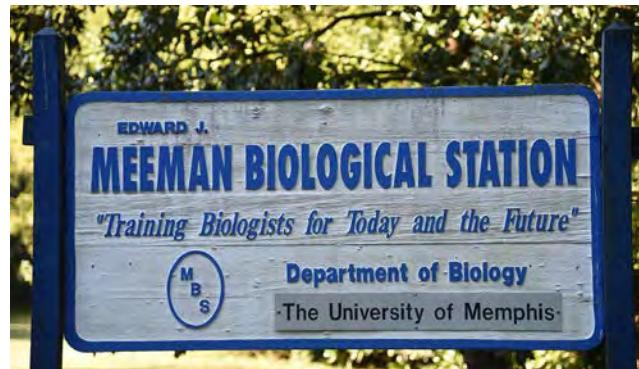


EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN



COVER

EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN
DECEMBER, 2018

 THE UNIVERSITY OF
MEMPHIS

ANDY HAYS 
LANDSCAPE ARCHITECT
© 2018 ANDY HAYS, ASLA

PREFACE

This document, *Edward J. Meeman Biological Station Conceptual Master Plan*, was created to recount the legacy of Meeman Biological Station and the important research and educational roles the Station has played in its nearly 60-year history. The *Plan* also examines the current condition of the Station and proposes how this extraordinary property can be greatly enhanced. Of utmost importance, the *Plan* demonstrates why a more comprehensive and fully functional Station would advance the research and academic goals of The University of Memphis and the diverse communities located within the greater Memphis region.

As documented herein, Meeman Biological Station is an irreplaceable >\$20M natural resource asset. The Meeman property contains 673 acres of forested and open field habitats and is adjacent to one of the most visited State Parks in Tennessee. Its close proximity to the Mississippi River, downtown Memphis and The University of Memphis makes the site one of the most valuable real estate properties in Shelby County. The companion Brunswick property has 367 acres of upland forest, field and wetland habitats, has frontage on a major tributary of the Mississippi River (the Loosahatchie River), and is located between the urban cities of Bartlett and Arlington. Significantly, Meeman Biological Station is the only member of the Organization of Biological Field Stations on the lower Mississippi River between Alton, Illinois and Baton Rouge, Louisiana.

This *Conceptual Master Plan* provides a guiding document for the world class campus that Edward J. Meeman envisioned when his valuable property was donated to the University of Memphis in 1967. Expansion and restoration of existing facilities, additional infrastructure and new structural assets such as a Mississippi River Center and Meeman Museum, are essential for its success. With these improvements, the opportunities for critical river research, establishment of a unique educational venue and expanded community outreach programs are limitless. As The University of Memphis continues to secure Carnegie I status as a top-tier research University, Meeman Biological Station could play a key role in achieving this lofty goal.



1. TABLE OF CONTENTS:

1.	TABLE OF CONTENTS	2
2.	ACKNOWLEDGEMENTS	3
3.	HISTORY	4
4.	CULTURAL INFLUENCES	6
5.	MISSION, PURPOSE AND VISION STATEMENTS	7
6.	STAFF, FACILITIES AND PROGRAMS	8
7.	SITE LOCATION, EXISTING CONDITIONS AND BUILDINGS	10
8.	EXISTING STRUCTURES	16
9.	SITE PHOTOGRAPHS	18
10.	RENOVATION AND REPAIR OF EXISTING FACILITIES	23
11.	DEVELOPMENT OF NEW FACILITIES	26
12.	CONCEPTUAL MASTER PLAN	28
13.	ECOLOGICAL RESEARCH FIELD STATION AND EDUCATION CENTER	33
14.	MISSISSIPPI RIVER CENTER AND MUSEUM COMPLEX	35
15.	BRUNSWICK PROPERTY	42
16.	SUMMARY AND CONCLUSION	43

2. ACKNOWLEDGEMENTS:

PHYSICAL ADDRESS:

Edward J. Meeman Biological Station (MBS)
1236 Cuba-Millington Road
Millington, TN 38053
Email: mbs@memphis.edu
Phone: 901.876.5336

CAMPUS ADDRESS:

Edward J. Meeman Biological Station (MBS)
Department of Biological Sciences
3700 Walker Avenue
The University of Memphis
Memphis TN 38152
Phone: 901.678.2581

PERSONNEL:

Dr. Michael L. Kennedy, Ph.D.
Director, Edward J. Meeman Biological Station
Professor of Biological Sciences
Email: mlkenndy@memphis.edu
Phone: 901.678.2597 (Campus) | 901.876.2599 (MBS)

Dr. Cheryl A Goudie, Ph.D.
Program Coordinator, Edward J. Meeman Biological Station
Adjunct Professor of Biological Sciences
Email: cgoudie@memphis.edu
Phone: 901.678.4299 (Campus) | 901.876.2050 (MBS)

PREPARED BY:

Andy Hays, ASLA
22 N. Front Street
Suite 780
Memphis, TN 38107
901.791.2369
andy@andyhays.com

