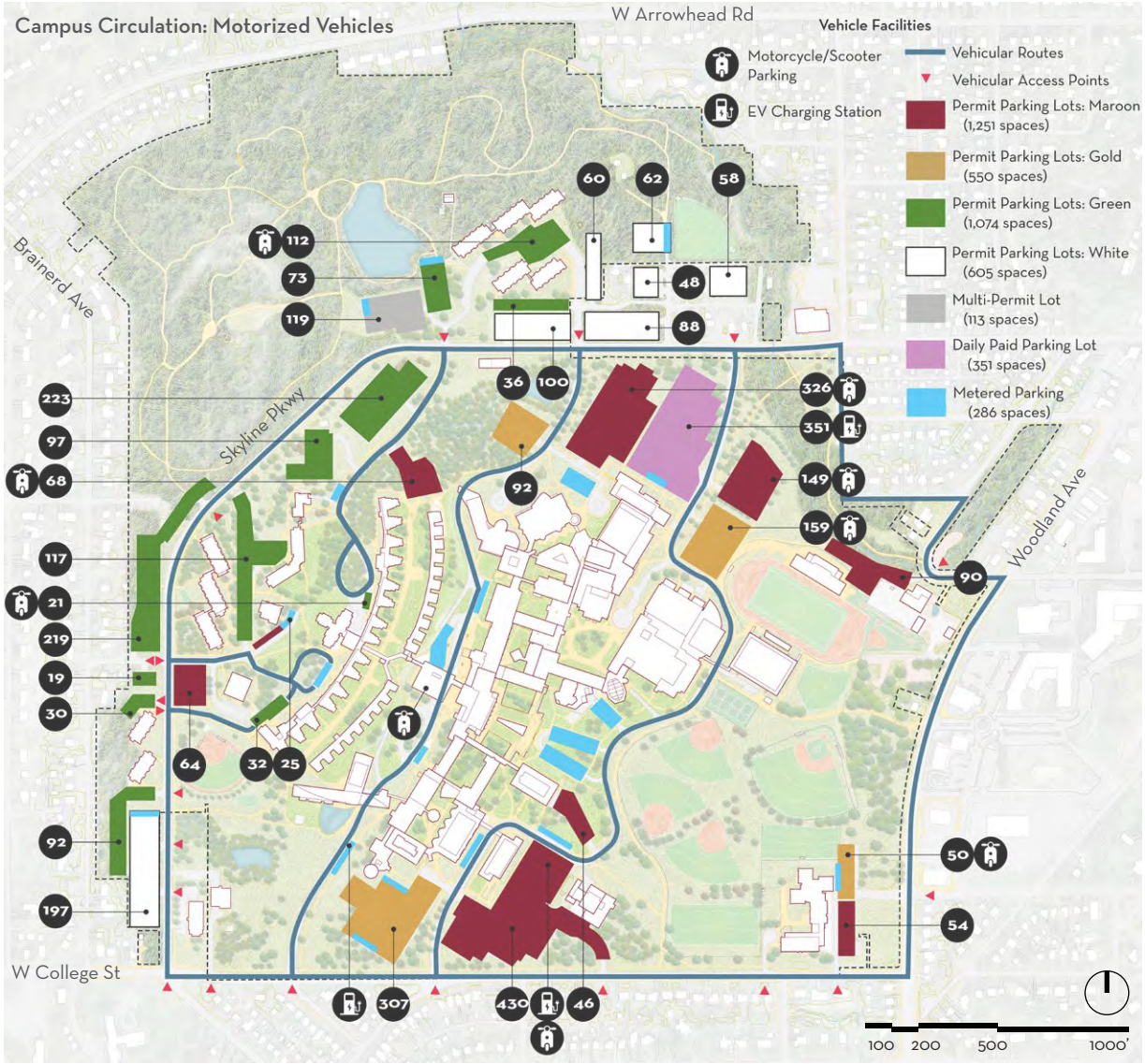


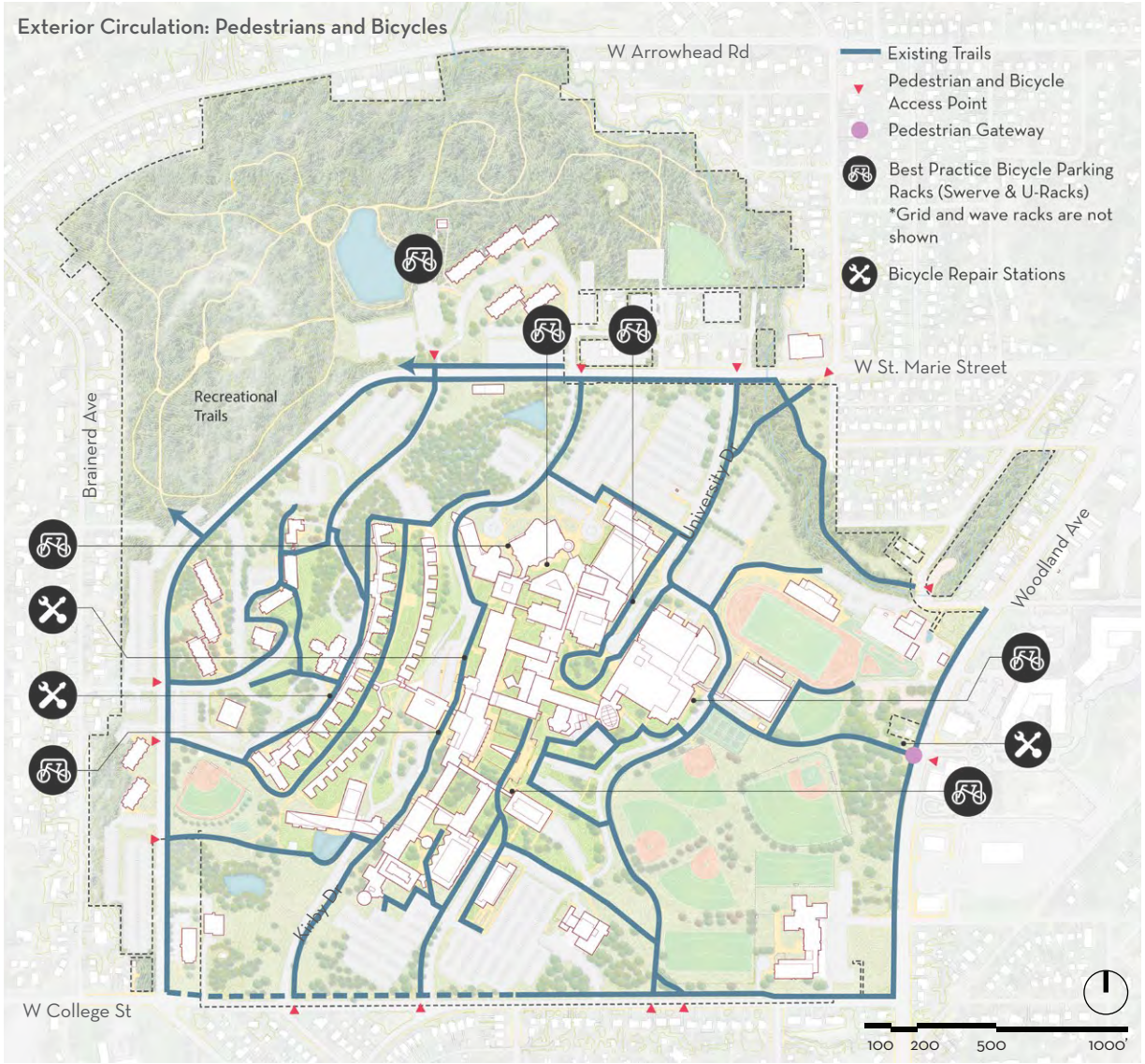
Mobility and Connectivity

Vehicular Circulation

Campus transportation and circulation systems on the UMD campus today are primarily designed around vehicles. Key vehicular routes through campus include north-south connections via University and Kirby Drives. Brainerd Avenue serves as the western edge of campus. West St. Marie Street bisects the northern part of campus from east to west separating Oakland Apartments and the Bagley Nature Area from the rest of the UMD campus. Gateway signage is visible at the intersections of University Drive with West College Street to the south and West St. Marie Street to the north. Besides these locations, there are minimal vehicular-scale gateway, wayfinding, or branding elements at entry points or edges, and existing signage is primarily directional.

Parking facilities are placed strategically to provide vehicular users with convenient and direct access to campus buildings and facilities. UMD has 4,370 total vehicular parking spaces on campus, of which 83% are permit parking, 15% are metered, and 2% are accessible spaces. Parking permits are color-coded by user type (such as residential, commuter or faculty/staff) and inform where each user may park. Seventy-five percent of parking permits are issued to students, of which 32% are residential on-campus permits. Parking utilization for all permitted surface lots in 2022 averaged 77%, and ranged from 90% (highest) to 62% (lowest). EV charging stations are available at two parking lots and at metered parking on Kirby Drive.





Pedestrian and Bike Circulation

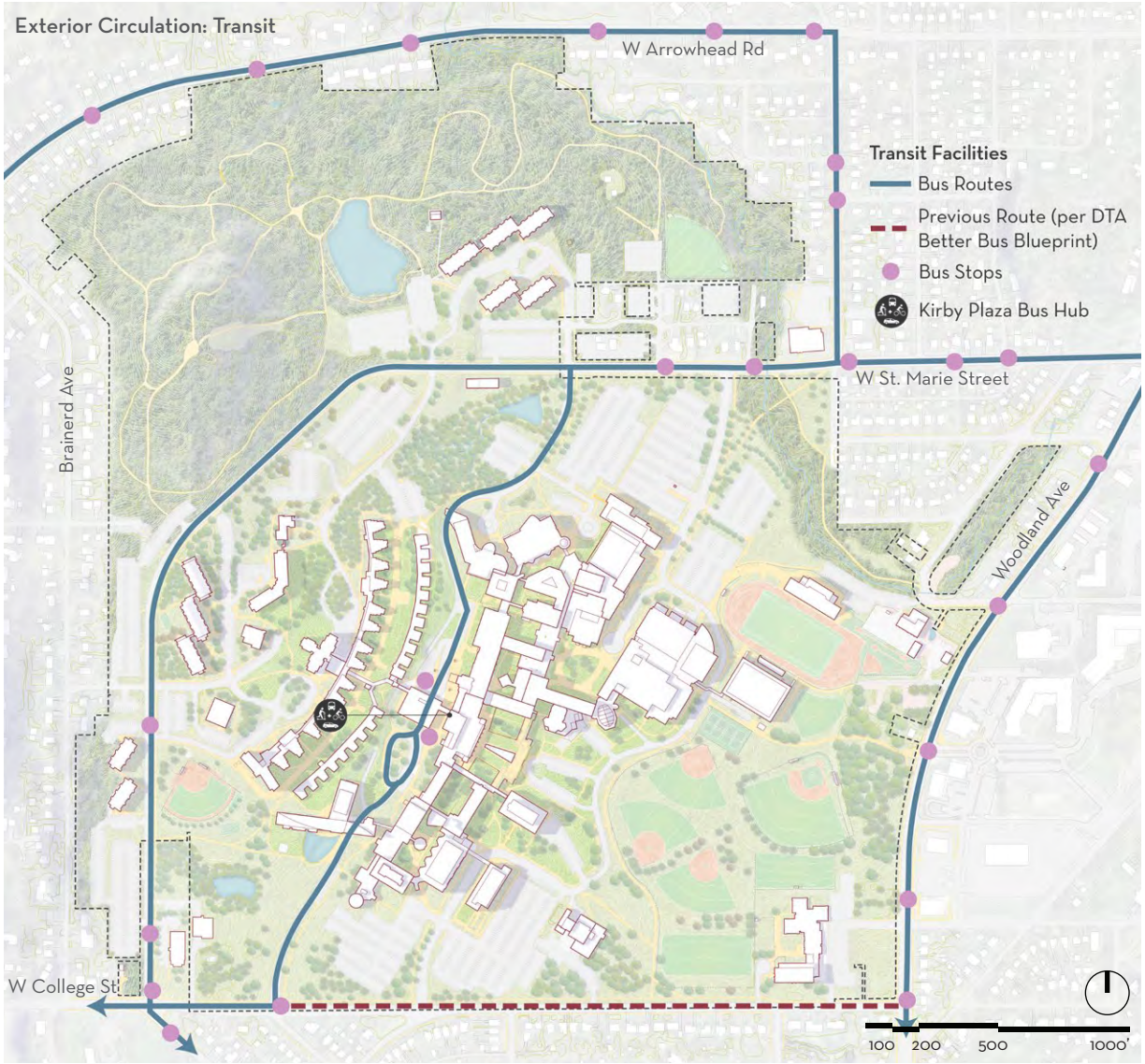
Exterior pedestrian pathways on campus are segmented. Kirby Drive is the only complete pedestrian route through campus. Minimal pedestrian crossing facilities or pedestrian access points to campus exist. One pedestrian-scale gateway at Woodland Avenue and Summit Street features landscape elements, lighting, and a pedestrian cross signal. The City of Duluth's plans for a campus connector trail will include a route through the UMD campus roughly following the existing alignment of University Drive, which will improve safety and fill gaps in the pedestrian network. Potential for additional pedestrian-realm improvements include more consistent pedestrian-scale lighting, seating, signage, and wayfinding.

There are no designated bike routes on or around campus. In addition to the lack of designated bike routes, campus topography and the cold climate may be impediments to those who otherwise might cycle to, from, and around campus. Unless it is their only transportation option, travelers are unlikely to choose active transportation that is not convenient, comfortable, and accessible. In interviews with the planning team, UMD staff confirmed that the weather and surrounding topography during most of the standard academic semester months presents a challenge for people desiring to walk or bike to and around campus.

Existing bicycle and micromobility amenities include a bike rental program, three bicycle repair stations, the ZAP bike-to-campus program, end-of-trip facilities (changing area, showers, and lockers) available by pass or membership, 43 bike racks (11 of which meet best-practice guidelines), and bike racks on all Duluth Transit Authority (DTA) buses. Best practice guidelines for bike parking racks recommend that racks are accessible, support upright bike position, provide two points of contact with the bike frame, and allow for locking of the frame and a minimum of one wheel. The UMD campus u-racks and swerve racks would be considered recommended racks, while the grid and wave racks would not. The UMD campus provides a total of 22 parking spaces at recommended racks and 244 parking spaces at non-recommended racks.

Transit

Local transit service to UMD is provided by Duluth Transit Authority (DTA). Jefferson Lines provides regional Intercity bus service. Buses service the campus core from Kirby Drive. The Kirby Plaza Bus Hub is the only bus stop in the campus interior, and is strategically located adjacent to the Kirby Student Center entrance. While most bus stops serving campus have signage only, the Kirby Plaza Bus Hub features lighting, seating, and shelter.

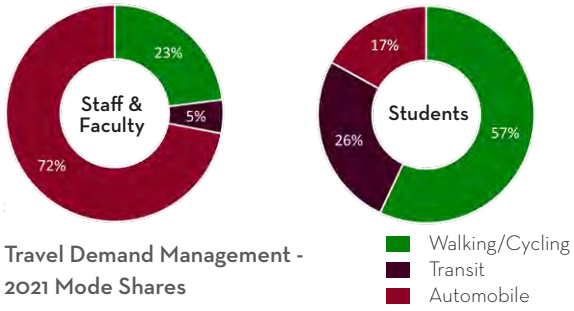


DTA amenities and services for students and UMD employees include free or discounted passes and tickets. The current DTA bus routes that provide access to campus include 6, 11, 11M, and 13, which circulate campus via Woodland Avenue, College Street, West St. Marie Street/Junction Avenue, Carver Avenue, and West Arrowhead Road. All routes access Kirby Plaza via Kirby Drive. DTA will be launching new routes throughout the service area in August of 2023. Per the Better Bus Blueprint, bus service will be removed along College Street from Woodland Avenue to Kirby Drive. The remaining roads will still be serviced by bus via routes 101, 104, 105, 106, and 112.

Modal Split

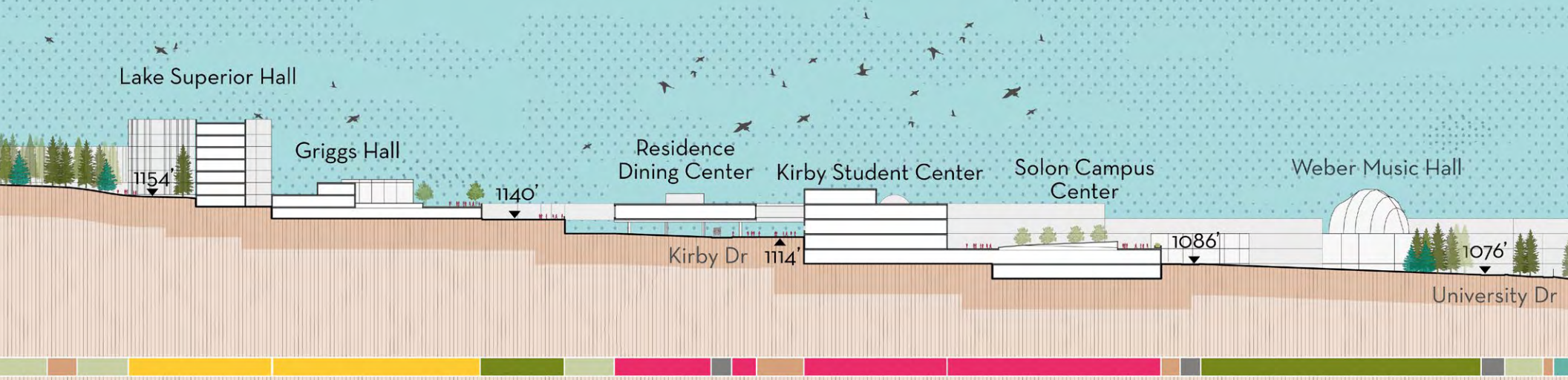
Commuting patterns impact land use on campus. Similar to the patterns seen on other UMN system campuses, there is a significant difference in how students get to and from campus compared to the faculty and staff. Estimates provided by the University for the 2021 Sustainability Indicator Management and Analysis Platform (SIMAP) report were informed by the total number of commuters, distribution of bus passes, and distance of residences to campus. The estimates suggest that 57% of the UMD student population were either walking or cycling to campus, 26% were taking public transit, and 17% were driving a personal vehicle. However, parking permits distributed to off-campus students suggest those commuting by automobile could be as high as 36%. In contrast, 72% of staff and faculty were driving, 23% were walking or cycling, and 5% were taking public transit. This creates demand both to support vehicle use for the trip to and from campus, and to expand and maintain sidewalks, lanes, and trails for pedestrians and cyclists.

The plan seeks to support how people prioritize moving around, as well as embrace sustainable modes of transportation to improve transportation efficiency, reduce greenhouse gas emissions and impervious surface parking area. Maintaining access and circulation for vehicles as transit and other vehicle types create a greater presence on campus is a necessary shift in campus culture, if these goals are to be met.



Travel Demand Management - 2021 Mode Shares

A cross section view of campus, looking north, indicates the extent of grade change that occurs from west to east (page left to right). Much of the topographic change on campus is currently navigated within the campus buildings themselves; the extensive network of connected buildings is a unique attribute of the UMD campus.



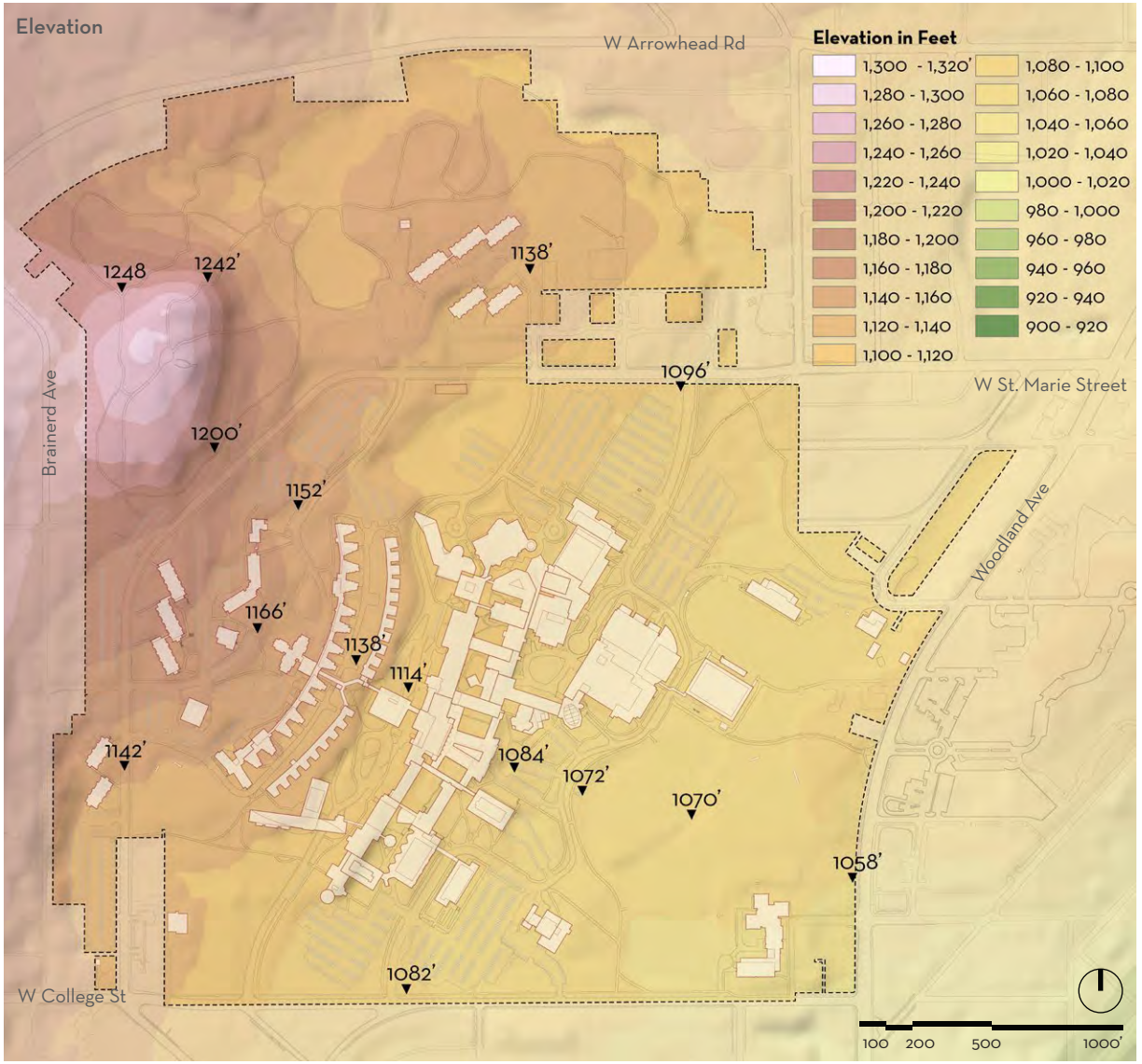
Housing
Campus Life
Transitional Greens
Open Spaces
Roads
Walkways
Athletics and Recreation Fields

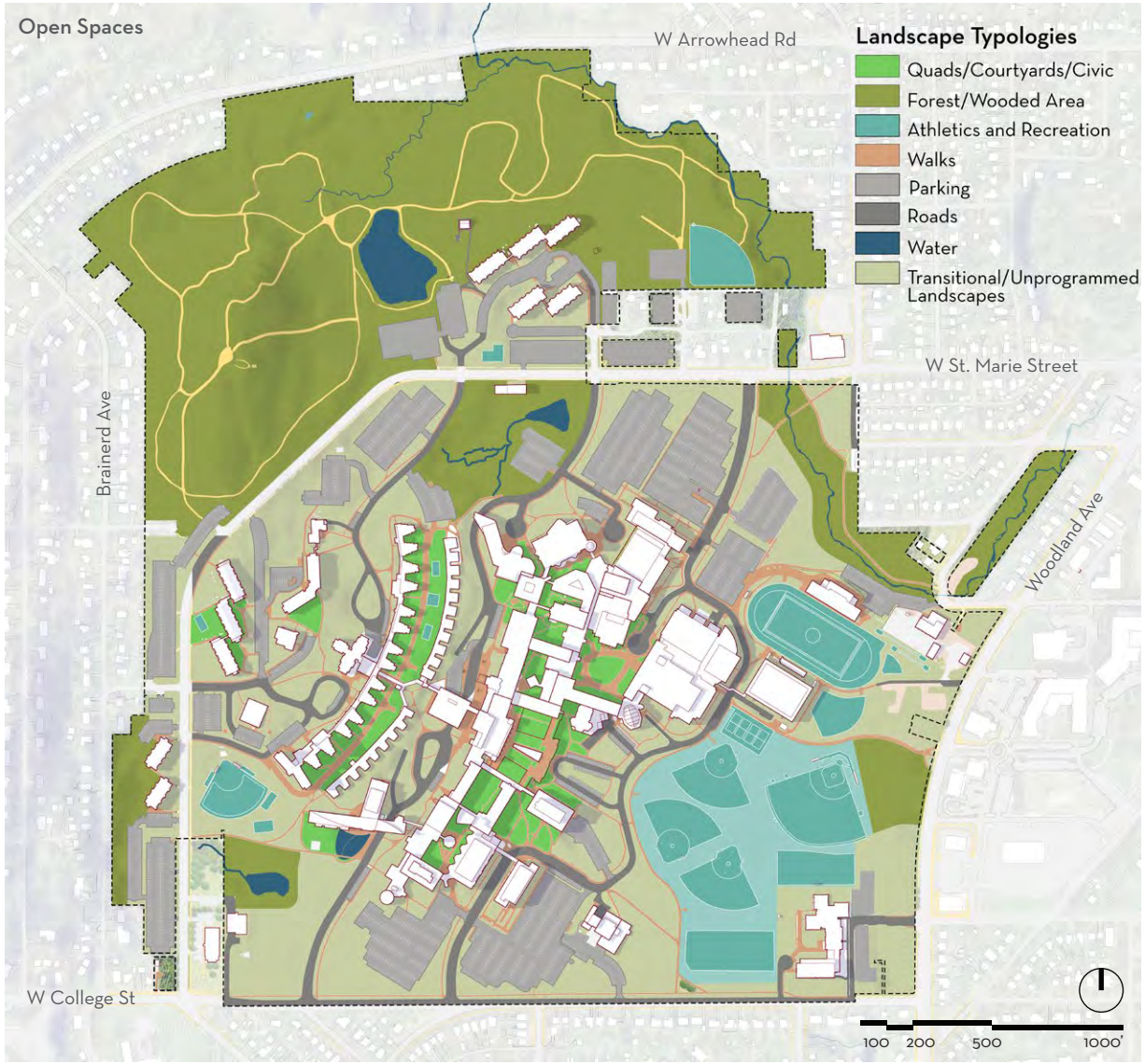

1068'
1068'
1058'
1042'
Woodland Ave

Topography and Open Space

Topography

The UMD campus is characterized by its dramatic topographic grade change from northwest to southeast. There is a nearly 200' grade change from the highest elevation on campus, located in Bagley Nature Area, to the lowest point by Woodland Avenue. There is a steep grade change between Residence Dining Center and Vermilion Hall due to a retaining wall. In many places on campus, grade change is negotiated with connected buildings; however, accessibility of outdoor spaces will remain an important consideration for future investments.





Open Space Resources

The Bagley Nature Area is a significant educational, research, and recreational resource for the campus community, and comprises nearly 25% of the UMD campus land area. While it is primarily wooded with a blend of young growth, secondary growth, and old growth forest, it also features Rock Pond, which drains into the Tischer Creek headwaters. Bagley contains a network of trails and a 1,400 square foot field station utilized as a classroom.

While the Bagley Nature Area is a prominent feature on the northern edge of campus, the campus core presently lacks a central, memorable open space. Approximately 50 acres of grounds are high-maintenance turf. Quads, courtyards, and other civic spaces are small and fragmented by campus buildings and surface parking. Outdoor recreation fields have limited seasonal use due to the long winter, and access is further restricted by perimeter fencing meant to prevent damage from foot traffic. This contributes to a perceived lack of accessible green space.

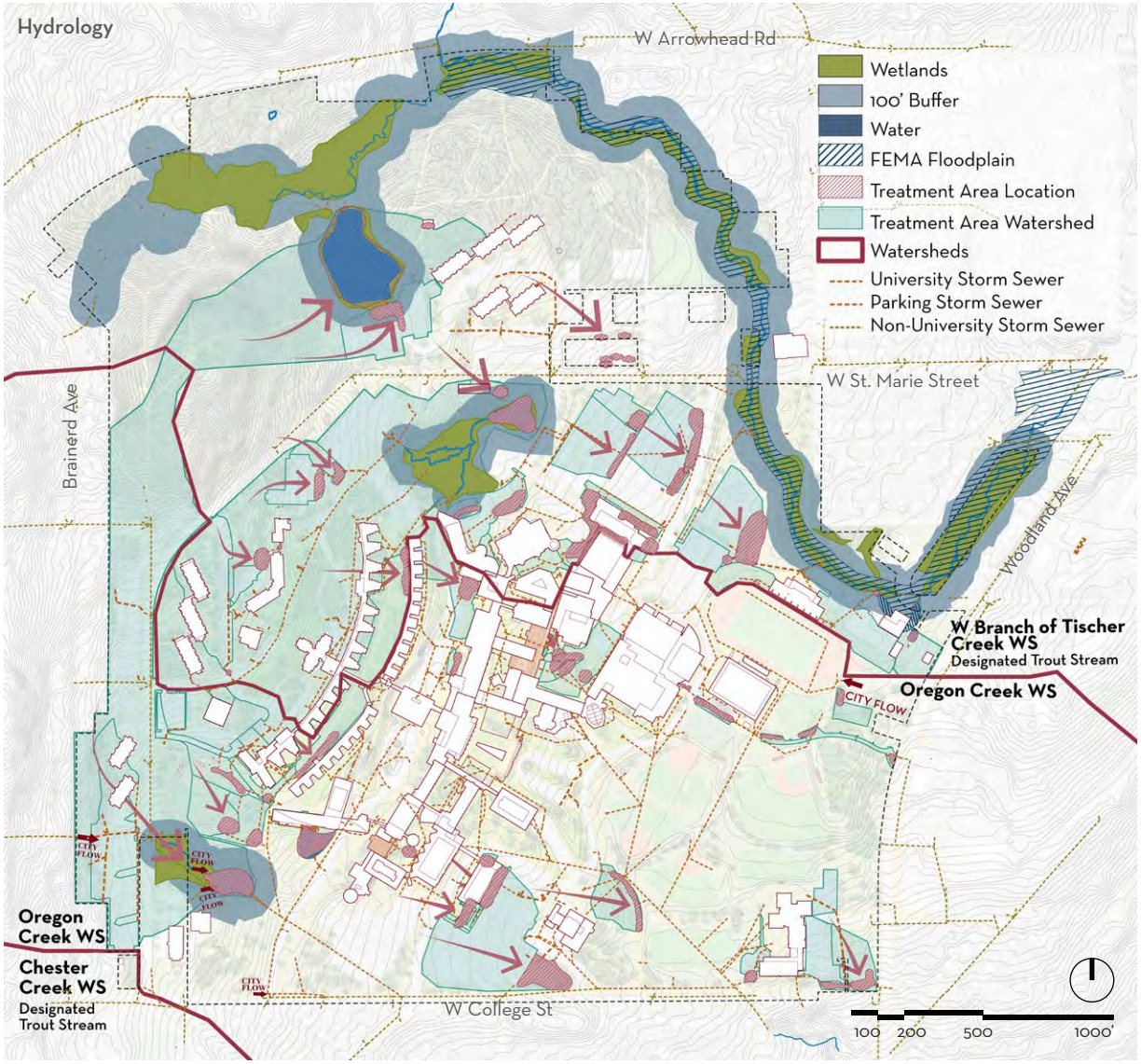
The 2013 campus plan recommended establishing a large green space east of the Solon Campus Center, to serve as the primary formal open space on campus, positioned to welcome visitors at this prominent entryway into the heart of campus. Today, this space is primarily dedicated to surface parking

serving UMD visitors. Almost 34% of the UMD campus is impervious surface (surface parking lots, roads, sidewalks, and building roofs). Surface parking is a highly visible feature along the campus edge and by major entry points. Reduction in surface parking lots would open up opportunities for reforestation, and provide a more welcoming 'green' entry experience to campus by allowing for the creation of new central open spaces for the campus community.

Landcover by Area

TYPE	ACRES	PERCENT %
BUILDINGS	27.32	10.60%
ROADS	16.60	6.40%
PARKING LOTS	29.87	11.60%
WALKWAYS	13.63	5.30%
TOTAL IMPERVIOUS	87.42	33.90%
SPORTS FIELDS	15.93	6.20%
OPEN SPACES	151.19	58.80%
TRAILS	2.76	1.10%

Hydrology



The majority of the UMD campus is situated in two watersheds– the Oregon Creek watershed and the West Branch of Tischer Creek watershed. A small area in the southwest corner of campus lies within the Chester Creek watershed. Chester and Tischer Creek are both designated trout streams, and EPA designated impaired waters.

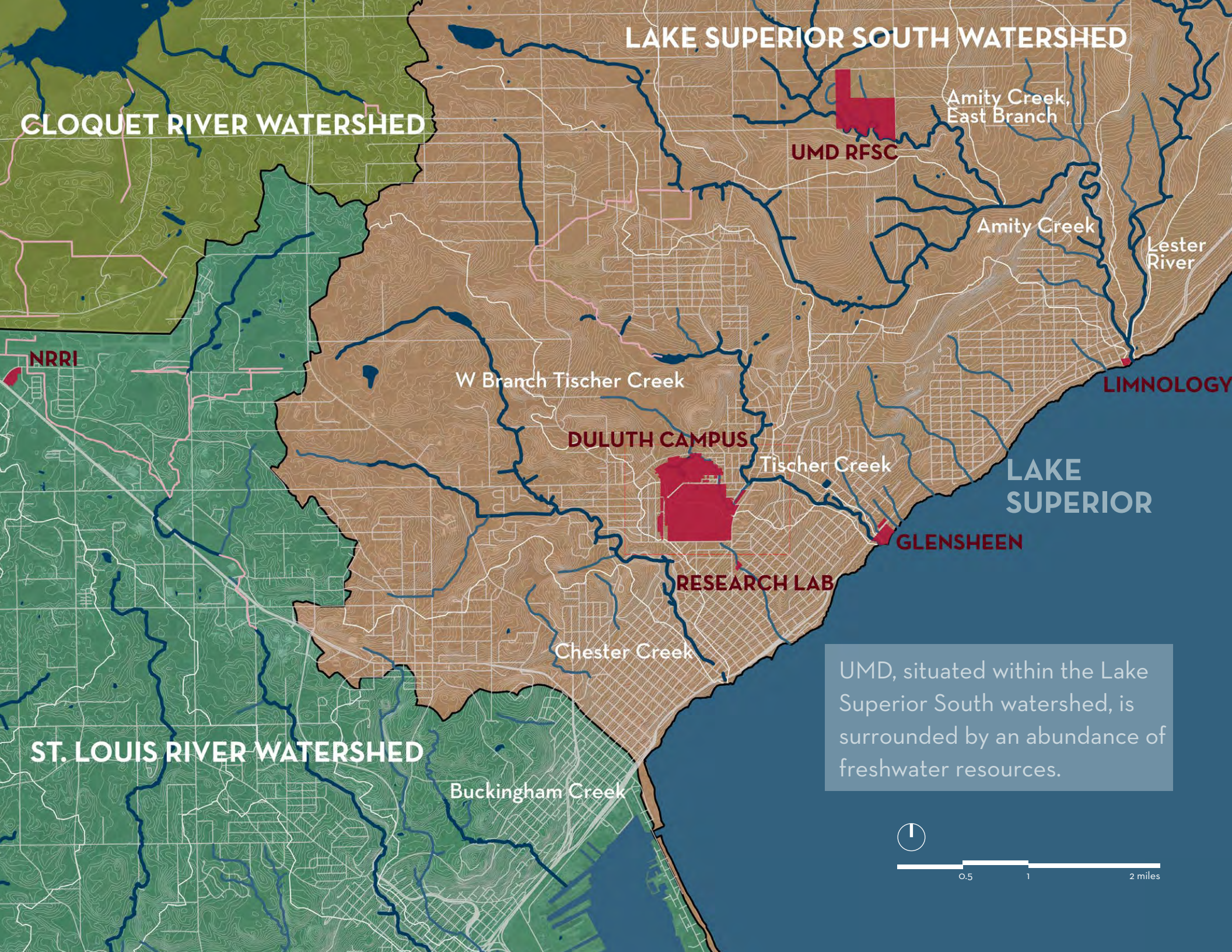
Stormwater from UMD campus drains into multiple University and City of Duluth stormwater sewer systems which then empty into these local streams and ultimately Lake Superior, an EPA designated restricted waters, making it critically important to treat stormwater. There are presently about 60 stormwater features on campus, such as sump structures, rain gardens, sand filters, underground tanks, and permeable pavement areas. As a MPCA permitted MS4, UMD is required to inspect these stormwater treatment facilities every year and maintain them as necessary.

There is presently no information available on the existing capacity of the storm sewer systems versus the projected capacity needed to meet future rainfall projections under climate change, however, the City of Duluth currently has downstream flooding issues implying that the streams are “at capacity” during larger rain events. MS4 requirements, downstream flooding, trout streams, and impaired and restricted waters make stormwater treatment and rate control on campus an important design component for future

development and/or redevelopment. Additional stormwater information can be found on UMD's Stormwater Pollution Prevention Program website at https://fm.d.umn.edu/stormwater-pollution-prevention-program-swppp

Long lines of interconnected building foundations perpendicular to the general flow of groundwater tend to act as underground dams potentially creating basement moisture issues on the northwesterly side of the buildings. Future development should take this phenomenon into consideration when designing drain tile systems.

Left Above: HCAMS outdoor landscape
Left Below: Swenson Civil Engineering stormwater management


LAKE SUPERIOR SOUTH WATERSHED
CLOQUET RIVER WATERSHED
Amity Creek, East Branch
UMD RFSC
Amity Creek
Lester River
NRRI
W Branch Tischer Creek
LIMNOLOGY
DULUTH CAMPUS
Tischer Creek
LAKE SUPERIOR
GLENSHEEN
RESEARCH LAB
Chester Creek
ST. LOUIS RIVER WATERSHED
Buckingham Creek
UMD, situated within the Lake Superior South watershed, is surrounded by an abundance of freshwater resources.
0.5
1
2 miles

Emissions and Climate Projections

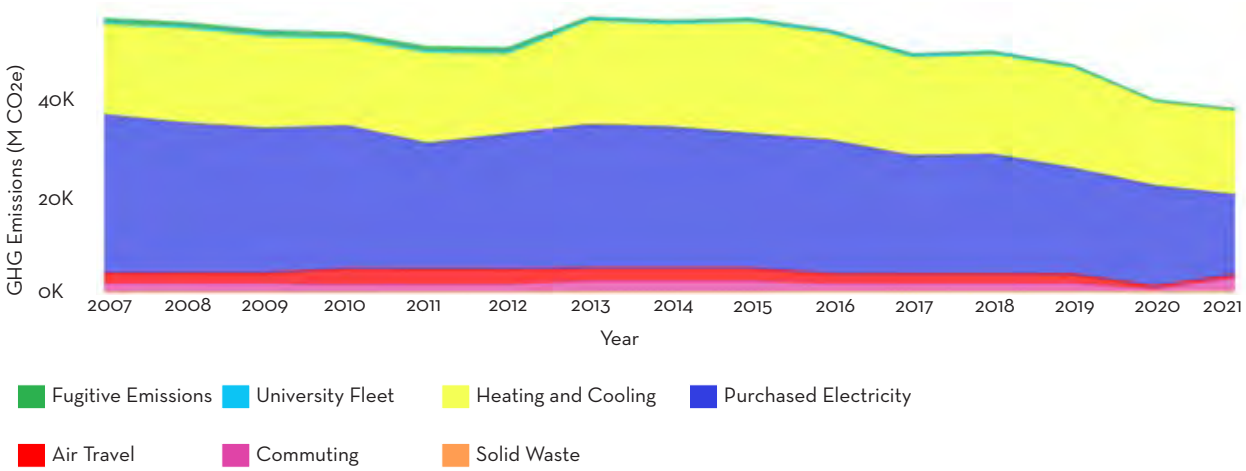
Shifts in climate have already occurred in Minnesota and globally. Many climate impacts are expected to worsen. Extreme events, like flooding, drought, and heat waves, will likely become more frequent and more intense with climate change in the future. Duluth is projected to have a slight increase in daily average temperature and high heat days due to climate change. Days with heavy rainfall (exceeding 4" of rain) are also projected to increase.

UMD currently tracks its greenhouse gas emissions from heating and cooling, the University's fleet, fugitive emissions (refrigerants and fertilizers), commuting, University-sponsored air travel, and solid waste. UMD's total emissions can be split into the following categories or "scopes":

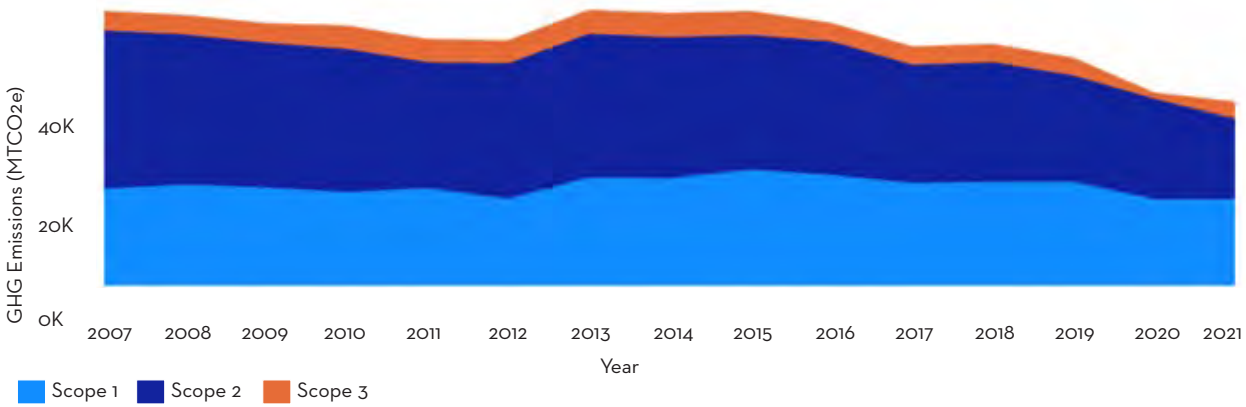
- 47% of emissions are Scope 1 or direct emissions from burning natural gas and fuel oil for heating and cooling, internal combustion fleet vehicles, and other fugitive emissions
- 44% of emissions are from Scope 2 or indirect emissions from purchased electricity
- 9% of emissions are from Scope 3 or other indirect emissions, like commuting and waste

While UMD successfully reduced emissions by 29% in 2020 over its 2007 baseline, further action will be required to meet system-wide climate commitments.