3. HISTORY

EDWARD J. MEEMAN

Edward John Meeman (October 2, 1889 – November 15, 1966) was an influential mid-twentieth-century journalist, newspaper editor and conservationist. Among other publications, he was the editor of the Memphis Press-Scimitar in his adopted home city of Memphis, Tennessee. He was an early advocate of what became the Tennessee Valley Authority along the Tennessee River that provided electric power to isolated sections of a half-dozen area states. In the early 1930's, Meeman went to Germany to study conservation and forestry. He also supported what became the Great Smoky Mountains National Park which was dedicated in 1940 by U.S. President Franklin D. Roosevelt. He was nominated for a Pulitzer Prize in 1946 for his articles and editorials opposing the E.H. Crump political machine that dominated local and State politics. Meeman retired from the editorship of the Memphis Press-Scimitar in 1962.

Upon his death and according to his wishes, Mr. Meeman was cremated and buried at the base of an unmarked tree on his property. The Edward J. Meeman Foundation (established by Mr. Meeman in 1949 and appointed with his trusted friends) posthumously provided generous endowments to institutions of higher learning including funds for the Edward J. Meeman Center for Life-Long Learning at Southwestern (now Rhodes) College and funds for the Edward J. Meeman Journalism Building at Memphis State University. The Foundation also deeded Mr. Meeman's home and property to Memphis State University to become the Edward J. Meeman Conference Center and the Edward J. Meeman Biological Station (MBS), respectively.

MEEMAN-SHELBY FOREST STATE PARK

After visiting Germany and seeing the relationship of city-dwellers and their nearby forests, Mr. Meeman realized that the eroded lands of west Tennessee could be reclaimed and prosper through reforestation. He worked with State Forester James O. Hazard and identified land about 12 miles north of downtown Memphis on the third Chickasaw bluff overlooking the Mississippi River. In 1933, the National Park Service provided Shelby County, Tennessee, money and Civilian Conservation Corps labor for the park's initial development. Land clearing began in 1935 and improvements commenced over the next several years. Other planned improvements were halted when national priorities turned toward World War II. The National Park Service transferred the Shelby Forest Recreational Demonstration Area to the State of Tennessee on May 4, 1944, and work on park development began again. In addition to the park's recreational areas, which are managed by Tennessee State Parks, much of its acreage was also designated as Wildlife Management Areas (Eagle Lake Refuge and Shelby Forest) for restoration and enhancement of wildlife and came under the authority of the Tennessee Wildlife Resources Agency.

After his death, the Tennessee Ornithological Society of Memphis suggested that the park be renamed to honor Mr. Meeman. In September 1967 Mr. Meeman's name was added to honor his commitment to the forest, to conservation, and for his leading and enduring role in the environmental movement. Today, Meeman-Shelby Forest State Park is one of the largest and most visited state parks in Tennessee with 12,539 acres of hardwood forest bordering the Mississippi River. The Park boasts 10 State Champion Trees and two National Champion Trees as well as endangered and protected plants among its many flora and fauna.

EDWARD J. MEEMAN BIOLOGICAL STATION

Trustees of the Edward J. Meeman Foundation began to dispense Mr. Meemans's assets and dissolve his estate in 1967. On multiple occasions, they met with representatives of Memphis State University. Dr. Cecil C. Humphreys, President, and Dr. Herbert Lee Williams, Chairman of the Department of Journalism, met with the Trustees to request funding for a first-class journalism building to enable recruitment of top faculty and students and for a speakers' series to help grow the program. Dr. Humphreys indicated that the Meeman residence and surrounding acreage would make an ideal location for a conference center that would be "isolated from the hustle and bustle of the usual conference locations" in the region and "be more conducive to discussions and decision-making". The Trustees were receptive to this suggestion and thought it was consistent with Mr. Meeman's expectations for use of his property. Dr. Humphrey's again met with the Trustees, accompanied by Dr. Robert McGowan, of the Department of Biology. Dr. McGowan suggested that the Meeman property would be "ideally suited for a natural wildlife area that could be used for experimental research" by faculty and students. President Humphreys agreed to allowing the property to be used by other institutions in the region.

When Dr. Humphreys next met with the Trustees on September 19, 1967, the Foundation proposed to provide \$200,000 towards construction of a new journalism building. Once established, the new program would be designated the Edward J. Meeman School of Journalism and Communication. The Foundation committed an additional \$5,000/year for 10 years to establish a Meeman Chair of Journalism and to finance guest lecturers. The Foundation also proposed to grant and transfer the Meeman residence and entire 623 acre property to be used for the Edward J. Meeman Conference Center and the Edward J. Meeman Biological Station (MBS) as a natural area for biological studies. A final stipulation was that 50 acres of land would be set aside for the deposit of cremated human remains and would be known as "The Garden of the Ever Living". On December 28, 1967, the Meeman property was conveyed to the State of Tennessee for use by Memphis State University.