Emissions Timeline



Emissions by Scope



Planning Vision: The Big Ideas 4

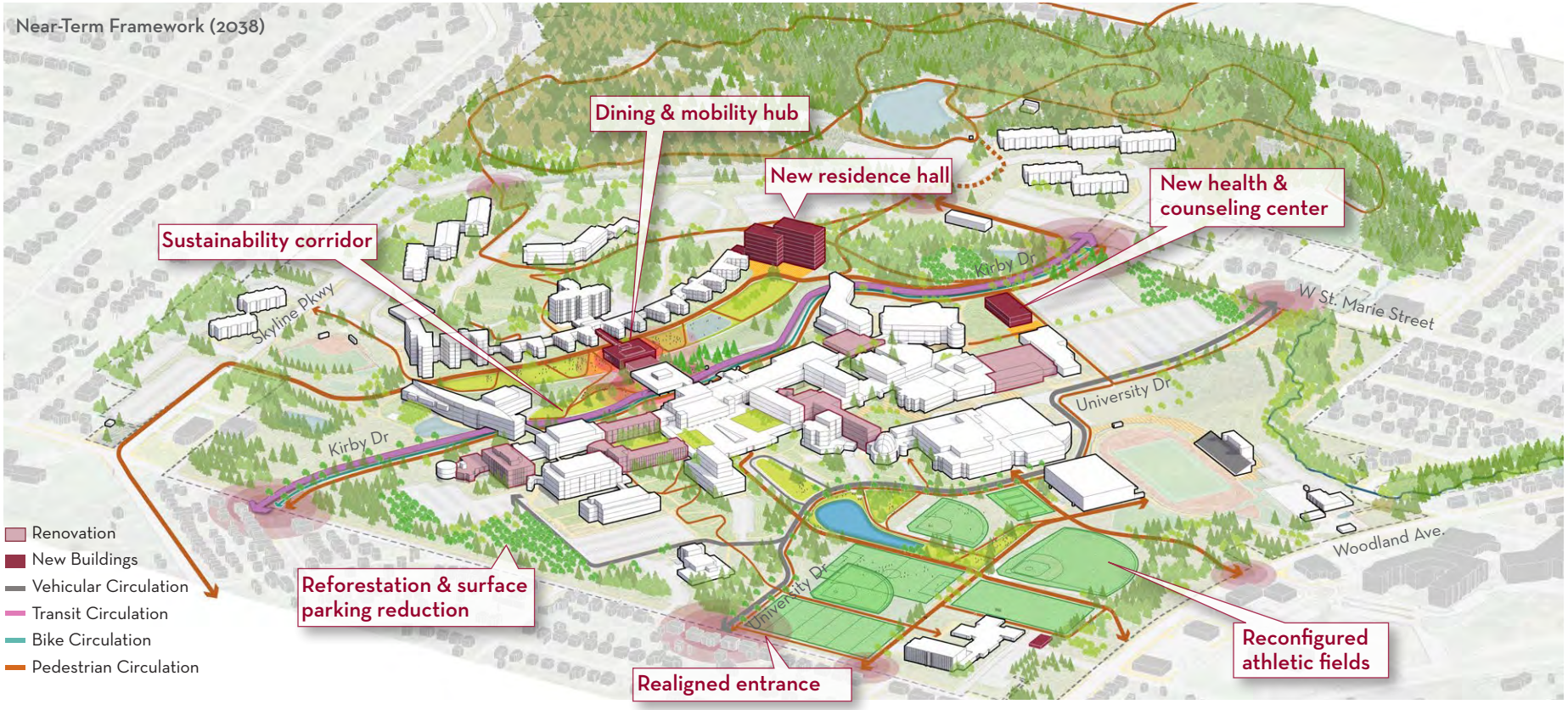
Near-Term Framework

In the case of the Duluth campus and its unique features and conditions, the 'Big Ideas' of the Campus Plan grew out of the analysis of conditions and feedback received from a range of stakeholders. The alignment of the Strategic Plan commitments to this framework unites a view of how the campus could change and has influenced key recommendations contained in the plan.

The UMD Campus Plan describes a future that strengthens the distinctive and unique physical attributes of the campus in service of UMD's vision and mission while providing opportunities for implementation of campus decarbonization and resilience strategies detailed in the Climate Action Plan. To summarize this, the following four "Big Ideas" represent the potential physical transformation of campus.

The Big Ideas contribute to an overarching vision to reimagine the campus as a model of sustainability and carbon neutrality taking into account the existing conditions of the campus and opportunities for future development.

Right: Plan view of the Sustainability Corridor big idea, and the campus as a green connection between Hartley Park and Chester Park




HARTLEY PARK
HUNTERS PARK
CONGDON PARK
BAGLEY NATURE AREA
KENWOOD
RETAIL & AMENITIES
THE COLLEGE OF ST. SCHOLASTICA
The College of St. Scholastica - Health Science Center
UMD Duluth - Main Campus
ENDION
CHESTER PARK
SUSTAINABILITY CORRIDOR
UMD Research Laboratory Building
CHESTER PARK

Big Ideas

Big Idea 1: Sustainability Corridor

Big Idea 2: Recreation Park

Big Idea 3: Greening the Campus Edge

Big Idea 4: Reinvest in the Campus Core


UMD
DINNING CENER

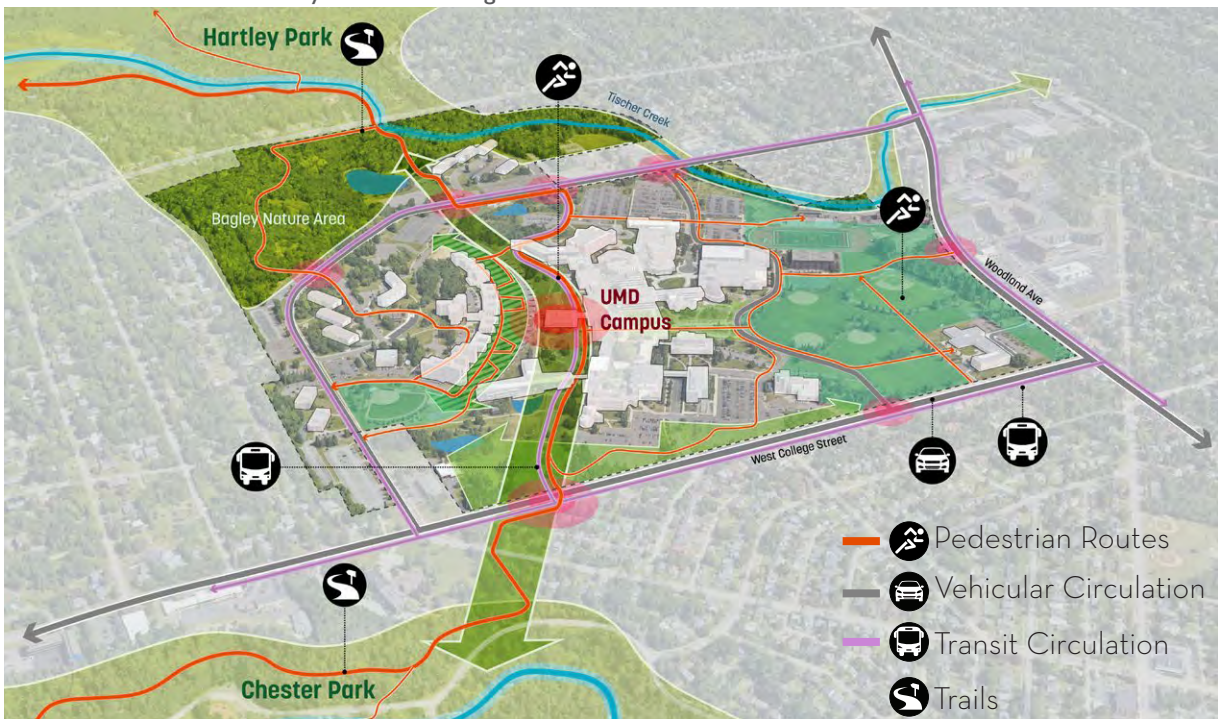
View of the upper landscape on the Sustainability Corridor

Big Idea 1: Sustainability Corridor

A new green corridor through the heart of campus will serve as gathering space for the UMD community, and will provide enhanced connections on the north and south boundary of campus to adjacent city neighborhoods and parks. The Sustainability Corridor will improve the entry experience into campus and strengthen pedestrian, cycling, and transit use enhanced by a new mobility hub and dining expansion along Kirby Drive. A gathering space for students to observe cultural traditions will be identified and developed with indigenous members of the campus community. New open spaces along the Sustainability Corridor will provide recreation opportunities in the heart of a renewed student housing neighborhood, while simultaneously serving as sites for potential infrastructure instrumental to UMD's decarbonization goals, such as geothermal technologies.[1] University Drive will serve as the primary vehicular through-street and gateway to campus, alleviating automobile traffic along Kirby Drive.

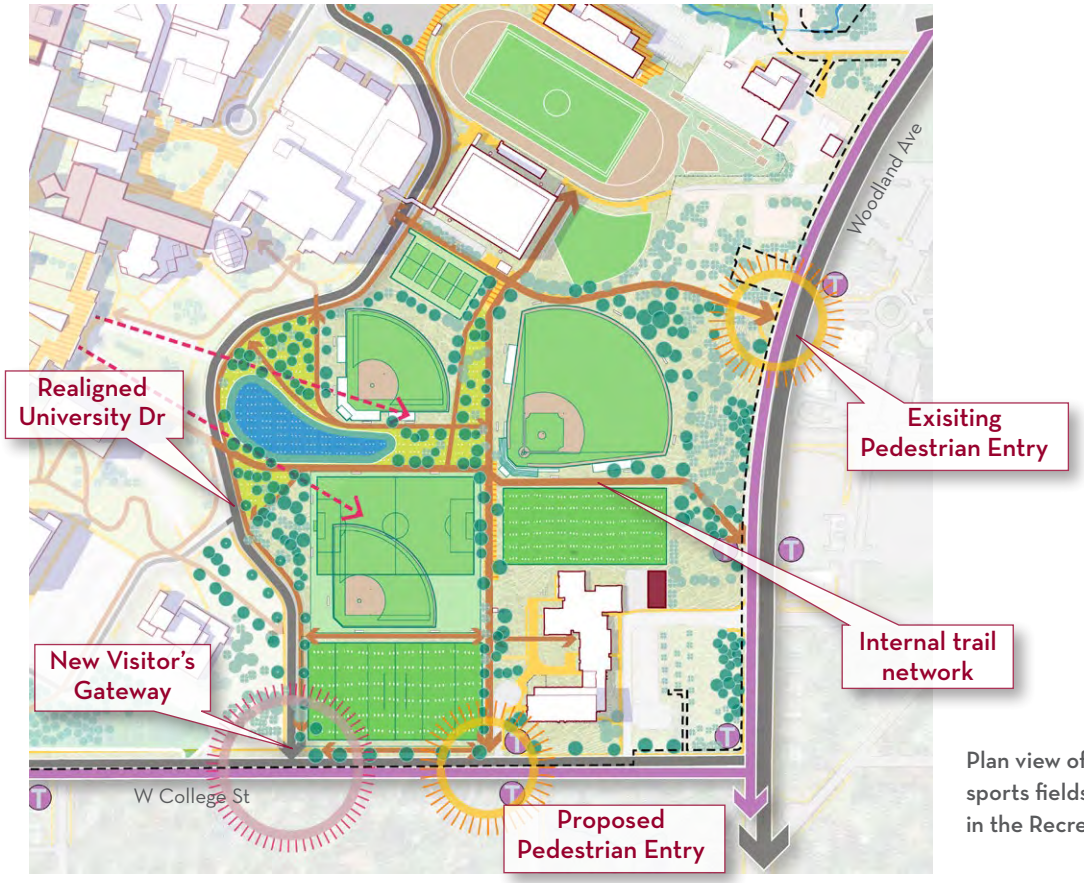
1 More information on low-temperature geothermal technology ("geothermal") can be found on page 76.

Aerial view of the Sustainability Corridor as a big idea



Big Idea 2: Recreation Park

The strategic renovation and reorientation of athletic and recreation fields will allow for a greater range of use while enhancing the eastern edge of campus with naturalized areas and pedestrian circulation. In addition to the ecological benefits that newly naturalized areas will provide, the Recreation Park will feature a stormwater pond, improving UMD's ability to manage runoff with a feature that provides habitat and visual interest to this central campus space. Besides supporting both active recreation and passive landscapes, the Recreation Park could be another site for new infrastructure to support the decarbonization of campus energy systems.



Plan view of the proposed sports fields and walkways in the Recreation Park

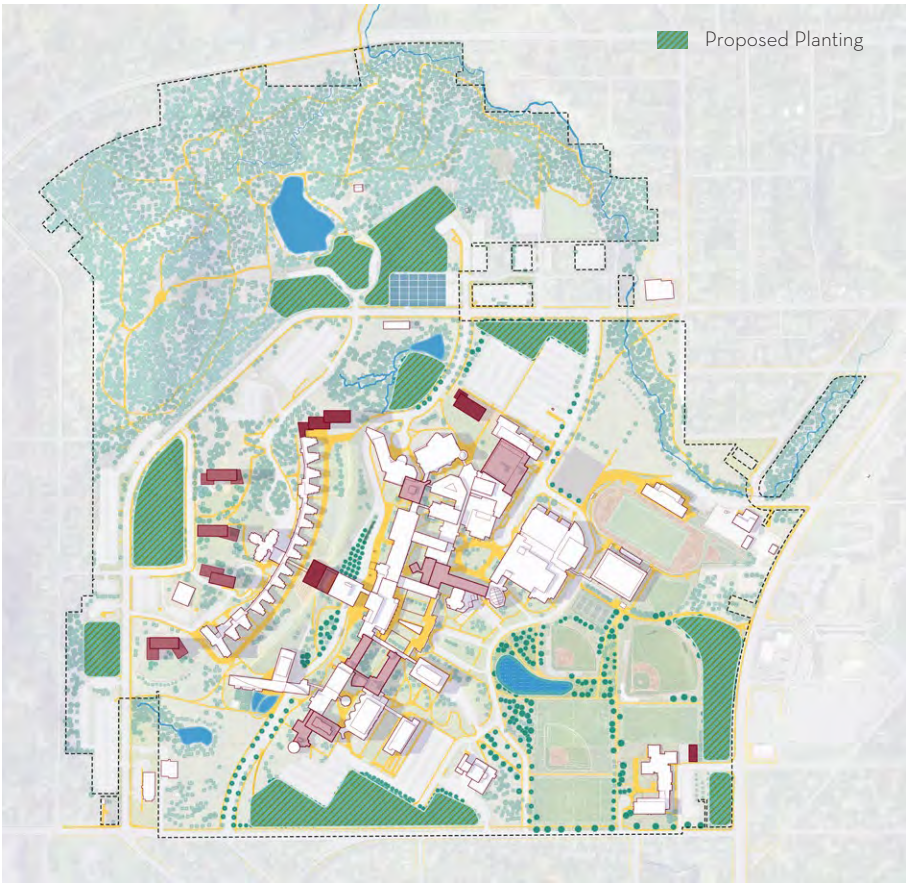
View of the Recreation Park, looking towards the campus


UMD
DULUTH
UMD
DULUTH
KIRBY
STUDENT CENTER
UNIVERSITY DR
UMD
UNIVERSITY OF MINNES

View of the proposed Visitor's Gateway, on W College St

Big Idea 3: Greening the Campus Edge

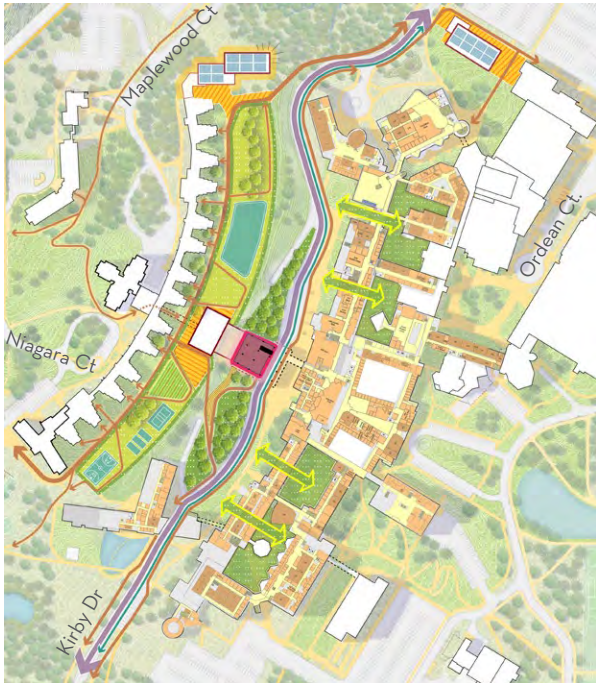
The eventual relocation and reconstruction of campus housing from the north side to the west side of campus, with the potential reduction in parking demand, will allow some existing impervious surfaces (parking lots) close to Bagley Nature Area and along the northern and southern edges of the core campus, to be returned to a more planted state. Some of the surface parking areas may be converted to a parking structure if future parking demand necessitates. Reduced impervious surface will enhance the experience of travel on foot and by bike, reduce need for snow storage and removal during Duluth's snowy winters, as well as reduce urban heat island effects.