In the ensuing five decades, numerous faculty and students from the Department of Biological Sciences, other departments within the University, Christian Brothers University, Rhodes College, Shelby State Community College and personnel from multiple other local, state and federal organizations have utilized MBS for research, education and community service.

NATURAL HISTORY / ECOLOGY

The Chickasaw bluffs were formed by deposits of glacial dust (loess) rising to approximately 300 ft. above the Mississippi River. The bluffs form a narrow transition zone between two major physiographic regions - the Quaternary valley of the Lower Mississippi River and the highly dissected Gulf Coastal Plain uplands. While the bluffs separate the alluvial valley from the coastal plains, they are considered part of this broad, gently sloping landscape that comprises the western third of the state of Tennessee. Ground elevation varies from 305 ft. at the edge of the Lower Mississippi River in the west to 560 ft. at the eastern edge of the Gulf Coastal Plain. The rolling upland topography has soils that consist mainly of clays, silts and sands deposited in ancient, shallow seas that once covered this area.

The primary Meeman site straddles two additional physiographic regions - the Mississippi Valley Bluff Hills and the Mississippi Valley Loess Plains. With this complexity of soils and origins, terrestrial and aquatic habitats on and surrounding MBS are exceptionally diverse. The Meeman site is east of the main-stem of the Lower Mississippi River and immediately adjacent to its floodplain.

The floodplains provide a variety of habitats, from deep ponds (oxbow lakes) to infrequently flooded terraces. Distinct forest habitat types include rolling terrain and steeply sloping hills of the Chickasaw Bluff. Uplands are characterized by mixed oak-hickory and beech-maple forests interspersed with old fields of varying ages, and lowlands include bottomland hardwoods that include cottonwood, elm, hackberry and cypress. Springs, permanent and temporary flowing streams, ponds and cypress swamps are also present in the area. Elevations on the MBS site vary from 250 to 400 feet above sea level.

The secondary Brunswick site is primarily floodplain adjacent to the Loosahatchie River, a direct tributary of the Mississippi River that flows through the northern portion of the Memphis metropolitan area. Much of this property was bottomland hardwood forest before conversion to agriculture. Habitats consist of old-field, wetlands, cypress swamps and small, slow-flowing streams and early successional forest of hardwoods. Private property in the form of small farms, large-plot subdivisions, and light commercial real estate surround the site. Overall, the habitat is typical of much of the mid-south and investigations conducted on these properties have wide application to the region.

4. CULTURAL INFLUENCES

LAND OWNERSHIP

MBS is composed of two separate properties. The primary Meeman property is located north of Memphis adjacent to Meeman-Shelby Forest State Park and has a total of 623 acres. The Brunswick property is located near Arlington, Tennessee and has a total of 367 acres. The combined acreage of the MBS is 990 acres.

The primary site is composed of seven parcels of land which Mr. Meeman purchased separately over several years. Parcel I, purchased from Ida B. Trotter on June 25, 1937, was 168 acres adjacent to Shelby Forest Recreational Demonstration Area (current day Meeman-Shelby Forest State Park). Parcel II, purchased from Claude L. Hannah on April 17, 1947, was an 8-acre strip of land (part of the E.E. Jeter tract) that ran along Bluff Road starting at Cuba-Millington Road. Parcels III, IV and V were purchased from Sophie Hays on October 25, 1950. Parcel III was 229.76 acres of land that included the Dolphus Cooper and Aaron Garrett tracts, and parcels IV and V were two 15-acre tracts purchased from Johnny Jenkins on August 1, 1944 and Lurenia Harrison on August 13, 1945. Parcel VI was part of a June 18, 1951 land swap. Land adjacent to the Shelby Forest Recreational Demonstration area (110.81 acres that Mr. Meeman had purchased from Miss L. G. Watts July 3, 1937) were exchanged for 38.1 acres (conveyed from the U.S. Government to the State of Tennessee) along Bluff Road and St. Paul Road. Parcel VII was purchased from Fontie Claire ApMadoc on March 22, 1966. It was 153.7 acres that were part of the Oldham estate. The entire 623-acre Meeman property was deeded December 28, 1967 to the State of Tennessee for use by Memphis State University. The transfer probably represented the largest material gift ever to the University.

The secondary Brunswick property includes wetland habitat and frontage on the Loosahatchie River. It was transferred from the U.S. Department of Agriculture Farmers Home Administration to the State of Tennessee on August 18, 1993.

RESTRICTIONS

As directed in the Meeman property Deed of Conveyance, the Meeman residence shall be known as the "Edward J. Meeman Conference Center" and the lands shall be known as the "Edward J. Meeman Biological Station". No permanent structures are permitted to be constructed on the Brunswick property.