Plan showing the proposed planting on the edges of the campus

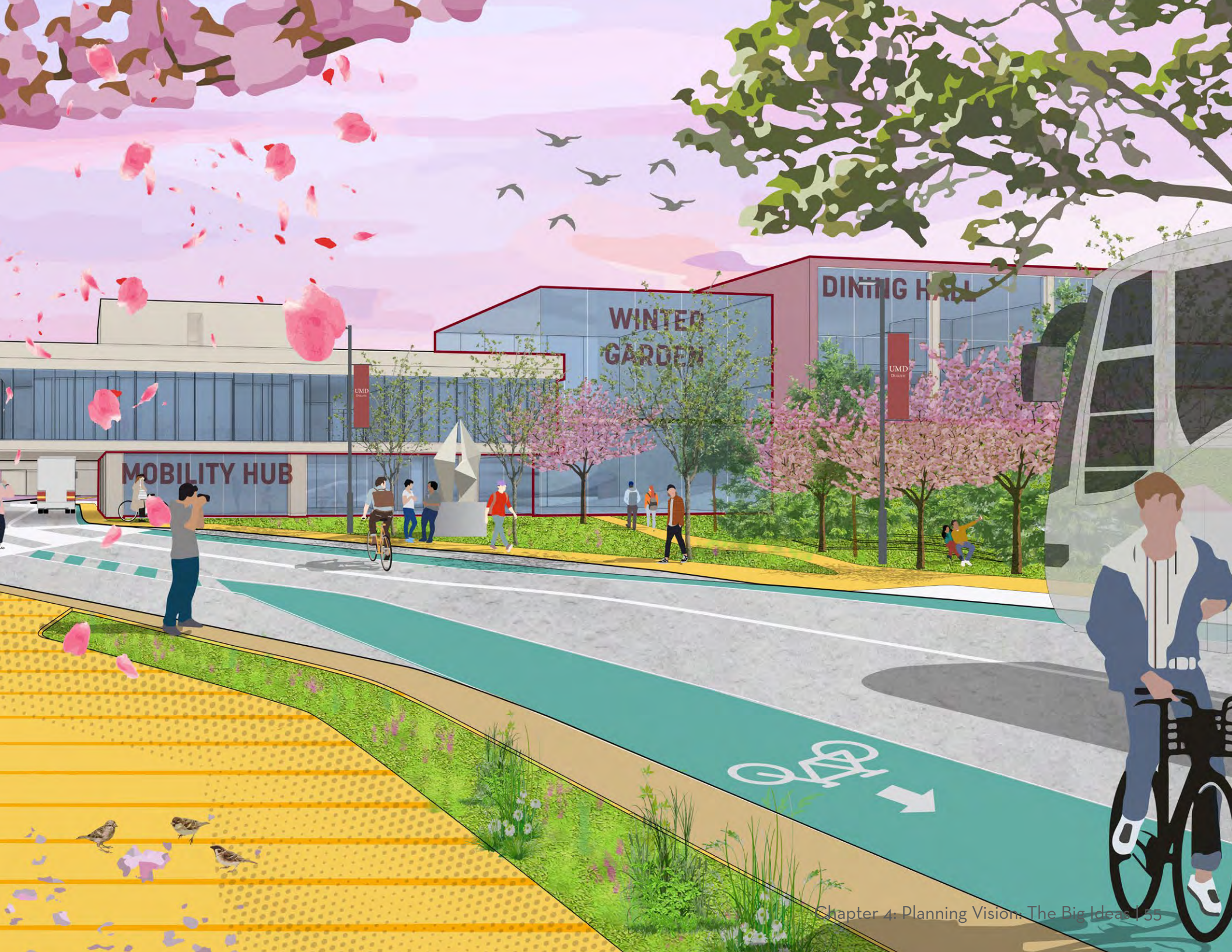
Big Idea 4: Reinvest in the Campus Core

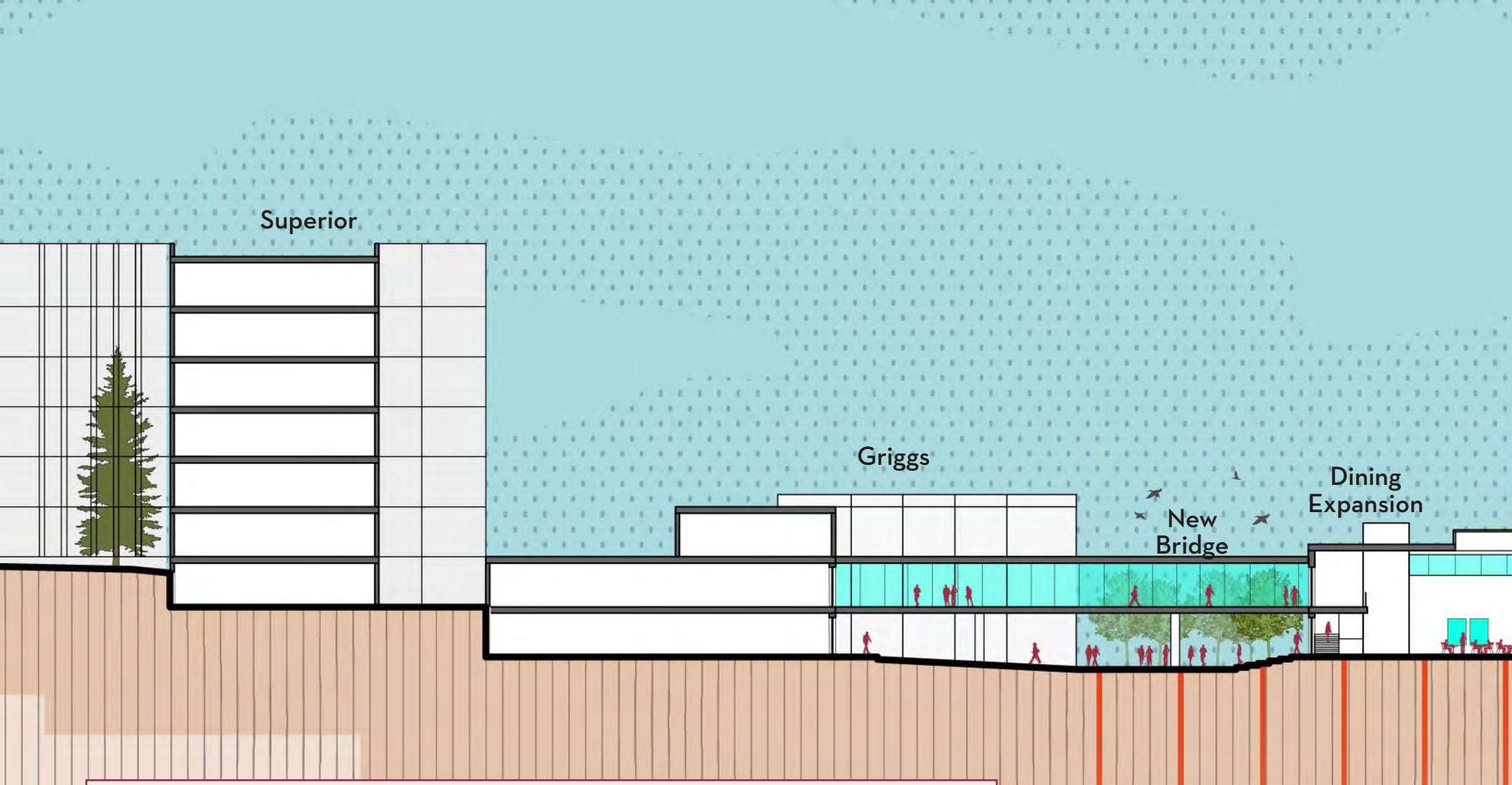
Selective renovation of primary academic buildings in the connected campus supports teaching, learning and outreach mission and will reduce emissions associated with energy use. Renovation of the Main Production Kitchen and future dining expansion with creation of a Mobility Hub in the Sustainability Corridor will reinforce existing patterns of student and academic life. The conversion of Vermilion and Burntside to a lively, intensively-used recreation space in the heart of the campus' residential neighborhood is another aspect of this investment in the core. Progressive attention to opening up some key spaces within the connected buildings to allow views and access to courtyards is another recommendation associated with reinvesting in the campus core. These spatial connections through existing buildings will offer physical and visual connectivity between the Sustainability Corridor and internal courtyards of existing academic and administrative buildings. The connections also offer the opportunity to create internal "winter gardens," spaces featuring plants and natural materials, notionally carrying the exterior landscape through the buildings.



Right: A plan view of the upper and lower levels of the Sustainability Corridor with landscape and visual connections to the buildings in the campus core

View of the Sustainability Corridor, along Kirby Drive


WINTER GARDEN
MOBILITY HUB
UMD
UMD



A conceptual section view of the reconfigured campus core illustrates proposed changes to dining and transit on campus, including the expansion of existing dining facilities, the addition of an interior winter garden, and an enclosed mobility hub. Future excavation at the campus core also provides opportunities for integration of geothermal technology to support campus decarbonization goals.

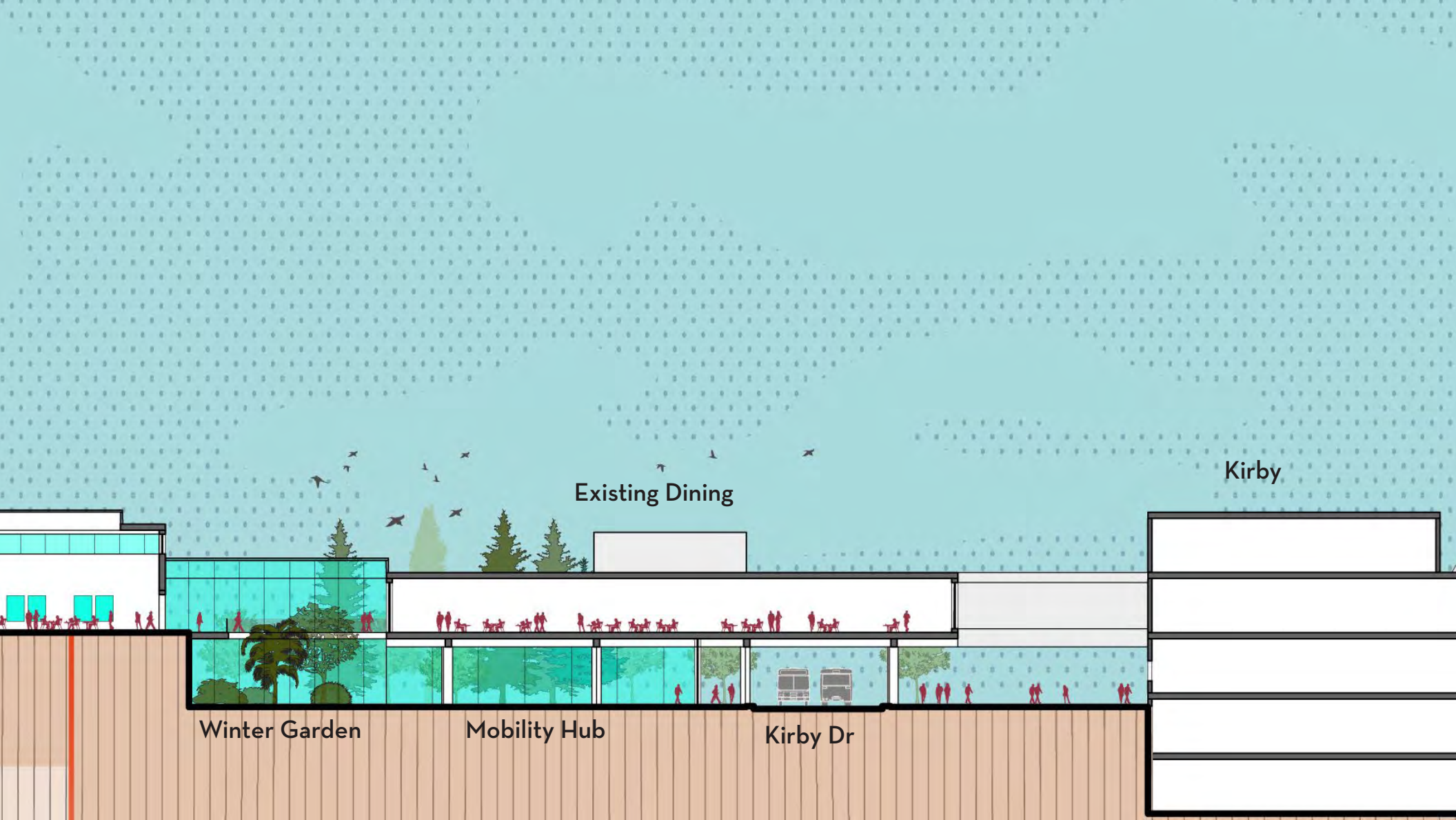


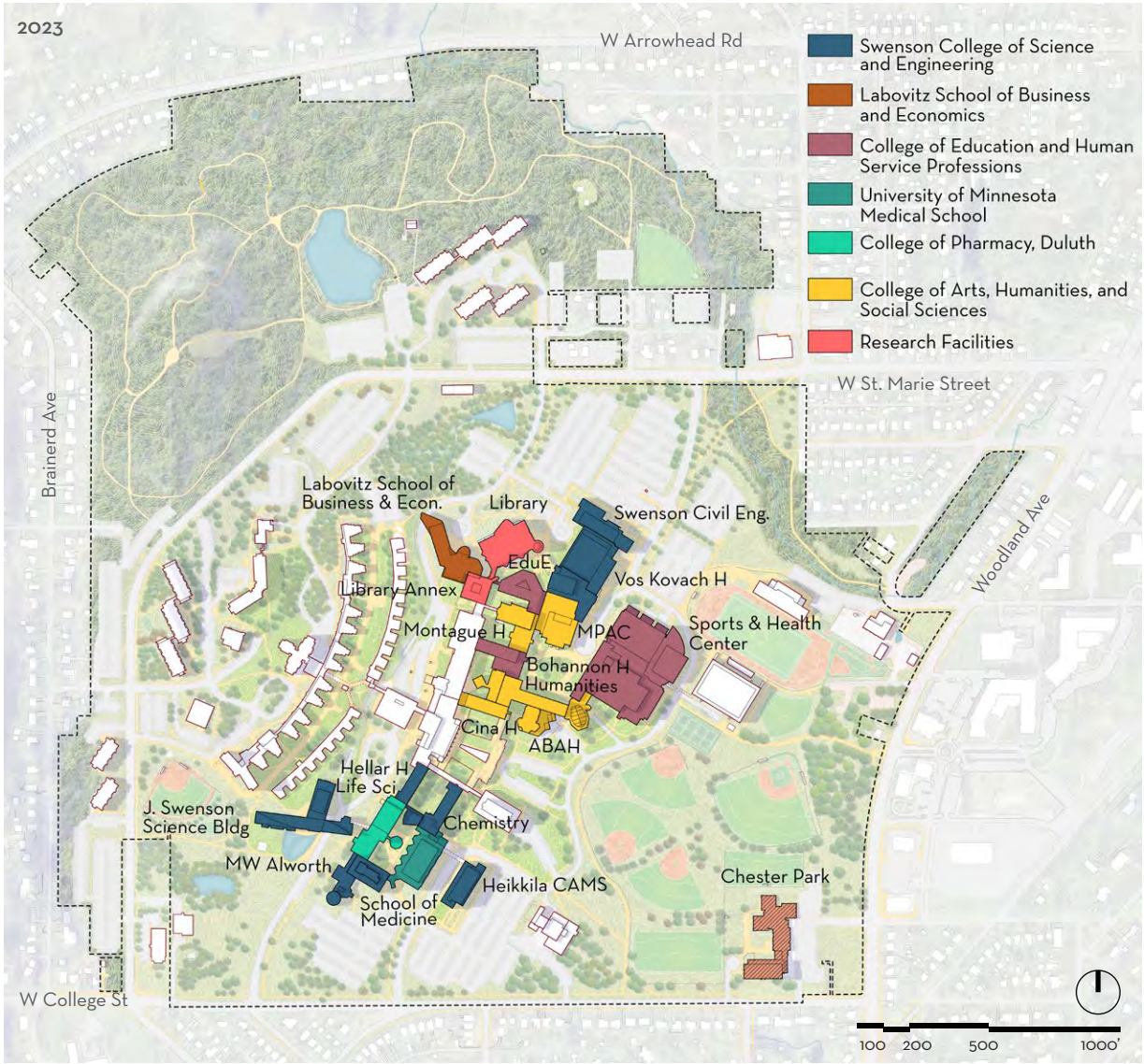
Figure 4.11

Campus Frameworks 5

Academic and Research Facilities Framework

2023

The Academic and Research Facilities Framework identifies opportunities to improve existing facilities to support UMD's educational mission. UMD's capital request list includes several building renovations that will collectively address known deficiencies and shortcomings in existing academic and research space. Based on current and projected space needs, no new construction of academic or research space is proposed on the campus. Instead, renovation and the reallocation of space within existing buildings will provide opportunities for addressing known office, lab, and collaboration space needs. Academic and research facilities proposed for renovation include Heller Hall, Chemistry, Library Annex, Humanities, and Voss-Kovach. Renovation to these academic buildings offers opportunities to improve internal circulation and new potential for visual connectivity between interior and exterior spaces. This could improve how people experience the Duluth campus, strengthening their sense of orientation and promoting an enhanced sense of place through visual cues such as landmarks and wayfinding. Renovation of the buildings also provides the opportunity to improve the energy efficiency and contribution each makes to the campus experience by integrating new social and engagement spaces; by offering visual and physical connections to the campus landscape, notably, the Sustainability Corridor; and, by introducing new wayfinding features.



2038

2053

The extensive interior corridor system is a boon to the campus community during the winter months. The system includes two main north-to-south routes within the buildings: the red concourse located at the Kirby Drive elevation of the academic buildings and the blue concourse located at the University Drive elevation. Any construction of new academic and research facilities proposed over the long term should prioritize proximity and potential connectivity with the existing complex of academic and campus life buildings that define the UMD core. New facilities could be constructed on the parking lots on the south side of campus as required in the longer term.

Below: Building renovations create visual and physical connections to the Sustainability Corridor

Campus Life

2023

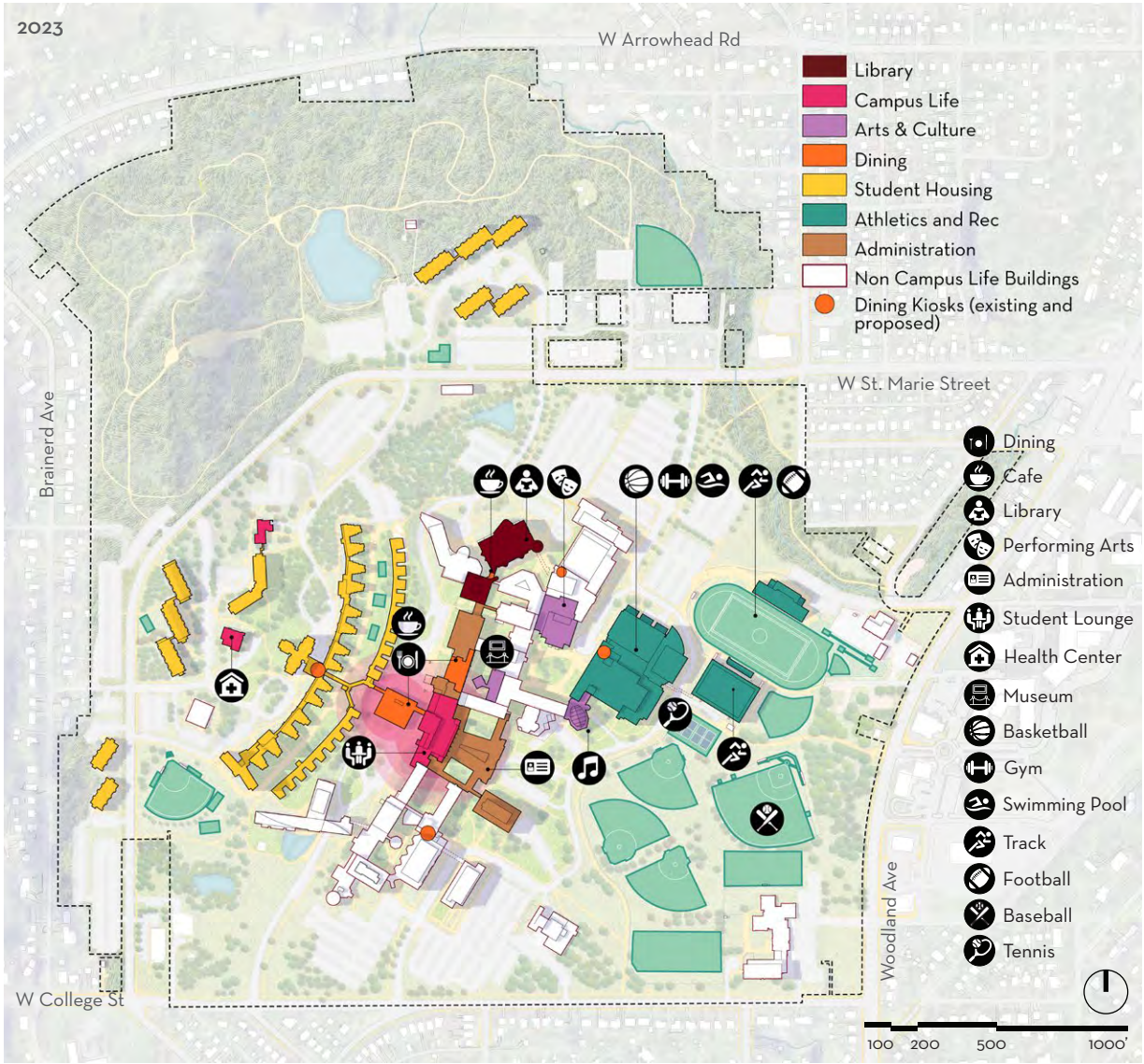
The Campus Life Framework highlights the gathering, dining, residential and student support facilities that contribute to the quality of life on campus. It takes into consideration existing student life facilities and provides recommendations for several new facilities.

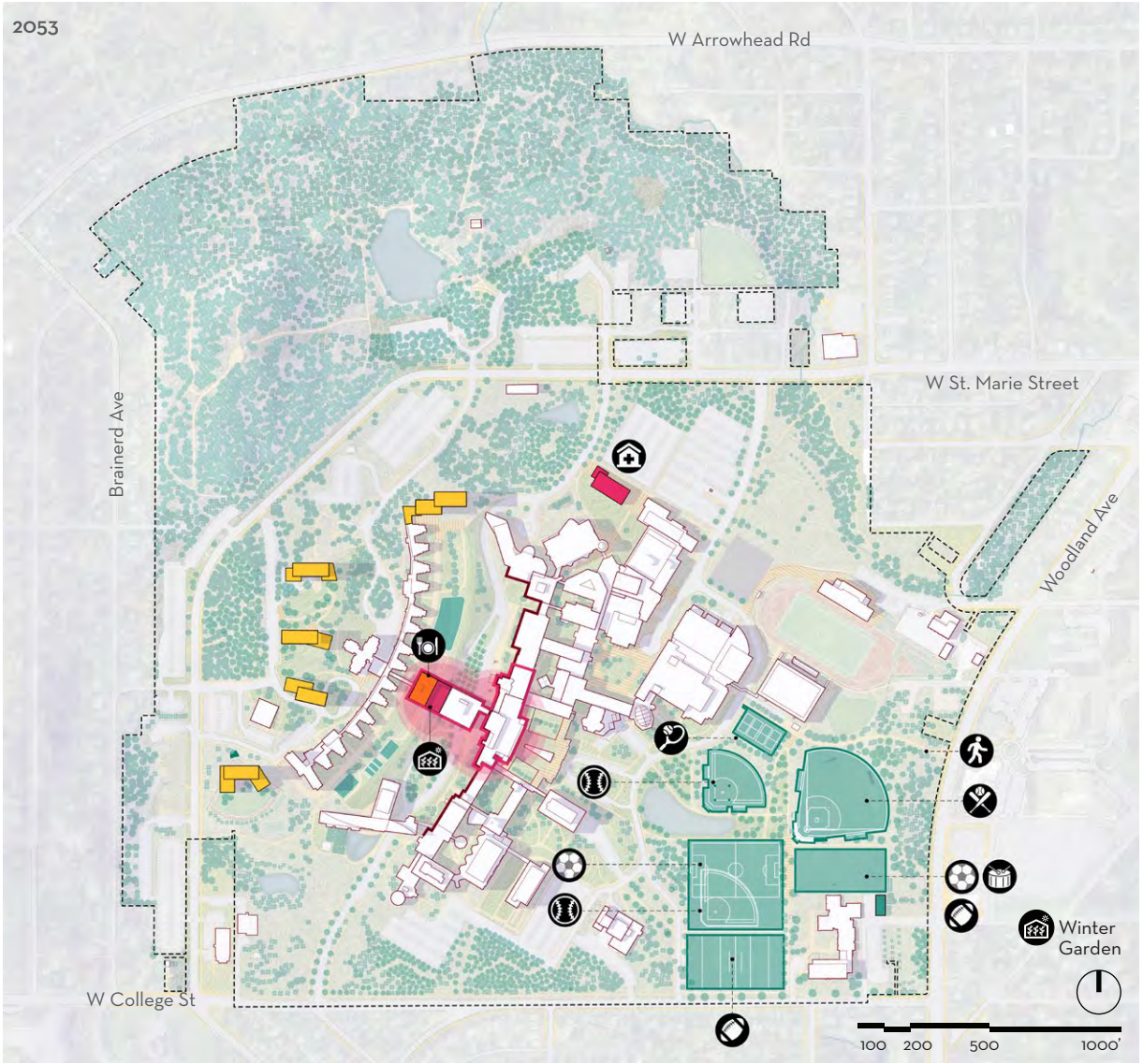
Superior Dining Hall and Mobility Hub

Centrally positioned, the existing Superior Dining Hall connects the academic buildings on the lower slopes of the campus with the crescent of residential buildings on the upper slopes (Lake Superior, Griggs, Vermilion and Burntside Halls). Superior Dining Hall serves as the main dining facility for the residential population.

The building is unique in that it is elevated on columns above Kirby Drive. The main dining spaces are one story above Kirby Drive, which passes under a portion of the building. Space below the Superior Dining Hall is unoccupied and open to the elements with limited bicycle parking. The kitchens, storage and service areas are located below grade.

The Campus Plan calls for additional dining space on the west side of the building to address the capacity challenges and operational deficiencies of the existing facility. Recommendations for the existing building include enclosure of the ground level to create a café and transit hub associated with the bus services utilizing Kirby Drive. The café will include a two-story winter garden connecting the ground





level of the building with the upper level where the dining expansion is proposed. The winter garden will incorporate the retaining wall located between the Griggs residential crescent area and the Kirby Drive level. The dining expansion will be located on the upper level, where it will connect to Griggs Hall.

The renovated and expanded dining hall is imagined as a beacon at the center of the proposed recreational areas associated with the Sustainability Corridor. It will include social engagement spaces and serve to bridge the residential and academic areas of the campus. Envisioned as a light-filled transparent space, the proposed expansion will offer direct connection to the landscapes and recreational areas of the Sustainability Corridor.

Housing

The Campus Plan includes demolition of Vermillion and Burntside residence halls and, depending upon increasing and sustaining undergraduate enrollment to pre-pandemic levels, a new residential tower. The new tower would support up to 351 beds, which would replace beds lost from Vermillion and Burntside and allow for additional capacity. The nine-story building will be south-facing to maximize passive solar gain and to connect with the landscapes and recreational areas proposed along the Sustainability Corridor (existing Burntside and Vermilion Halls site).


UMD

View from the proposed dining extension, looking out onto the upper level of the Sustainability Corridor

Over the long-term, future replacement housing is proposed west of Lake Superior Hall on the upper slopes of the campus. The framework illustrates a series of new residence halls designed to replace peripheral housing such as the Oakland and Junction Apartments. It provides recommendations for the eventual replacement of Goldfine Apartments and Heaney Hall, which are both located west of Lake Superior Hall, with new facilities optimally oriented for passive heating and cooling. The project team recommends that all future housing be oriented on the east-west axis to maximize passive solar gain and to facilitate the installation of solar panels. A detailed site planning study will be required to determine an optimal development and grading strategy given the presence of existing buildings and topographic challenges. Accessibility, building orientation, geothermal potential, and stormwater management will be key objectives in a comprehensive site development strategy. No net reduction of beds is proposed at this time.

Health and Counseling Center

A new health and counseling center is proposed north of the Kathryn A. Martin Library to replace the aging, outdated and undersized student health facility located south of Heaney Hall. The consolidated facility will form a new gateway to the campus from the commuter parking lots on the north. It will be located for ease of access from the residential areas of the campus, as well as from the "red concourse" of the academic buildings, from bus services on Kirby Drive, and from the commuter parking areas. Future studies are recommended to determine the building program and total square footage required to meet UMD's needs.

Sustainability Corridor

The vision for the Sustainability Corridor includes recreation fields, courts, terraces and patios, all of which are intended to enhance the residential experience for students living on campus. Located on the upper level of the Sustainability Corridor, these campus life amenities will be linked to Bagley Nature Area and to the parks and trail networks beyond campus by means of new pathways for pedestrians and cyclists.

Recreation Park

The Recreation Park will contribute to the campus life experience for resident students, commuters and the broader campus community. It will include new baseball, softball, soccer and multipurpose fields for athletic and recreational activities. The network of paths and interstitial landscape features between the fields will contribute to campus health and wellness objectives by providing walking and jogging routes. Low fences will protect the fields and be more likely to invite onlookers to support events and participate in future events.

Landscape

2023

The Landscape Framework provides the overall organizational structure for the campus. The Framework responds to the broader open space context of Duluth, notably Hartley and Chester Parks, and to the landform, drainage patterns, existing open space structure, and existing landscapes of the campus.

The Landscape Framework defines the landscape character of the following areas of the campus:

- the Bagley Nature Area;
- the Sustainability Corridor;
- the Recreation Park; and
- Campus Edges

It also provides recommendations for interstitial areas of the campus landscape as well as courtyards defined by campus buildings.

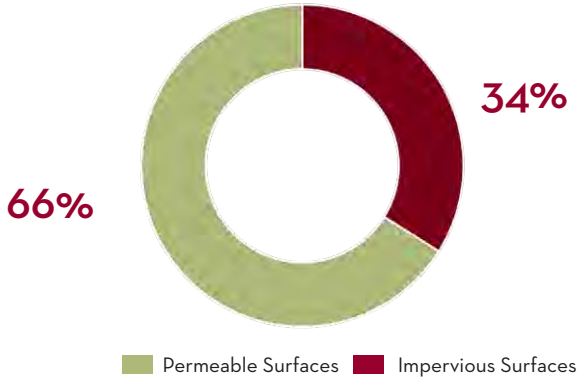


Figure 5.07: Existing Condition

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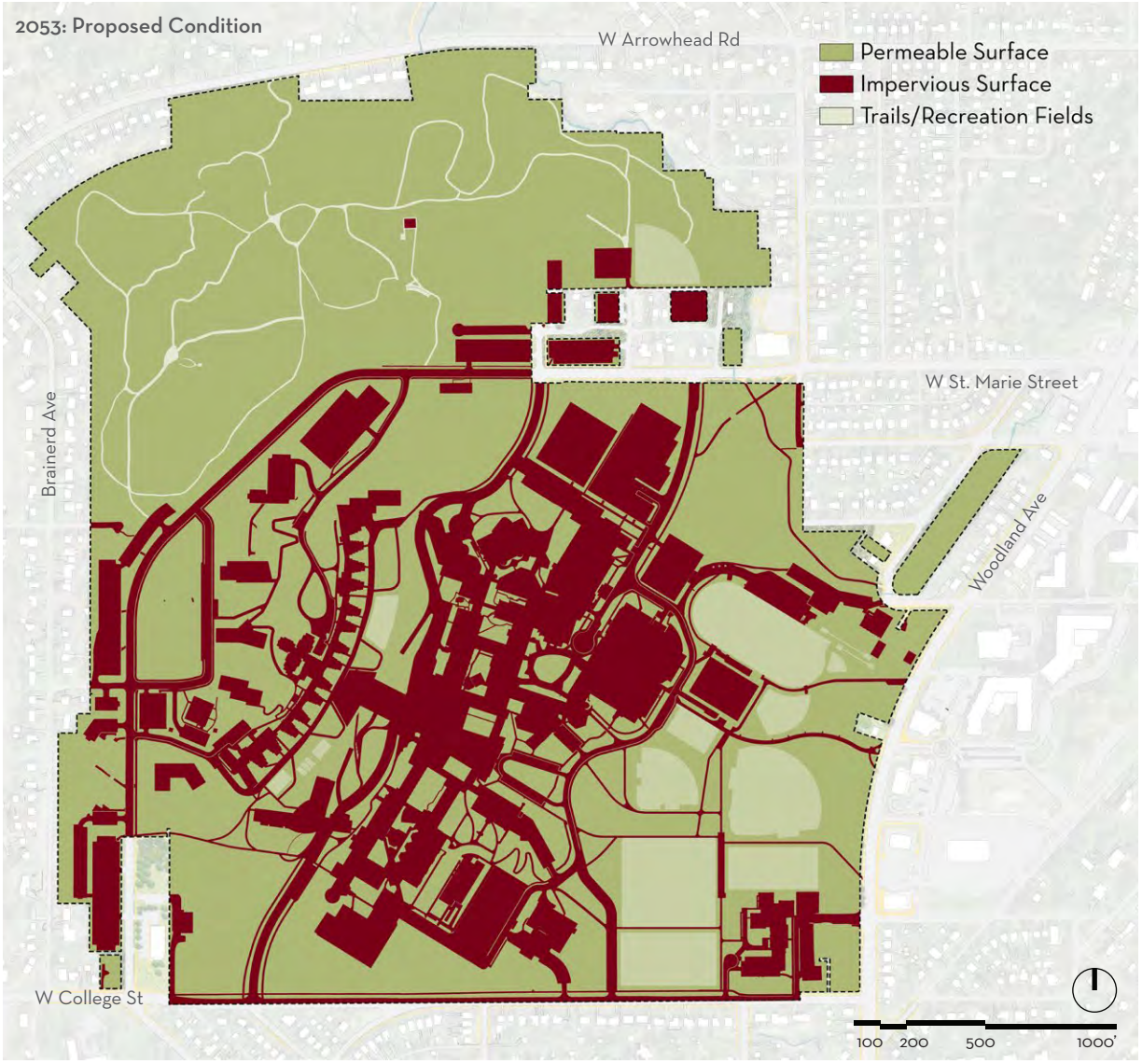


Bagley Nature Area

The Landscape Framework calls for the preservation of existing campus woodlands, primarily the Bagley Nature Area, and for reforestation of previously developed areas. The demolition of the aging and inefficient Oakland Apartments and the associated parking will allow for reforestation north of W. St. Marie Street, offering co-benefits of carbon sequestration and habitat restoration while contributing to the greening of campus edges.

Sustainability Corridor

The proposed Sustainability Corridor is envisioned as the central "park" of the campus; the type of centrally -located gathering space, lacking on the campus today. Conceptually, it establishes a linear park linking Hartley Park and the Bagley Nature Area on the

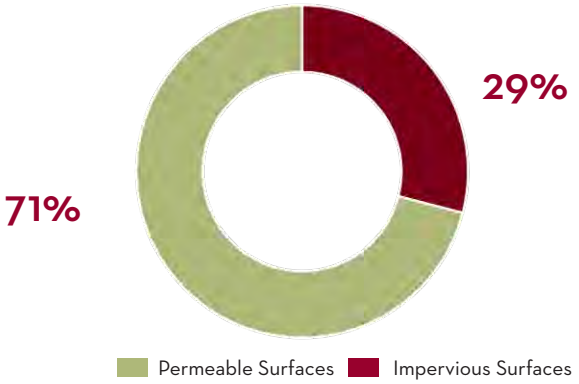


Figure 5.08: Proposed Condition

north to Chester Park on the south. At this broadest level, the Corridor will connect the campus with Duluth's system of parks and trails.

The Sustainability Corridor defines a strong organizational structure for campus development-- a structure that can be implemented incrementally over time in conjunction with investments in infrastructure and new facilities. It encompasses a wide swath of land through the center of the campus along Kirby Drive and features upper and lower topographic levels separated by the existing retaining wall located west of Kirby Drive. Burntside and Vermilion Halls define the upper level with the lower level defined by Kirby Drive.

In addition to aesthetic goals, the Sustainability Corridor includes a number of functional features that support UMD's sustainability initiatives:

1. North-south pedestrian, bicycle and transit circulation routes through the campus, the intent of which is to promote sustainable mobility. Personal cars will be prohibited with the exception of those traveling to the bookstore, child care center or ADA parking areas.
2. Stormwater management features to address water quality concerns and slow the rate of runoff.
3. A recreation corridor featuring pathway connections to the parks north and south of the campus and recreation lawns, courts and plazas on the upper level and following the footprint of Griggs Hall.
4. Opportunity to incorporate geothermal wells under the recreation areas proposed on the sites of Burntside and Vermillion Halls (both planned for demolition).

Campus Edges / Reforestation Areas

The Landscape Framework identifies opportunities for reforestation along W. College Street and W. St. Marie Street. The reorganization of surface parking along the public edges of the campus will enable reforestation while improving the appearance of the campus.

Bagley Nature Area and Classroom

Stormwater Management

The UMD campus includes three watersheds: Chester Creek, Oregon Creek, and the West Branch of Tischer Creek. Chester and Tischer Creeks are designated trout streams both of which are protected in the Landscape Framework by means of buffer areas and landscape corridors. While further study is needed, stormwater best management practices (BMPs) are proposed for all major landscape and building projects. Notable opportunities include along the Sustainability Corridor, where impervious parking and building areas could be replaced by water receiving landscapes. Similar opportunities exist in the proposed Recreation Park where a stormwater retention pond and BMPs are recommended.

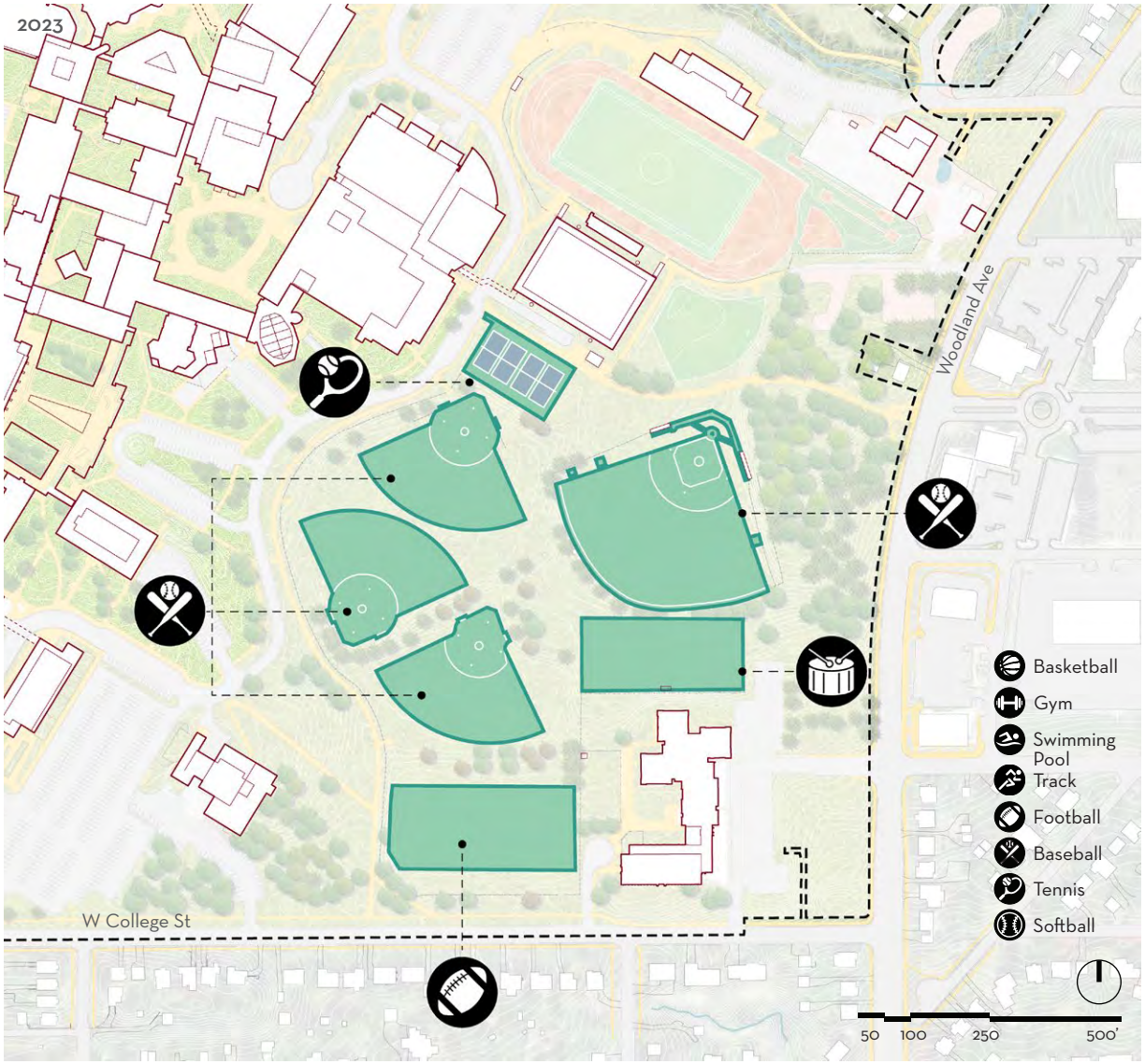
Top Right: Bagley Nature Area campgrounds
Bottom Right: Swenson Civil Engineering stormwater management

Recreation

2023

Recreation Park

The Recreation Framework is integrated with the Landscape Framework, reimagining the arrangement of existing east campus recreation fields in response to programmatic needs, required upgrades and opportunities for incorporating geothermal on campus. In doing so, the intent is to create a park-like environment and pathway network between and around the fields. The pathways, combined with a central stormwater retention pond, contribute to the idea of a "park" for both recreational and formal athletic activities. Eliminating the existing fence around the entire perimeter of the field area will open up the park for circulation and passive recreation. The proposed fields will be fenced along their respective perimeters for movement through the park on the proposed pathways.



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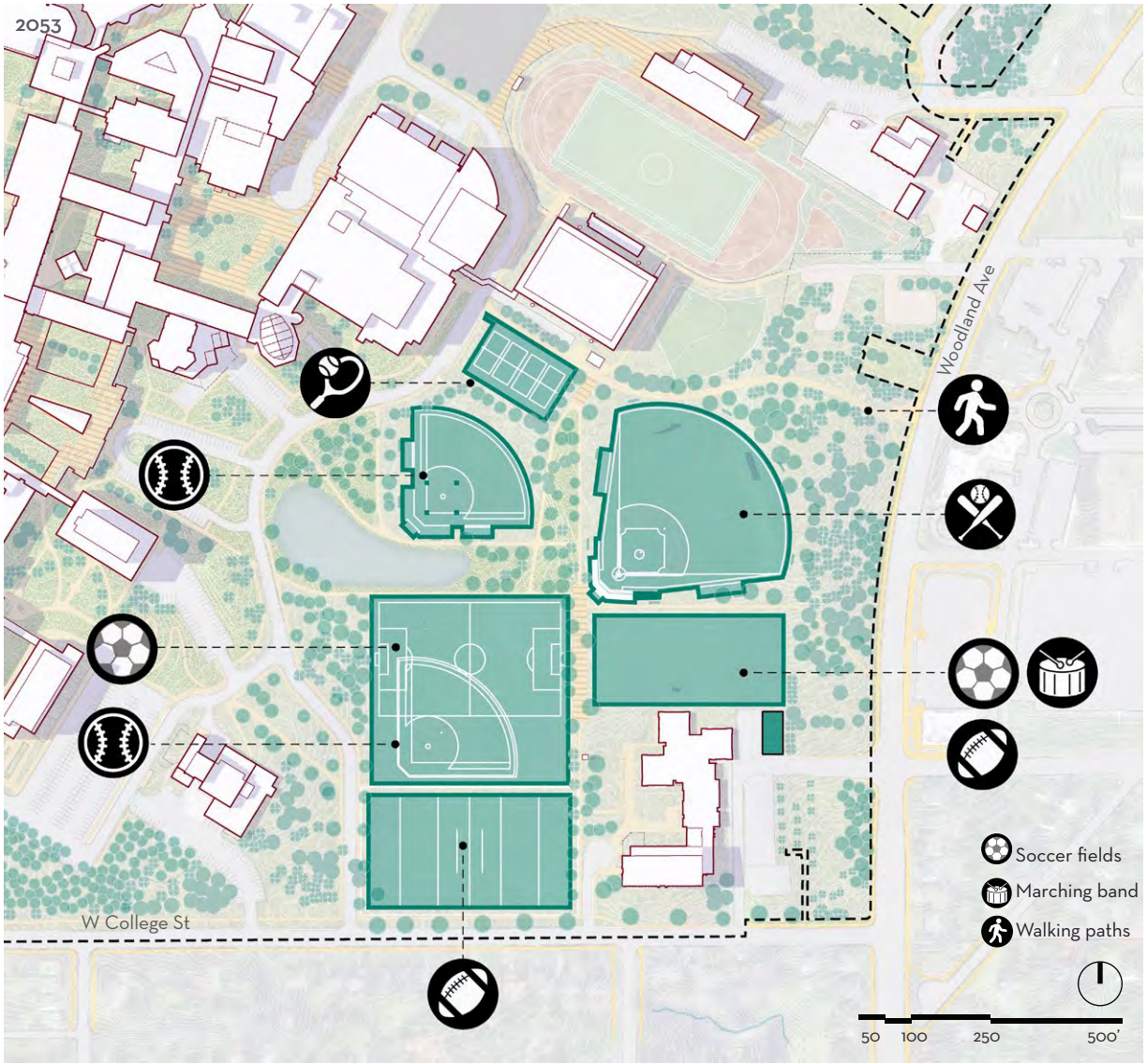


The Recreation Park will contribute to the campus life experience for resident students, commuters and the broader campus community. It will include new baseball, softball, soccer and multipurpose fields for athletic and recreational activities. It will also feature a new storage shed to support recreational activities, which is proposed to the east of the Chester Park building.

The network of paths and interstitial landscape features between the fields will contribute to campus health and wellness objectives by providing walking and jogging routes. Low fences will protect the fields and be more likely to invite onlookers to support events and participate in future events.