CURRENT USES

MBS is used primarily for research, teaching and service activities. Research studies include biodiversity, conservation, natural history, genetics, reproduction, recruitment, competition, interaction and habitat utilization of coyote, white-tailed deer, raccoon, opossum, small mammals (such as deer mouse and shrew), wild turkey and migratory song birds. Some undergraduate and graduate courses that have been taught include Plant Ecology, Biology of Lichens, Wetlands Ecology, Animal Ecology, Herpetology, Avian Ecology, Mammalogy and Field Techniques in Vertebrate Biology. Also, MBS has an environmental education outreach program working with elementary and middle school students in the Shelby County Schools system. Collaboration has recently focused on Campus School with plans to interact with the new University Middle School.

5. MISSION, PURPOSE AND VISION STATEMENTS

MISSION

The mission of MBS is to provide critical knowledge associated with ecology, environmental biology and natural history and to conduct research, teaching and service programs that advance and promote the dynamic interactions between people and natural ecosystems in rural to urban settings using experiential, inquiry-based learning methods.

PURPOSE

MBS was established to encourage and foster scientific pursuits in the areas of ecology, environmental biology and natural history and to provide sites in a natural setting from which research and instruction could be conducted by qualified investigators. MBS provides opportunities for significant study and research of organisms in their natural habitats, offering an "outdoor laboratory and classroom" for experiential teaching and research that cannot be duplicated in a conventional University setting.

VISION

The vision of MBS is to provide an interdisciplinary unit within the University of Memphis that focuses on sustainability of natural resources, to be recognized for ecological leadership by the University, the regional community and the nation, and to become qualified to compete for recognition and support by the National Science Foundation and other national programs.

6. STAFF, FACILITIES AND PROGRAMS

STAFF

MBS has a full time staff of two: the Director and a Program Coordinator - both of whom have appointments in the Department of Biological Sciences. The Physical Plant employs a full-time Caretaker/Maintenance person who lives on the Station.

RESEARCH FACILITIES AND EQUIPMENT

Approximately 90 replicated artificial ponds for studies of amphibian populations are also available on the Meeman site. An array of nearly 700 nest-boxes has been established at the Station for long term study of migratory song birds. An automated weather station provides long-term baseline data on climatic conditions, and a radio tower and relay station operated by Center for Earthquake Research and Information provide a means of collecting and relaying data from remote seismic monitoring stations throughout eastern Arkansas and western Tennessee. Land transportation includes three licensed pick-up trucks and two 4-passenger all-terrain vehicles. MBS maintains several boats (an enclosed cabin 1999 Sea Ark Little Giant with twin, 150 hp Evinrude outboard motors; one 5.5 m john-boat with a 90-hp Johnson outboard motor; several 3 to 5 m johnboats with 9.9 to 15 hp outboard motors, and 12 Old Town canoes with a 6-canoe trailer) to support research and teaching. The State of Tennessee maintains a nearby concrete boat ramp in Meeman-Shelby Forest State Park that provides access to the Mississippi River. The Brunswick site has no permanent buildings.

MBS has one land-line telephone in each of its buildings. Hard-wired and wireless internet capability is also available in these buildings. A hand-held radio system is available for field crews. In a cooperative agreement with Meeman-Shelby Forest State Park, the radios are linked with the Park repeater (used by Park Rangers) to broaden the range. The radios and repeater render total coverage of the MBS and adjacent areas, as well as coverage several miles up and down the Mississippi River.

RESEARCH AND EDUCATIONAL EXPERIENCES

Faculty from the Department of Biological Sciences use MBS to teach classes during the regular academic year and also provide full courses during the summer. These courses incorporate lecture, data collection in the surrounding environments, and laboratory analysis on site. Several courses, including those from the Earth Sciences Department, use MBS as a staging site for numerous class field projects along the nearby floodplain rivers and streams. More recently, faculty from across the University (including Journalism and Architecture) have availed themselves of teaching and research opportunities at MBS demonstrating the potential for wide-ranging and interactive utilization of the Station.