Mobility

2023

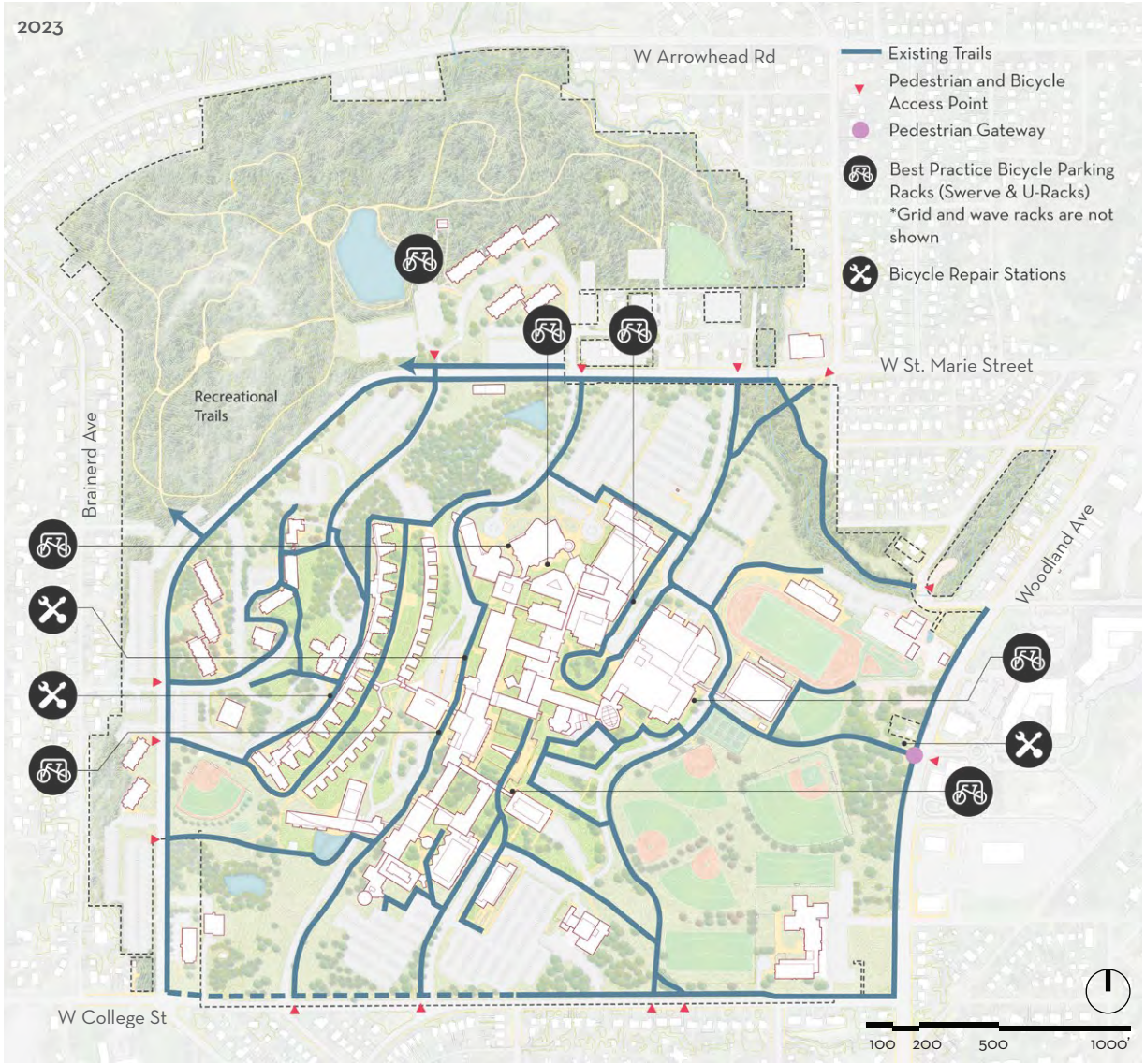
Accessibility and Pathways

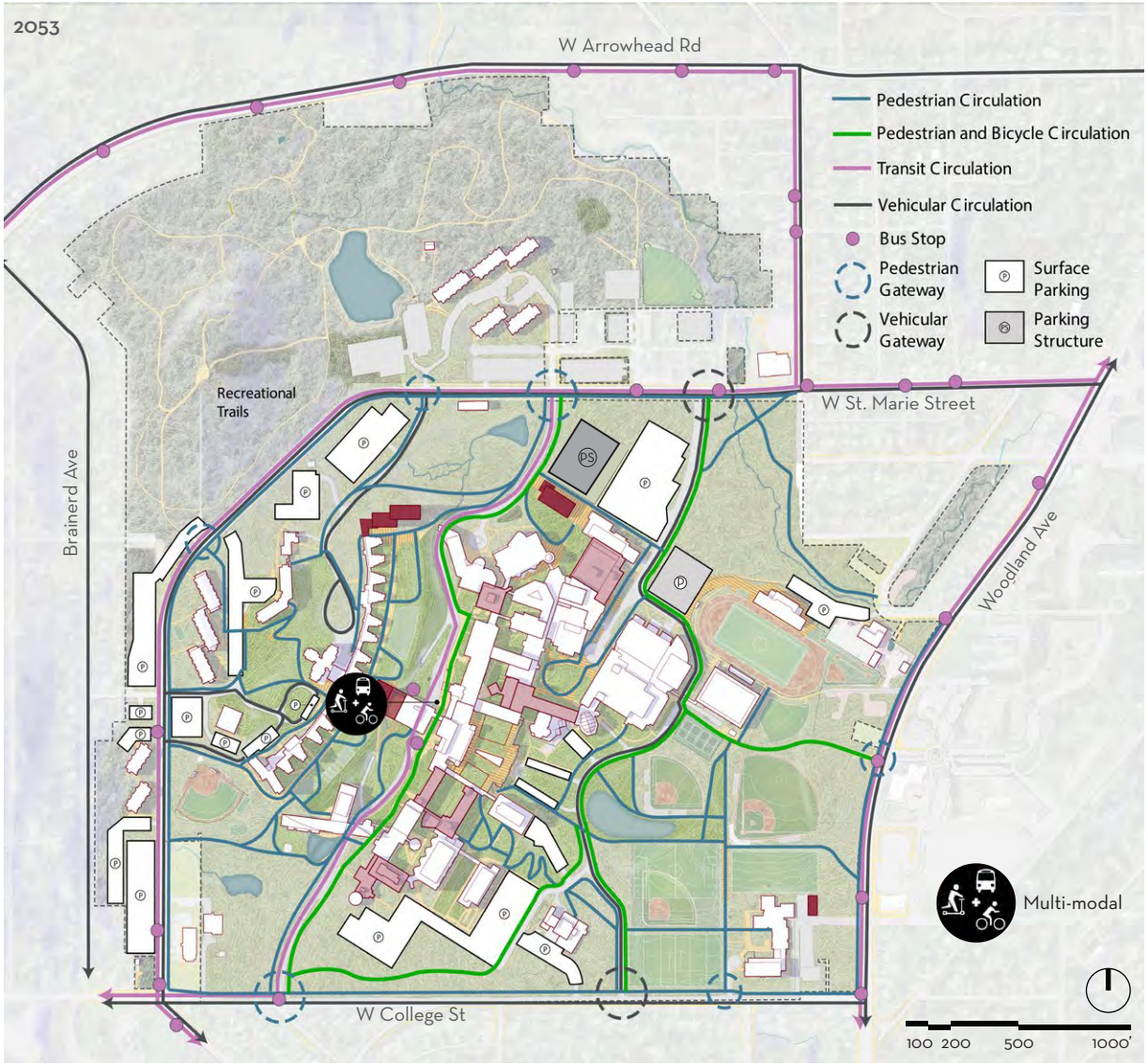
Continued expansion of the interior concourse system is proposed to connect with major academic buildings that may be constructed in the future. Accessible connections of the interior concourse system to external pathways is recommended as part of future site and building projects. It is also recommended that an interior wayfinding and signage strategy be developed to facilitate navigation and movement across the campus such as a strategy for demarcating distance north and south from the center of the Kirby Student Center.

Exterior pathway improvements are proposed on the upper and lower elevations of the Sustainability Corridor. On the upper level directly, following the Griggs curve, pathways and bike routes are proposed to connect the campus north to the Bagley Nature Area / Hartley Park and south to Chester Park. Other exterior pathway improvements are proposed within the Recreation Park to create an open accessible network across the campus.

Transit

Increasing transit ridership among students, faculty, and staff will have multiple benefits, including reduction of demand for surface parking and reduction of commuter-associated emissions. In order for UMD to strengthen its multi-modality transit culture, further investments in supportive





programming and transit infrastructure are recommended. A sheltered mobility hub at the core of campus, connected to the Kirby Student Center and the expanded Residence Dining Center, will give prominence and visibility to transit access while improving the user experience. Close coordination with the City of Duluth will be instrumental in updating other bus stops and shelters servicing campus to incentivize ridership, as well as identifying opportunities for improved service routes. Based on conversations with representatives of the City of Duluth, future transit connectivity between the mobility hub and nearby destinations including Kenwood Village and the College of St. Scholastica should be considered.

Improvements to wayfinding and enhanced interconnectivity between and within the campus activity center (Kirby) and other campus destinations will likely encourage more members of the UMD campus community to make the trip on foot or by bike. Coordination with the City of Duluth to support the implementation of the Campus Connector Trail Plan through campus– the first paved, vertical commuter corridor in Duluth– will realize additional benefits for pedestrians and cyclists in the community and improve connectivity between UMD and the surrounding community.

Kirby Drive

The Mobility Framework envisions the future of Kirby Drive as closely linked to the implementation and success of the Sustainability Corridor. By redirecting personal automobiles to University Drive and restricting parking on Kirby Drive, this key corridor will become a route into the heart of campus accessed by pedestrians, cyclists, and transit riders. The proposed transit hub on Kirby Drive will encourage ridership, offering shelter and supporting micromobility with co-located bike or scooter-sharing hubs. A well-lit and sheltered interior could double as social or study space to serve waiting transit riders. The removal of most automobile traffic from Kirby will positively impact the efficiency of transit operations, and strategic elimination of surface parking will offer opportunities for iconic new social spaces or planted areas along the corridor.

Automobiles and Parking

The Mobility Framework supports the reduction of single-occupant vehicle use on campus and associated surface parking area. To realize this vision, UMD may elect to cap parking space permitting, gradually reducing surface parking in tandem with the implementation of transportation demand management (TDM) policy and program support. Repurposing excess surface parking into green space will enhance the campus environment aesthetically, increase stormwater percolation, and improve ecosystem function. It will also facilitate reforestation in key areas notably along Kirby Drive and along W. College Street and W St Marie Street.

Gateways

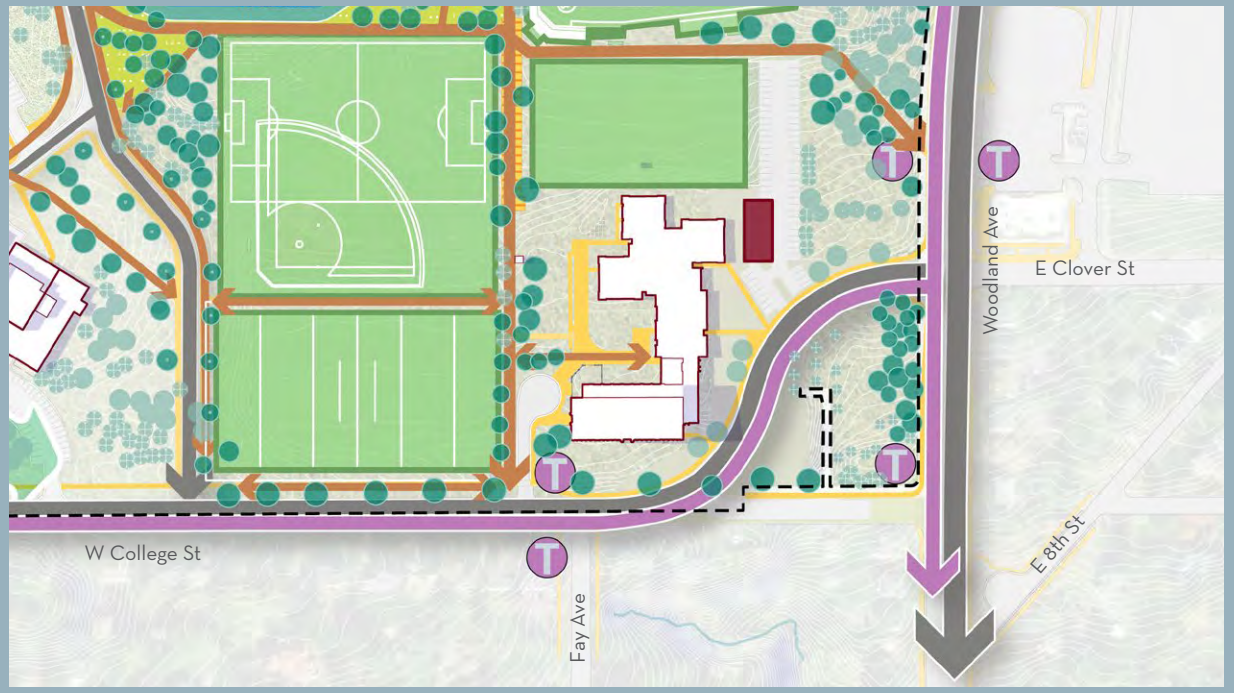
The Mobility Framework recommends landscape and wayfinding enhancements at both existing and new gateways with the intent of improving the arrival sequence to the campus. The campus plan defines a new visitor gateway on W. College Street, east of the power plant. A new segment of University Drive will provide a more direct route to Solon Campus Center and other visitor destinations, including the arts and sporting venues on the north side of campus.

Gateways to the Sustainability Corridor occur at the intersection of Kirby Drive and W. College Street, and at the intersection of Kirby Drive and W. St. Marie Street. These gateways are envisioned to be part of the linear landscape corridor through the center of campus.

Woodland Avenue Gateway Study

The 2013 Master Plan recommended realigning West College Street to intersect with Woodland Avenue at Clover Street, identifying this reconfiguration as a strategy to improve the experience of arriving to campus.

This concept was studied further during the 2023 planning process. Based on transportation planning and urban design best practices, the realignment of W. College Street would create an awkward gateway experience and sense of arrival, particularly for visitors coming from the south, because the building contains active UMD programs and is expected to remain in place. Uniting the two sides of the Woodland Avenue neighborhoods at a future intersection would require significant public investment in infrastructure and would displace surface parking at Chester Park building, resulting in reduction of green space along this prominent campus edge if surface parking is shifted north. As future circulation and development in the area around campus brings additional demand for improved intersection at Woodland and College, UMD should continue to work with affected stakeholders and the City of Duluth to arrive at a workable solution without sacrificing campus facilities or land, or negatively affecting the entry experience for vehicles and non-motorized traffic.



The 2013 plan considers re-alignment of W College St to intersect with Woodland Avenue at E. Clover St, depicted above.

Decarbonization and Resilience

2023

New Constuction and Substantial Renovation

Substantial renovation of campus buildings will support decarbonization goals, described in the Climate Action Plan, through improvements such as energy efficiency and the addition of rooftop solar infrastructure. Prioritization of adaptive reuse over new construction, where feasible, will be another strategy to reduce UMD's embodied carbon. New construction will include the future health and counseling center as well as the proposed residence hall. New facilities will be oriented to optimize energy performance, maximize passive heating and cooling potential, and support rooftop solar infrastructure. The design of future buildings will also account for climate change projections, such as more intense precipitation events and annual warming trends.

Where feasible, the installation of energy-conserving infrastructure such as geothermal and wastewater heat recovery technology will occur in conjunction with substantial renovation, demolition, and new construction projects to minimize the need for additional disturbance in the future. The site of the proposed residence hall is recommended as a location for a cooling thermal energy storage tank; the future demolition of Burntside and Vermilion will similarly provide the opportunity to install geothermal infrastructure on those sites (refer to 2023 Climate Action Plan for additional details).

Landscape

Where feasible, the reduction of impervious surfaces will enhance opportunities for climate-resilient native plantings and reforestation, increasing UMD's ability to sequester carbon dioxide while improving the ecological value of the campus to support habitat and provide shade. The reduction of impervious surfaces will also reduce stormwater runoff, thereby contributing to the health of the surrounding watershed. Improvements to the campus landscape will also positively impact the campus community; enhanced opportunities for outdoor circulation and recreation will promote the physical and mental health of community constituents, thereby contributing to the resiliency of the UMD community as a whole.

Mobility

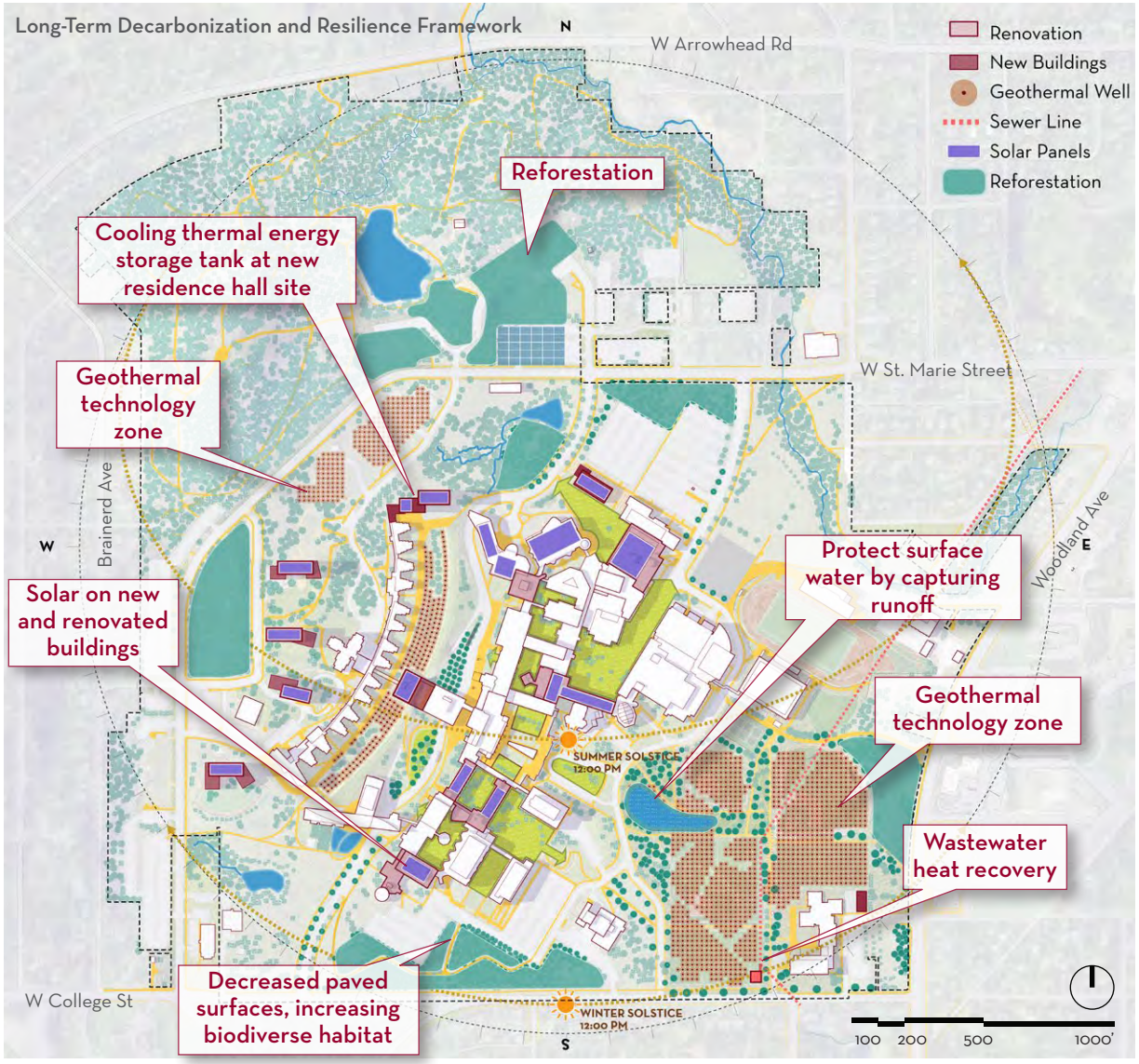
The strategic reduction of vehicular traffic along Kirby Drive, improvements to pedestrian and cyclist circulation, and the introduction of a new mobility hub at the center of campus will support decarbonization goals by incentivizing UMD community members to use more sustainable means of accessing and navigating campus. A more walkable, accessible campus with improved pedestrian safety will additionally contribute to the health and safety of community members.

Low-temperature geothermal technology involves circulating chilled water or another thermal fluid through closed-loop piping that is buried underground. Refer to the accompanying Climate Action Plan for futher information about the application of this technology for efficient heating and cooling.

Community Wellness

Improved access to wellness resources, ease of circulation, and the activation of community spaces will support the health and resilience of the campus community in the future. The relocation and expansion of health and counseling facilities will improve how UMD students are able to access and receive health care, better supporting their physical and emotional wellbeing. Expanding opportunities for passive and active recreation through activated outdoor spaces and improved connections to neighborhood resources will further boost the health of the campus community. Incorporating art and cultural spaces that acknowledge and celebrate the diversity of the campus constituents and the indigenous history of the land will build community and foster social resilience.

2053


Long-Term Decarbonization and Resilience Framework
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W Arrowhead Rd
Renovation
New Buildings
Geothermal Well
Sewer Line
Solar Panels
Reforestation
Reforestation
Cooling thermal energy storage tank at new residence hall site
Geothermal technology zone
W St. Marie Street
Brainerd Ave
W
Woodland Ave
E
Protect surface water by capturing runoff
Solar on new and renovated buildings
Geothermal technology zone
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Wastewater heat recovery
Decreased paved surfaces, increasing biodiverse habitat
W College St
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Implementation and Phasing Strategy

6

Near Term Strategies (2038)

Academic and Research Facilities

- Renovation of Alworth, Heller, Old Chemistry, Library Annex, Humanities, and Voss-Kovach
- Relocation of Large Lakes Observatory and subsequent divestment of the Research Lab Building
- Substantial renovation of any buildings on campus should support decarbonization goals as discussed in the accompanying Climate Action Plan, such as upgrades to heating and cooling systems and addition of rooftop solar infrastructure

Campus Life

- Further coordination is needed with indigenous UMD community members to identify meaningful placemaking
- Demolition of Vermilion Hall, Burntside Hall, and Health Services
- Construction of a new residence hall[1], a new health center, and expansion of the Residence Dining Center facilities (Main Production Kitchen and dining hall)

1 The construction of a new residence hall is recommended assuming student enrollment remains stable. The location, design, and timeline for construction of new campus facilities, including athletic fields, should align with the goals and strategies identified in the Climate Action Plan.

Landscape

- Construct a linear park on the former site of Vermilion and Burntside Halls as part of the proposed Sustainability Corridor
- Enhance pedestrian access to the Bagley Nature Area/Hartley Park and the Chester Park building with an expanded network of pedestrian paths
- Reforest campus edges following strategic removal of surface parking on the campus perimeter
- Expansion of park facilities to support the Sustainability Corridor concept should occur in coordination with the implementation of sustainability and decarbonization measures described in the Climate Action Plan. Removal of surface parking to support reforestation along the campus perimeter will require further study

Recreation

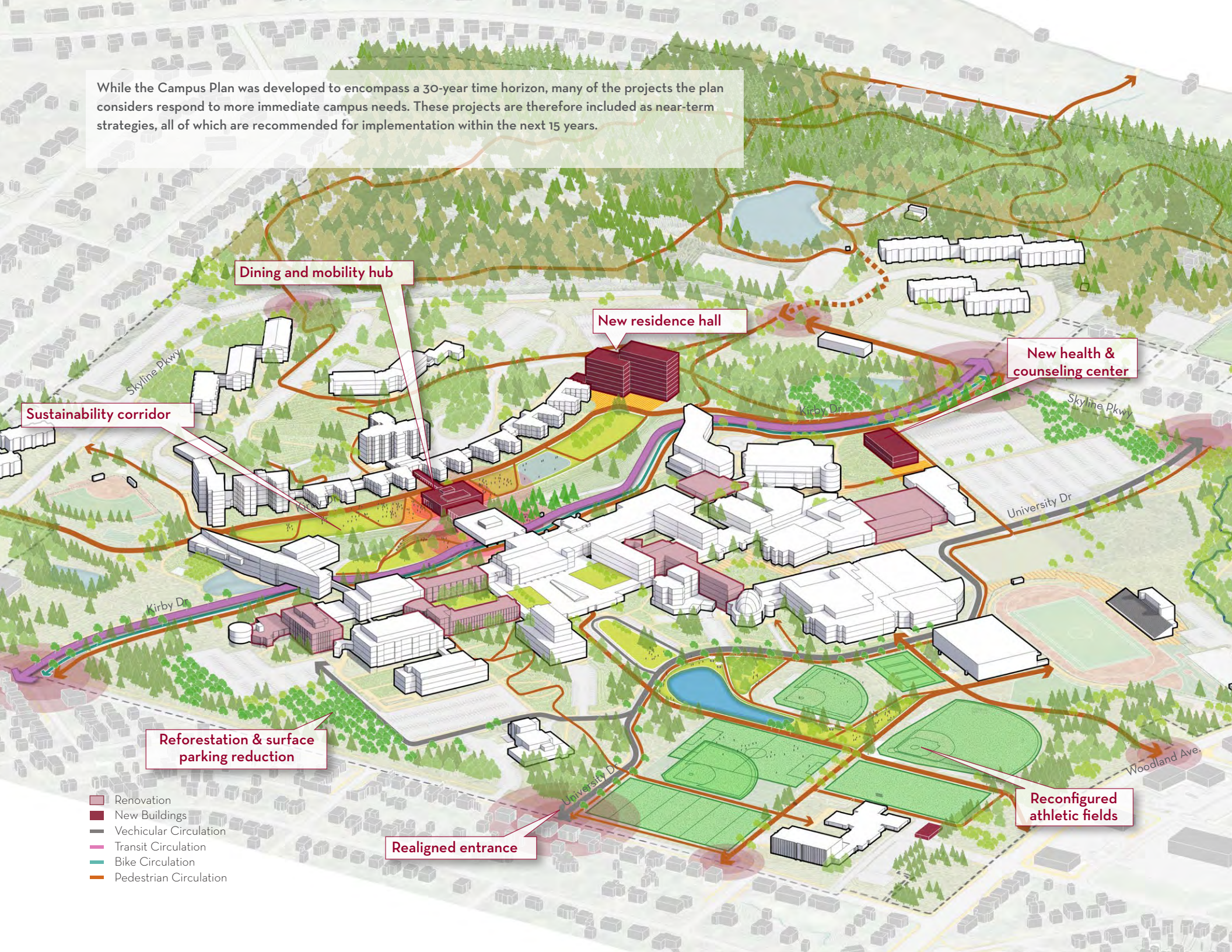
- Reconfiguration of athletic fields and addition of a new storage shed to support athletic and recreational programming in coordination with decarbonization measures

Mobility

- Develop a Transportation Demand Management (TDM) Plan and program to reduce single occupant vehicle commuting and increase carpooling, shared rides, transit, walking and biking trips (1-5 Years)[2]
- Coordinate with the City of Duluth to provide complete, safe, connected and quality networks of pedestrian and bicycling facilities to campus, including crossings
- Construct a new campus mobility hub for transit and micro-mobility users in conjunction with the expansion of dining facilities (associated with the Superior Dining Hall renovation)
- Realign University Drive at the West College Street entrance, creating a new campus gateway sequence and improving the visitor experience
- Limit parking and personal vehicular use on Kirby Drive, increasing multi-modal and transit use through this key campus corridor
- Improve Woodland Avenue access (provisionary)

2 A TDM Plan should include well-defined measures and accountability; baseline and ongoing data collection, including annual travel survey and standardized count programs that are integrated with Greenhouse Gases (GHG) data collection and development; targets for travel mode shares coordinated with targets for Scope 3 commuter greenhouse gas reduction; modified policies to align with targets and timelines; parking management and reduction strategies; programs and technologies to streamline and progress TDM efforts; a timeline for implementation milestones, and a public-facing dashboard showing progress towards targets. The TDM Plan is recommended for implementation before other near-term mobility strategies listed above.

While the Campus Plan was developed to encompass a 30-year time horizon, many of the projects the plan considers respond to more immediate campus needs. These projects are therefore included as near-term strategies, all of which are recommended for implementation within the next 15 years.



Implementation Activities

The UMD Campus Plan is a framework for future growth and change. It will be adapted over time in response to strategic decisions and the mission-driven needs of the University.

The campus plan defines concepts for change for all areas of the campus, with the expectation that specific investments will require further exploration and discussion. Some of the recommended changes are small in scale; others are transformative and must happen through a series of incremental steps over time. Still others are dependent on the involvement of other parties to effect significant change, such as on the edges of the UMD Campus. The plan does not define project- level details for facilities, either in physical form or in cost, for most concepts outlined in the document. Future project development will result in better knowledge and awareness of the scope and timeline for these events.

Given all the unknowns associated with future events, the 'Big Ideas' and recommended initiatives serve as the core guidance for ongoing decision-making about capital projects. This flexibility is intended so that the decision-making process for future projects can uphold the intent of the plan.

A number of significant ongoing UMD planning efforts are expected to follow the 2023 Campus Plan Update, as described here.

UMD Cultural Resources Inventory

Staff will compile an inventory of eligible historic resources consistent with state requirements. For resources listed on the National Register of Historic Places, impacts to historic landscapes, districts, and/ or buildings, consideration must be given to maintaining the integrity of such resources while also meeting University needs for teaching, research, and outreach, maintenance and operations, accessibility and other factors.

Energy Master Plan

In alignment with the Climate Action Plan goals established as part of the integrated campus and climate action plan effort, this work will itemize the scope of work needed to effect change in energy supply systems and utilities on the UMD campus.

Ongoing Transit Service Planning

In tandem with the Duluth Transit Authority, to support improved ridership option for students, staff and faculty.

Other non-motorized transportation (bike/ scooters/ pedestrian) plans

A campus-wide assessment of near and long term improvements to address access (universal design) and mobility needs for non-motorized transportation.


UMD
UMD


UMD

Near-Term Framework (2038)

2023

Existing Site

UMD's main campus today, pictured right, consists of over 50 buildings. Although the buildings are positioned to allow users to enjoy the views of the surrounding scenery, the building orientation is not necessarily optimal for the cold climate of Duluth, which requires energy-intensive heating.

Transit via personal vehicle is popular, particularly in winter months; roughly one third of campus landcover is impermeable due to buildings and paved surfaces, such as parking and roads.

2038

2053

Campus in 2038 (Approx)

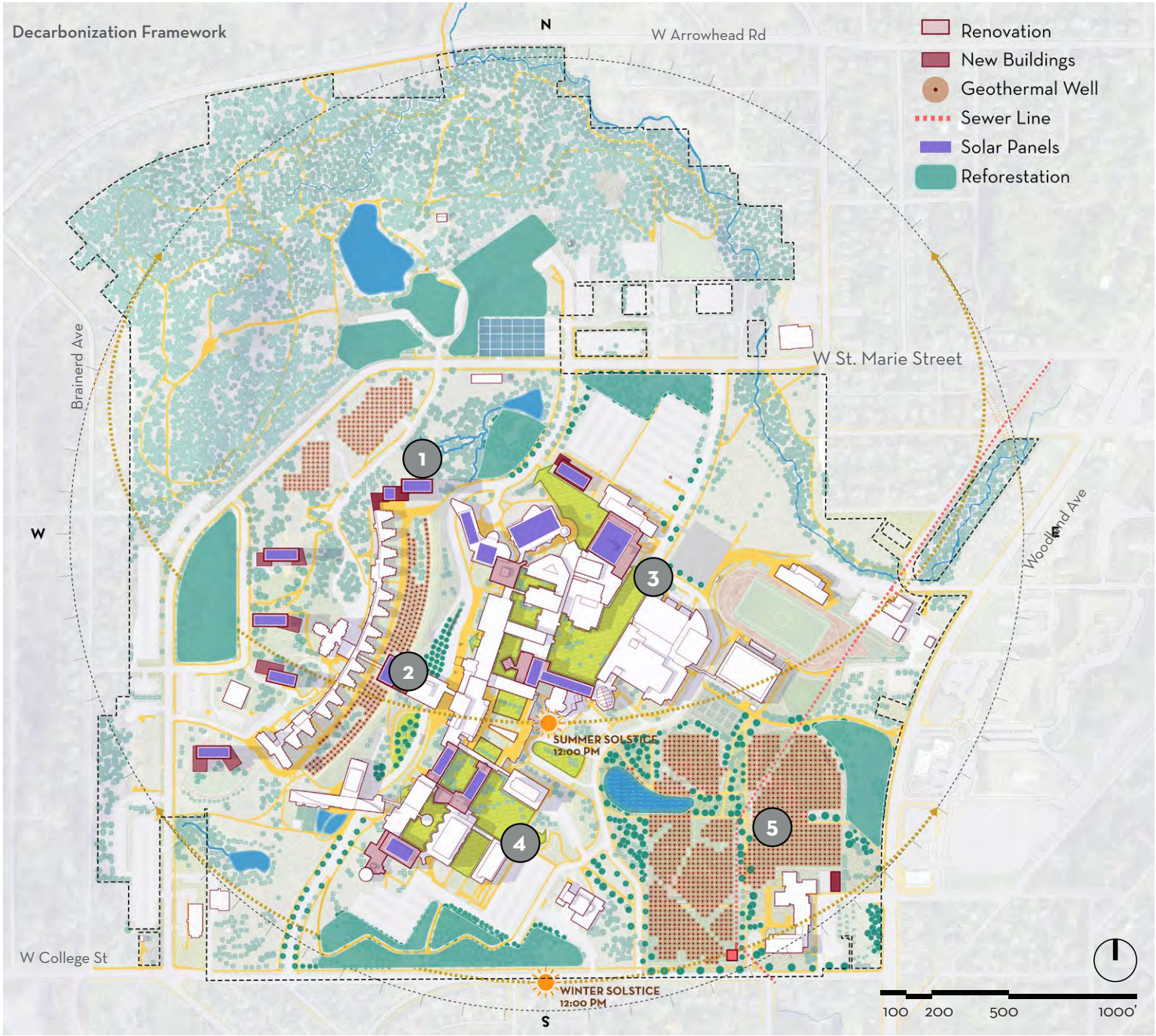
- A New health center
- B New residence hall
- C Sustainability corridor
- D Dining and mobility hub
- E Reconfigured athletic fields
- F Reforestation & parking reduction
- G New visitor's gateway
- H Planned building renovations

Near-Term Framework (2038)

Decarbonization and Resilience

The Climate Action Plan articulates five geographic areas of campus, or "nodes," for phasing of decarbonization projects that may be implemented within a 15 year time horizon.

- **Node 1:** Construct all-electric residence hall that houses heat pumps heating and cooling plant, and construct thermal energy storage tanks and geothermal field proximate to the residence hall
- **Node 2**: Install geothermal field following the demolition of Vermilion and Burntside, removing steam piping in the residence halls and expanding hot water system in its place; add temporary steam to hot water converter and pumps in expanded dining facility for hot water system resiliency during the conversion process; install exhaust/relief air heat recovery.
- **Node 3**: Install steam to hot water converter and hot water distribution pumps in Lund plant; direct bury hot water lines from Lund to the Sports and Health Center; convert the Sports and Health center to hot water; demolish steam and condensate lines and expand the hot water system throughout the northern half of campus buildings; connect the two hot water systems at the dining hall expansion site and at the new residence hall; install exhaust/relief air heat recovery.
- **Node 4:** Demolish steam and condensate lines and expand the hot water system throughout the southern half of campus buildings; remove converter and pumps at dining hall expansion site; complete hot water loop back to Lund plant; install exhaust/relief air heat recovery.
- **Node 5**: Install wastewater heat recovery and geothermal fields during reconstruction of the Recreation Park.


Decarbonization Framework
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New Buildings
Geothermal Well
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Long Term Strategies (2053)

Campus in 2053 (30 years)

Academic and Research Facilities

- Continue to reinvest in existing academic and research facilities
- Demolish obsolete buildings when they can no longer be adaptively reused

Campus Life

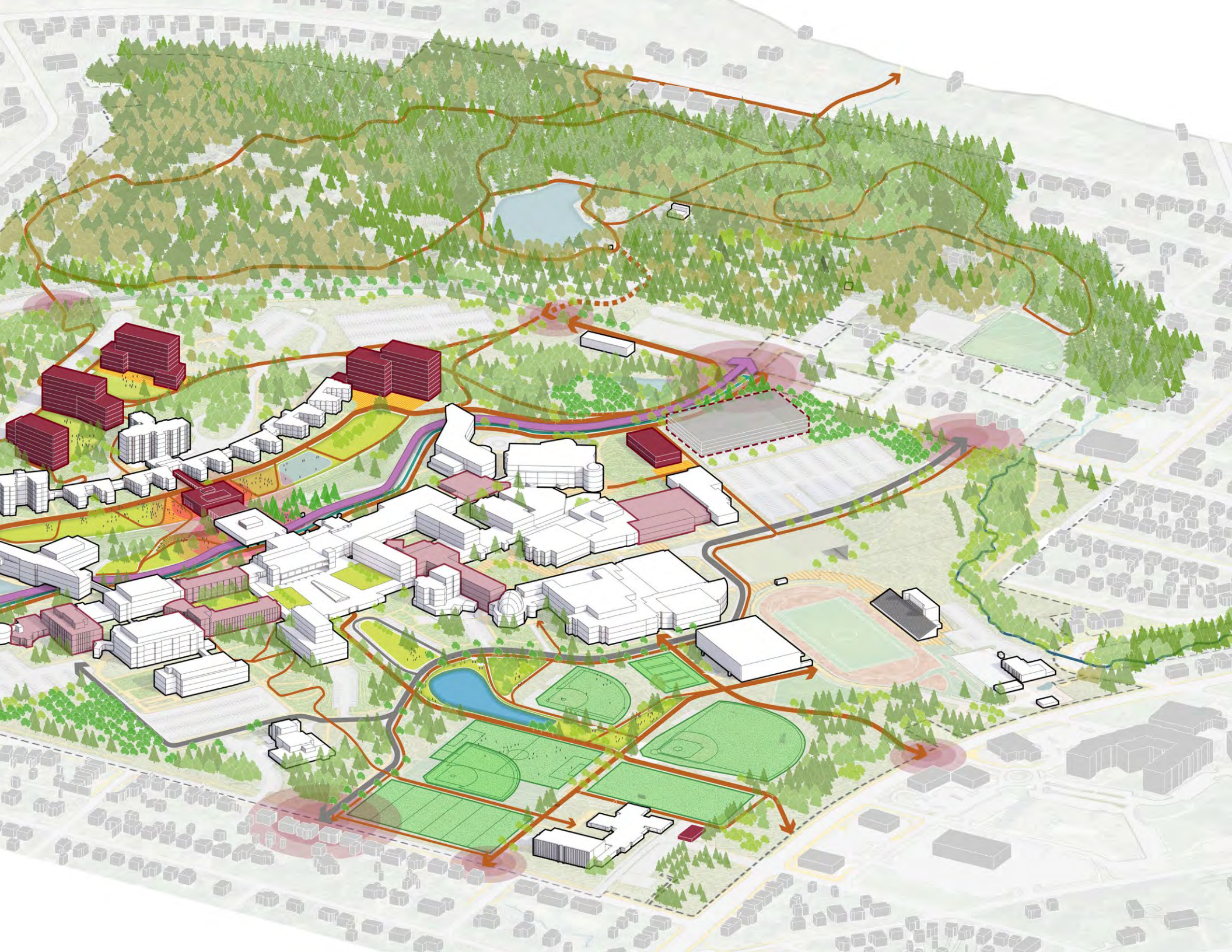
- Demolish Oakland Apartments, Junction Apartments, Goldfine Apartments, and Heaney Hall, replacing them with new housing to the west of the campus core. No net loss of beds is recommended at this time, but should be reevaluated based on future need and enrollment trends.
- Relocate the child care center (UMD Children's Place) to the Chester Park building, assuming there is sufficient financial support and continued demand.

Landscape

- Reforest areas of former surface parking and housing locations, augmenting tree cover at Bagley Nature Area and other forested areas on campus with climate-resilient species

Mobility

- Realize a focused mode shift away from single-personal vehicles to public transportation, pedestrian, and cycling
- Complete long-term strategic reduction of surface parking
- Construct a potential parking structure in coordination with the removal of surface parking (no net addition of parking is recommended)



Long Term Strategies (2053)

2023 — 2038

Campus in 2038 (Approx)

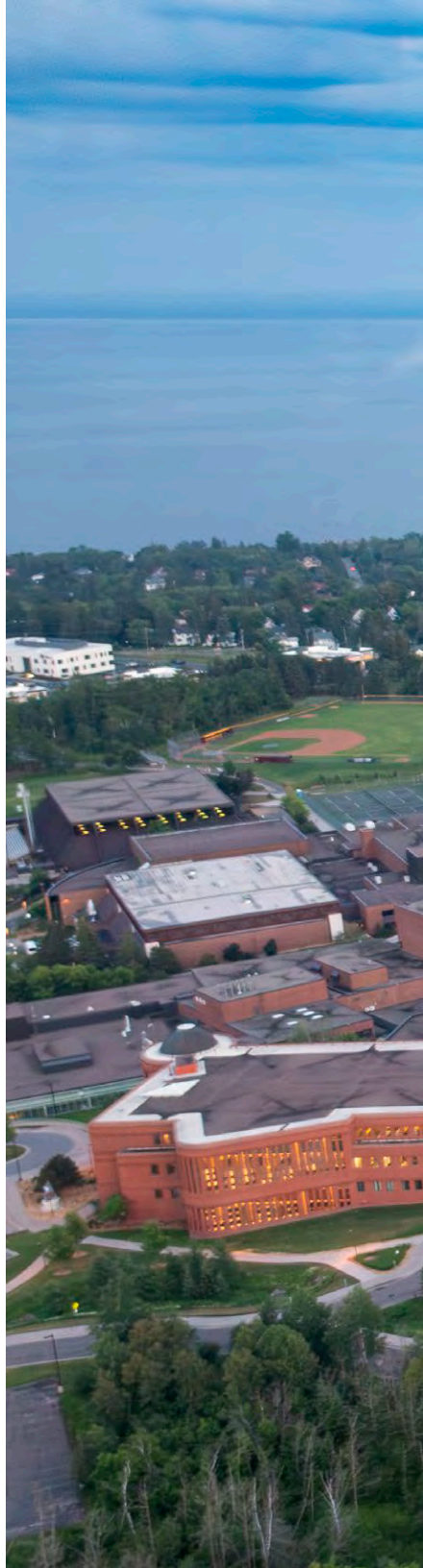
- A New Health Center
- B New residence hall
- C Parking ramp
- D Sustainability corridor
- E Dining and mobility hub
- F Reconfigured athletic fields
- G Reforestation & parking reduction
- H New visitor's gateway

Campus in 2053 (Approx)

- (A) Reforestation
- (B) New residence halls
- (C) Parking ramp

Campus Growth and Property Acquisition

In the near future horizon, campus growth is expected to be accommodated on land already owned by the University. However, as enrollment and other mission support activity expands beyond the capacity of the current footprint, it may be appropriate to consider additional land purchase consistent with the Regents' policy on land acquisition. Maintaining a stable, vibrant surrounding edge to the campus is a high priority for UMD as a good neighbor within the City of Duluth. Consideration of impact to municipal tax base, maintenance of city systems and preservation of physical and natural resources are all contributing factors to long term decisions about land assembly immediately adjacent to current campus holdings on the core UMD campus site.