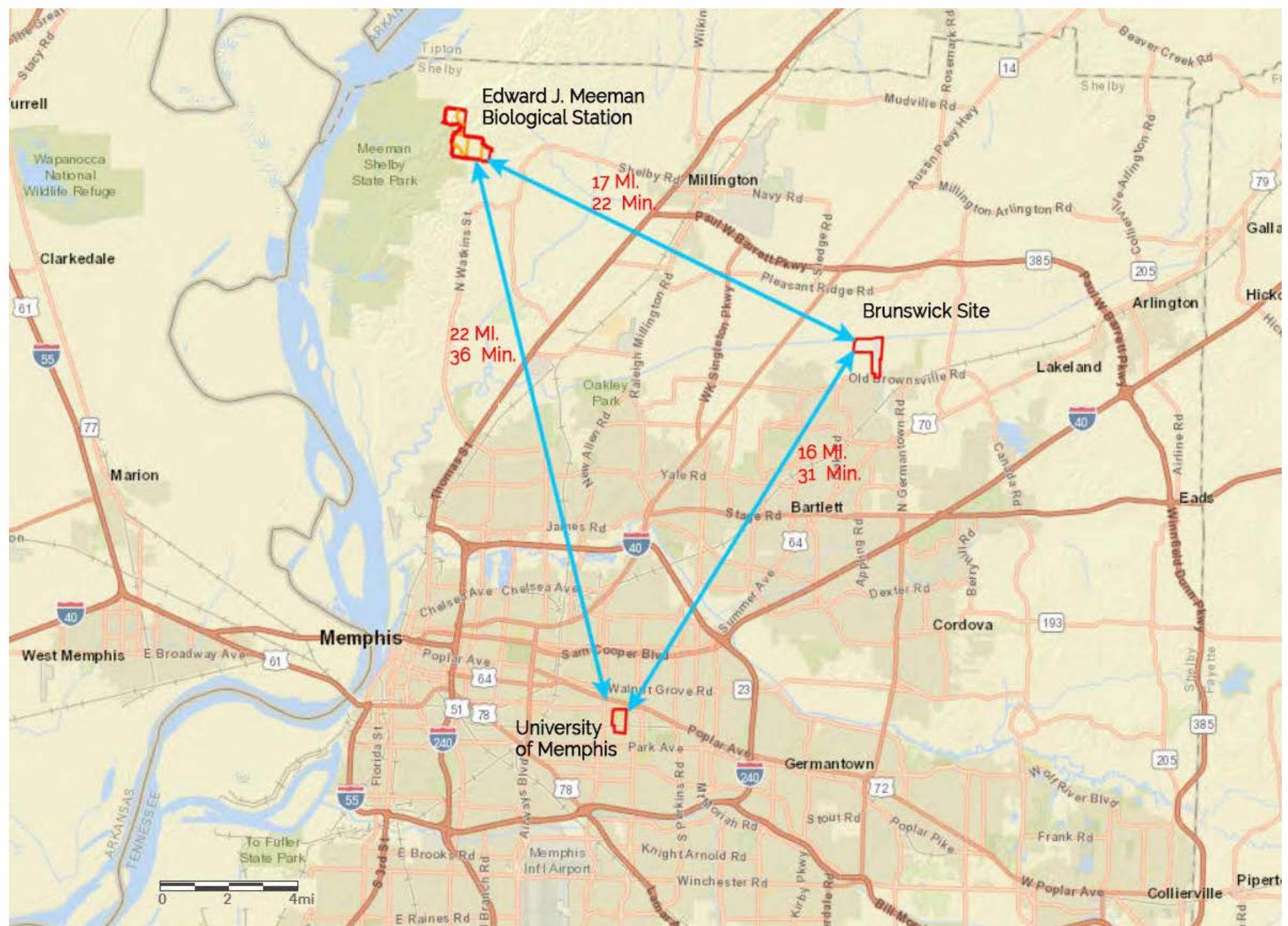
Several instructors and state and federal cooperators have established long-term study sites that are monitored and revisited intermittently. The long-term study sites will continue to produce data of relevance and these data will be made available to other researchers and classes upon request. The protected habitat available at MBS ensures continuity of long-term research and education programs.

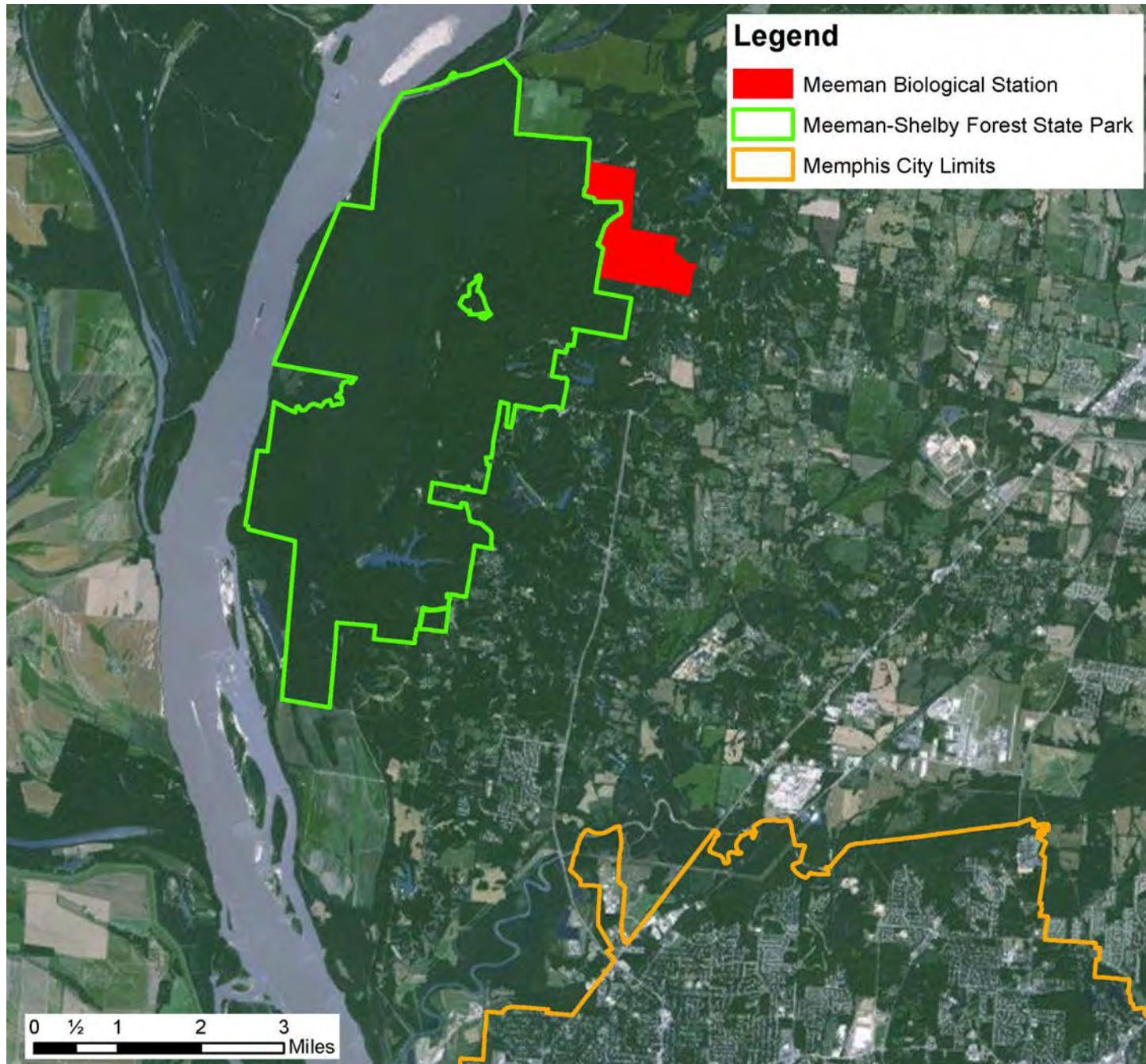
CURRENT RESEARCH TRACKS

Wildlife ecology
Conservation biology
Natural history of small, medium and large mammals
Interactions and competition among mammalian species
Utilization of arboreal habitat by small mammals
Evolution of mammalian behavioral systems
Evolutionary, physiological, and behavioral ecology of wild birds
Demographic monitoring and mapping of breeding populations of wild birds
Plant conservation and evolutionary genetics
Cross-domain microbial ecology and the mechanisms of community assembly