Acknowledgements 7

UMD Campus Plan Update and Climate Action Plan Acknowledgements

Interim Chancellor David McMillan and the Executive Committee; Interim Vice Chancellor for Finance & Operations Sue Bosell, Vice Chancellor for Student Life Lisa Erwin, Interim Executive Vice Chancellor for Academic Affairs Amy Hietapelto, and Associate Vice Chancellor for Academic Affairs Jennifer Mencl, provided direction and made sure recommendations of the Campus Plan and Climate Action Plan align with University of Minnesota Duluth goals.

The Executive Committee selected an advisory committee made up of representatives across UMD to provide guidance and direction to the planning team. The Advisory Committee included the following:

- Chuck Bosell, ITSS
- Kim Dauner, Faculty Senate Rep
- Julie Etterson, Biology, Institute on the Environment
- Forrest Karr, Athletics
- Pat Keenan, Student Life
- Jonna Korpi, Facilities Management/Sustainability
- Katy Morgan, Staff Senate Rep
- Susana Pelayo-Woodward, Diversity & Inclusion
- Shane Peterson, Facilities Management
- John Rashid, Facilities Management
- John Sawyer, Facilities Management
- Ella Stewart, Student Association Representative

The coordinated Campus and Climate Action Plans were informed through the participation of the following UMD campus community members:

- Climate Action Plan Subcommittee
- Facilities Subcommittee
- Multicultural Student Center
- Student Leader Open Forum
- Focus Groups
  - Athletics & Recreation
  - Deans & Research Directors
  - Dining Services & UMD Stores
  - Facilities Management
  - Health Services
  - Housing & Residential Life
  - Kirby Student Center
  - Sustainability
  - Transportation & Parking Services & Student Affairs

Thanks to all the students, faculty, and staff for their time and contributions to develop the UMD Campus Plan Update and Climate Action Plans, October 2023.

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AHEAD
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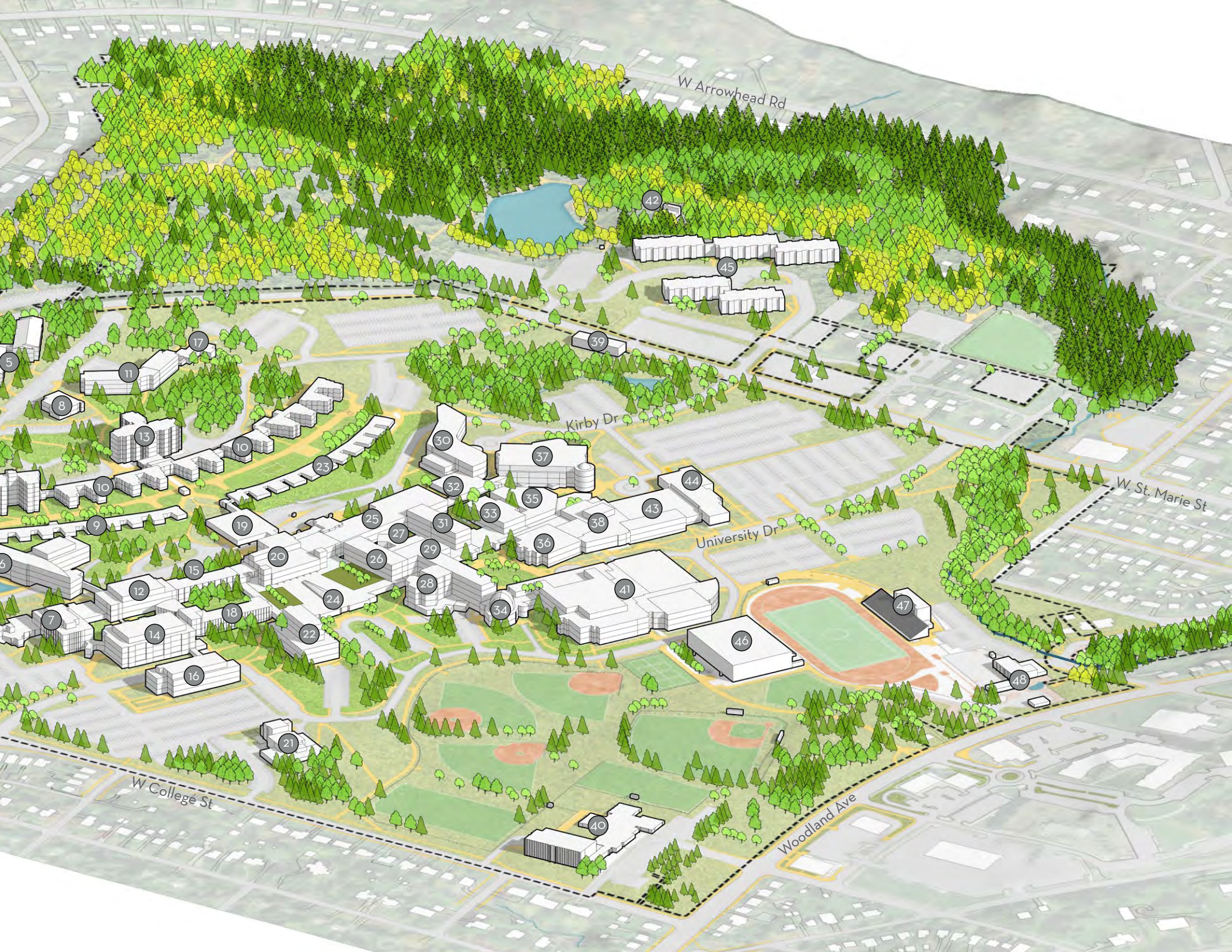
Appendix 8

2023 UMD Campus Buildings

1. Junction Apartments
2. WDSE
3. Ianni Hall
4. M.W. Alworth Planetarium
5. Goldfine Hall
6. James I. Swenson Science Building
7. M.W. Alworth Hall
8. Health Services
9. Vermilion Hall
10. Griggs Hall
11. Heaney Hall
12. Life Science
13. Lake Superior Hall
14. School of Medicine
15. Heller Hall
16. Heikkila Chemistry and Advanced Material Sciences
17. Heaney Hall Service Center
18. Chemistry
19. Residence Dining Center
20. Kirby Student Center
21. Lund
22. Darland Administration Building
23. Burntside Hall
24. Solon Campus Center
25. Kirby Plaza
26. Cina Hall
27. Tweed Museum of Art
28. A.B. Anderson Hall
29. Humanities
30. Labovitz School of Business
31. Bohannon Hall
32. Library Annex
33. Montague Hall
34. Weber Music Hall
35. Education Endazhi-ginkinoo'amaading
36. Marshall Performing Arts Center
37. Kathryn A. Martin Library
38. Engineering
39. CUB
40. Chester Park
41. Sports and Health Center
42. Bagley Classroom
43. Voss-Kovach Hall
44. Swenson Civil Engineering
45. Oakland Apartments
46. Ward Wells Field House
47. Malosky Stadium
48. Robert W. Bridges Fleet Ground Maintenance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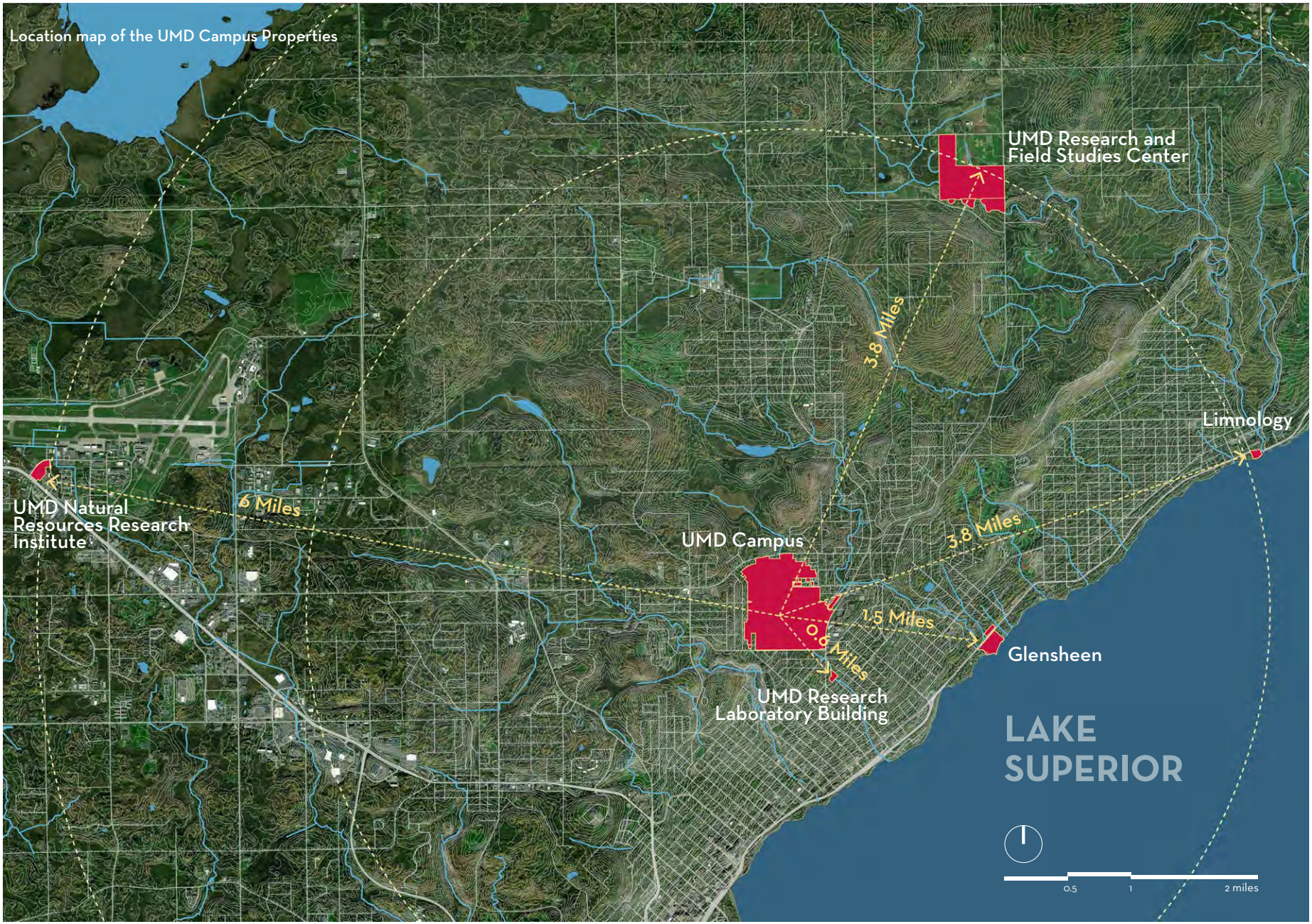

Location map of the UMD Campus Properties
UMD Research and Field Studies Center
3.8 Miles
Limnology
UMD Natural Resources Research Institute
6 Miles
UMD Campus
3.8 Miles
1.5 Miles
0.6 Miles
Glensheen
UMD Research Laboratory Building
LAKE SUPERIOR
0.5
1
2 miles

Aerial photo of the Glensheen Campus

Glensheen

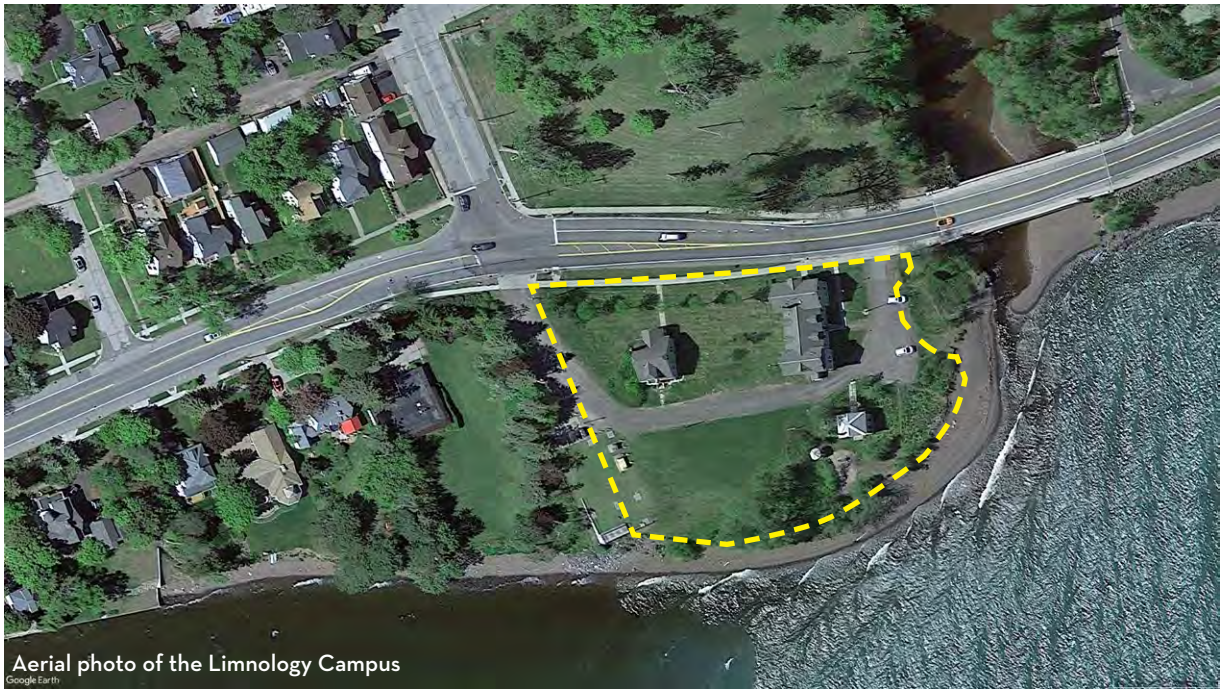
The Glensheen Mansion is a historic property located on a 22-acre lakefront parcel , listed on the National Register of Historic Places in 1991. Built as a home for the Congdon family, construction was completed in 1908. The property was transferred to the University of Minnesota in 1979, restored, and opened for public use as a museum. In addition to the Glensheen Mansion, the property also features the Boat House, Carriage House, and Gardener's Cottage.

The Glensheen Mansion today receives 110,000 – 120,000 visitors annually. It is used as a venue for community and corporate events, as well as leadership events for the UMN system. The property is also used for UMD classes, including museum studies, art history, and environmental education.

Potential improvements include expanded visitor parking, bus parking, and a public welcome center with restrooms. Deferred maintenance includes improvements to humidity control and cooling systems, electric infrastructure upgrades, and enhanced ADA accessibility.

Limnology

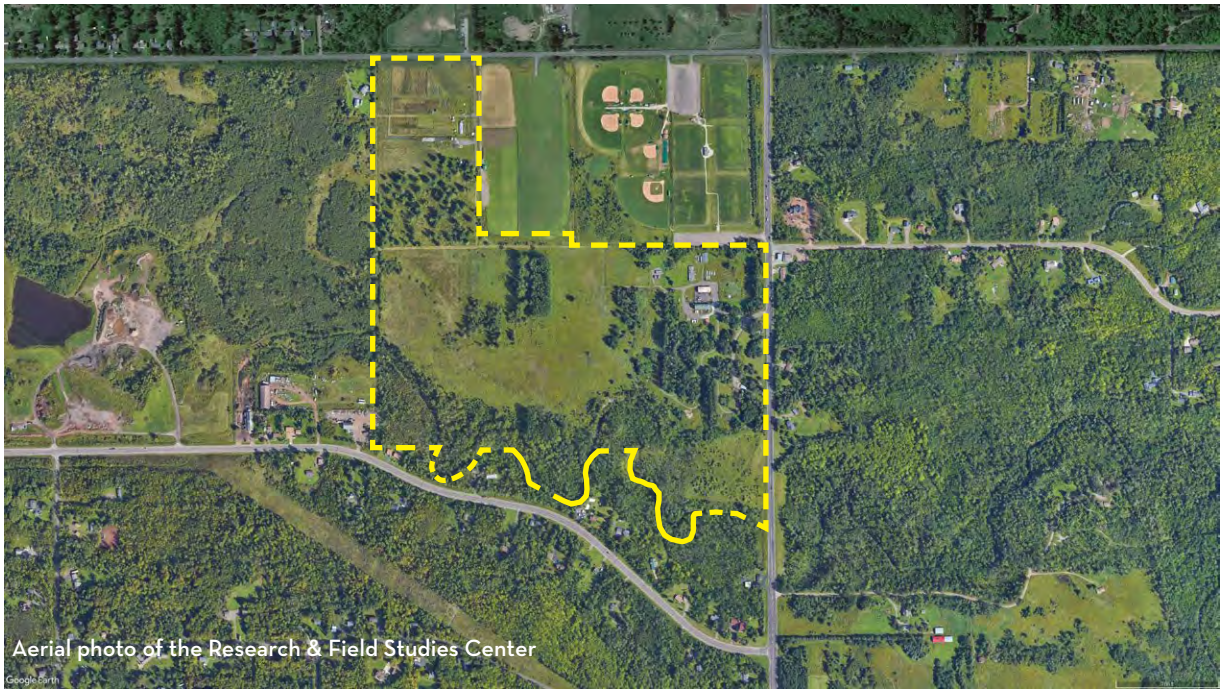
The Limonology building is located where the Lester River meets Lake Superior, approximately four miles from the UMD main campus. A former US Fisheries station, the University acquired the property in 1947. It has since supported a variety of functions, including limnology (freshwater research). The building was placed on the National Register of Historic Places in 1978. Renovated in 2012, the building today houses the UMD recreation sports and outdoor program (RSOP). Spaces on the first floor are also used by UMD departments for office and meeting space.



Aerial photo of the Limnology Campus

Research & Field Studies Center

Also referred to as "The Farm", the Research & Field Studies Center is operated as an experiential learning resource for UMD students and faculty. The 114-acre property is located approximately four miles from campus and is used primarily for research associated with a variety of UMD departments. Some instructional work also occurs at the site. The Research & Field Studies Center also contains the Land Lab, ten acres of land focusing on different facets of sustainable agriculture. A master plan was completed for the property in 2014. Recommendations focused on creating an indoor classroom space and making the property more accessible to visitors with enhanced pathways and wayfinding. No transit routes service the site; students and faculty must provide their own transportation.



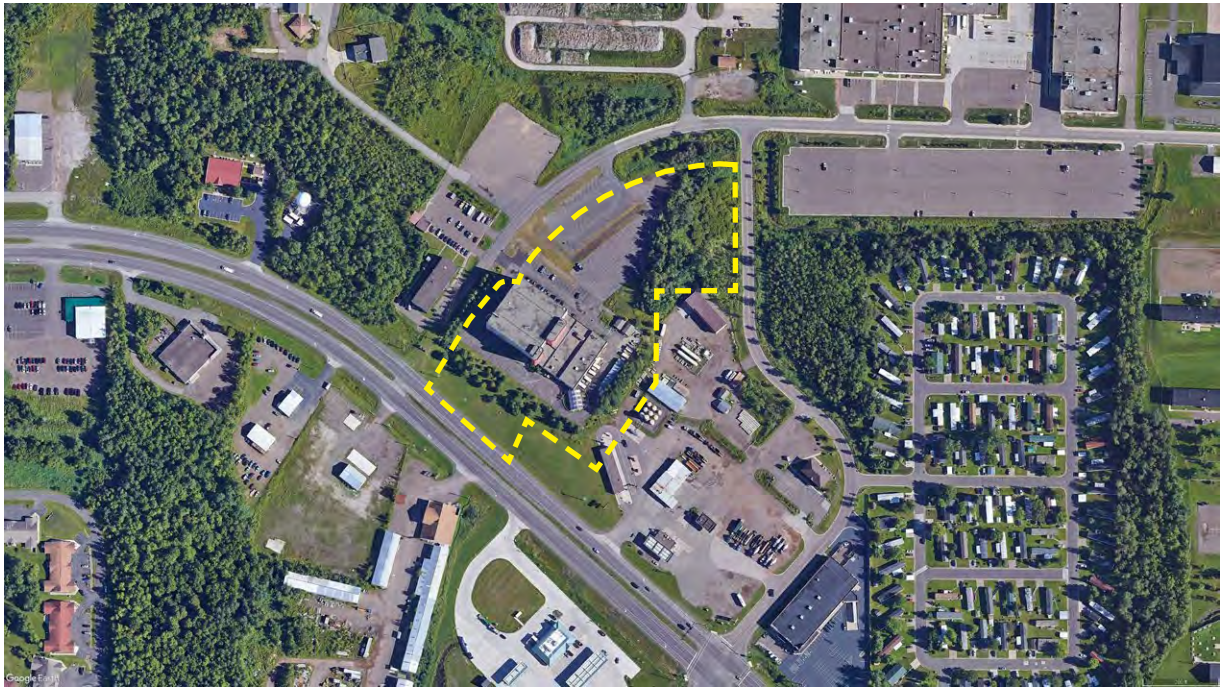
Aerial photo of the Research & Field Studies Center

Natural Resources Research Institute (NRRI)

The Natural Resources Research Institute (NRRI) is an applied research institute supporting approximately 150 permanent staff, as well as additional student researchers. NRRI has two industrial research facilities in the state.

The Hermantown location is situated at the headwaters of Miller Creek, in close proximity to the Duluth airport. The building which houses the research was constructed in the 1980s as an air defense command center. Today, it houses central NRRI administration, 19 research labs, and flexible pilot space serving the needs of land, wildlife, water, and mineral research. mineral research. Potential needs include expanded laboratory facilities, and converting office spaces into flexible laboratories to increase research capacity and enhance opportunities for collaboration with research partners, faculty, and students.

The 27-acre NRRI site in Coleraine focuses on minerals, metallurgy, and bio-based research. Formerly the property of the United States Steel Corporation, buildings on the site were built in 1930s and earlier. Potential needs include a new process technology building for metallurgy research.



Aerial photo of the Natural Resources Research Institute (NRRI)