7. SITE LOCATION, EXISTING CONDITIONS AND BUILDINGS:



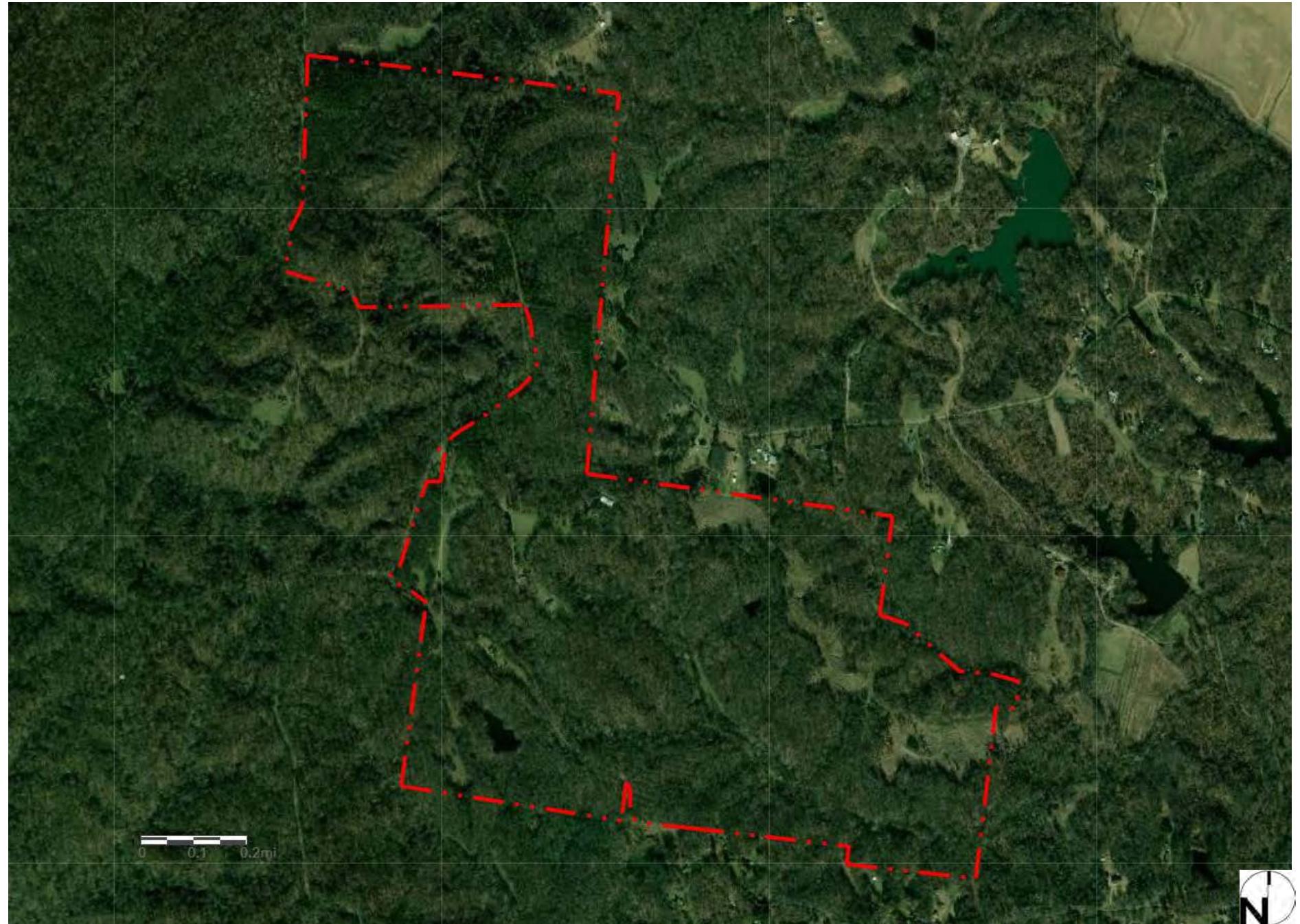


SITE LOCATION - ADJACENT TO MEEMAN-SHELBY FOREST STATE PARK
EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN
DECEMBER, 2018



ANDY HAYS
LANDSCAPE ARCHITECT
AH
© 2018 ANDY HAYS, ASLA





SITE CONDITIONS - AERIAL PHOTOGRAPH

EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN

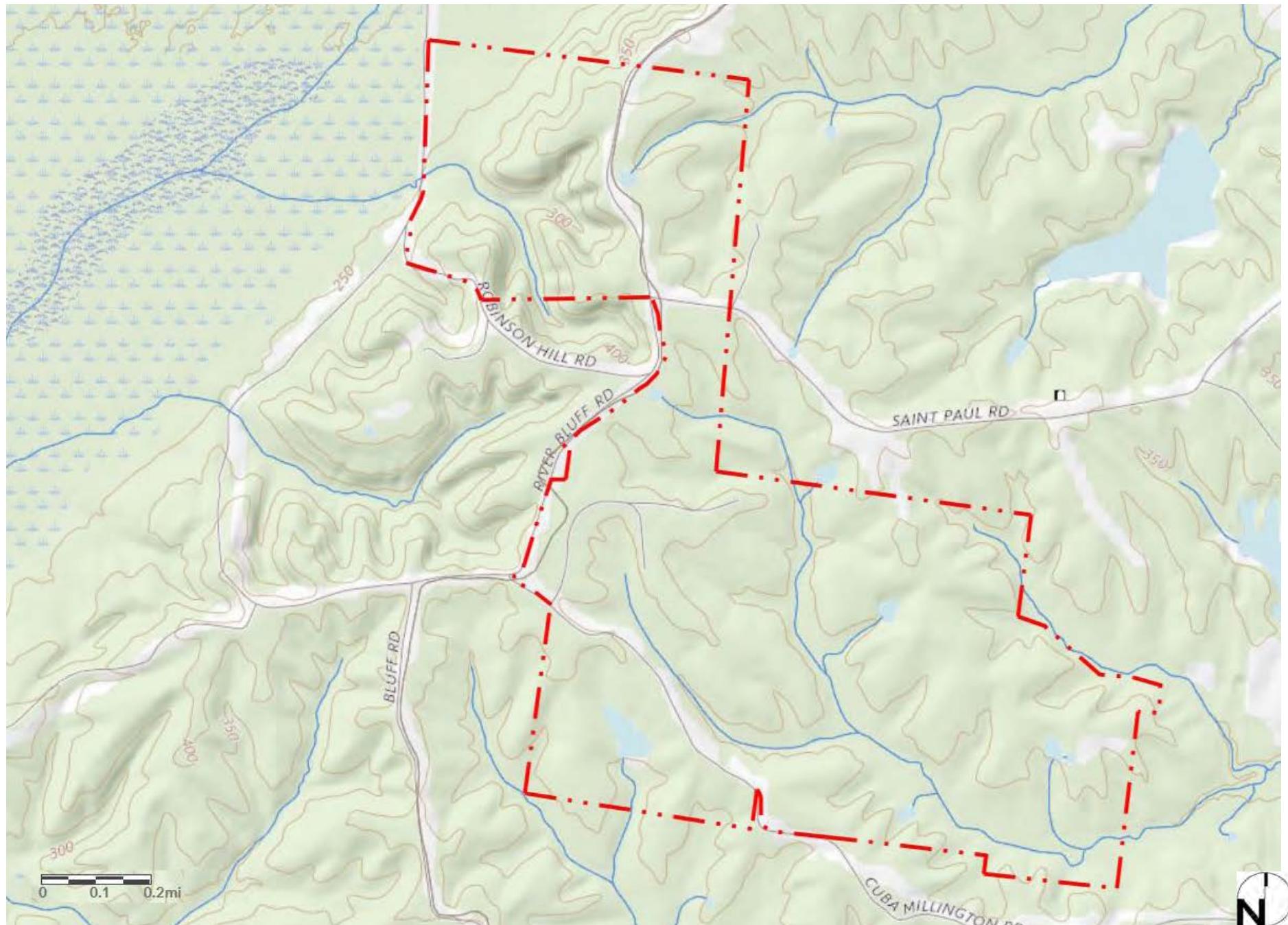
DECEMBER, 2018



ANDY HAYS
LANDSCAPE ARCHITECT

AH
© 2018 ANDY HAYS, ASLA





13

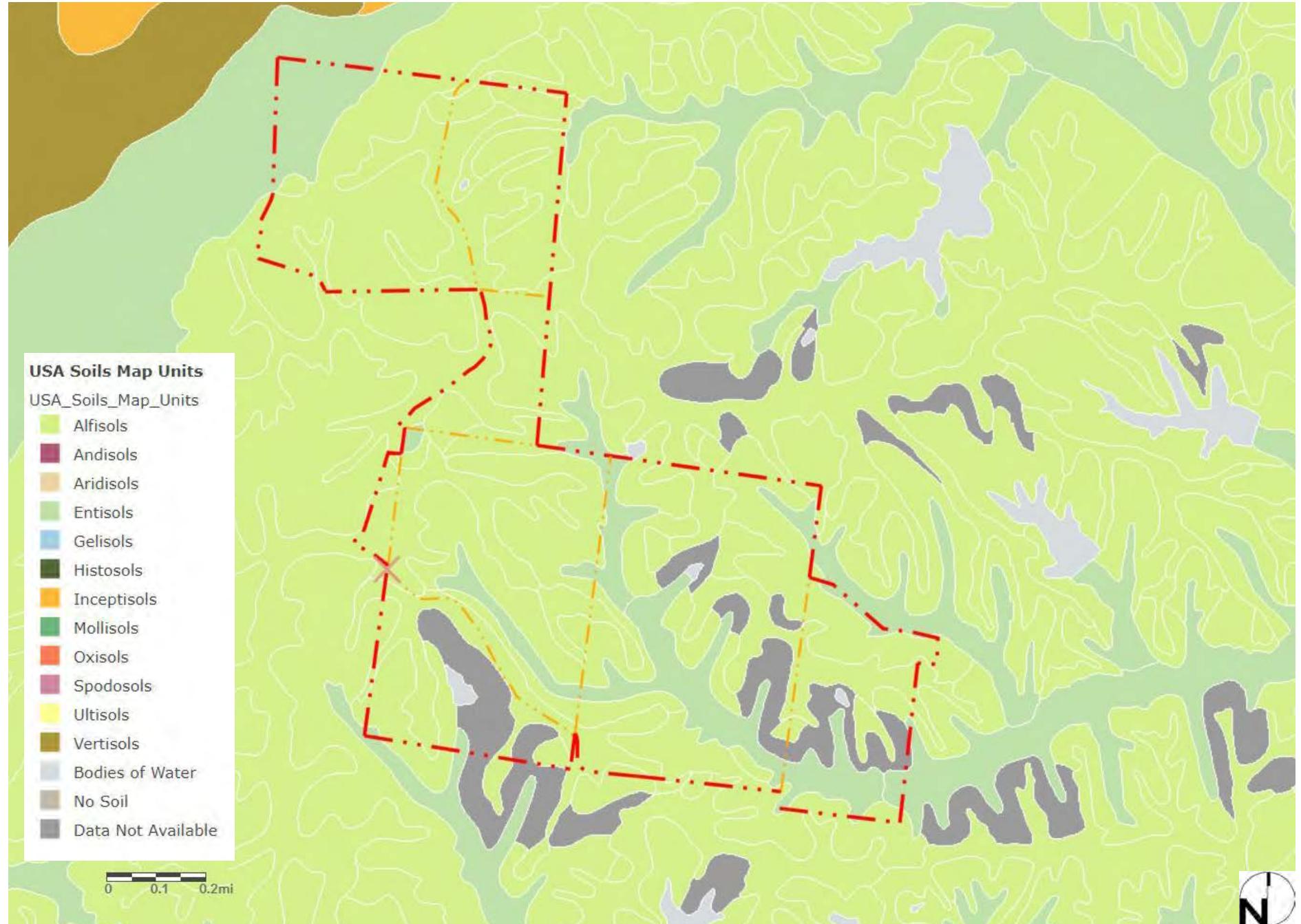
SITE CONDITIONS - TOPOGRAPHY AND WATER

EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN

DECEMBER, 2018

ANDY HAYS
LANDSCAPE ARCHITECT
AH

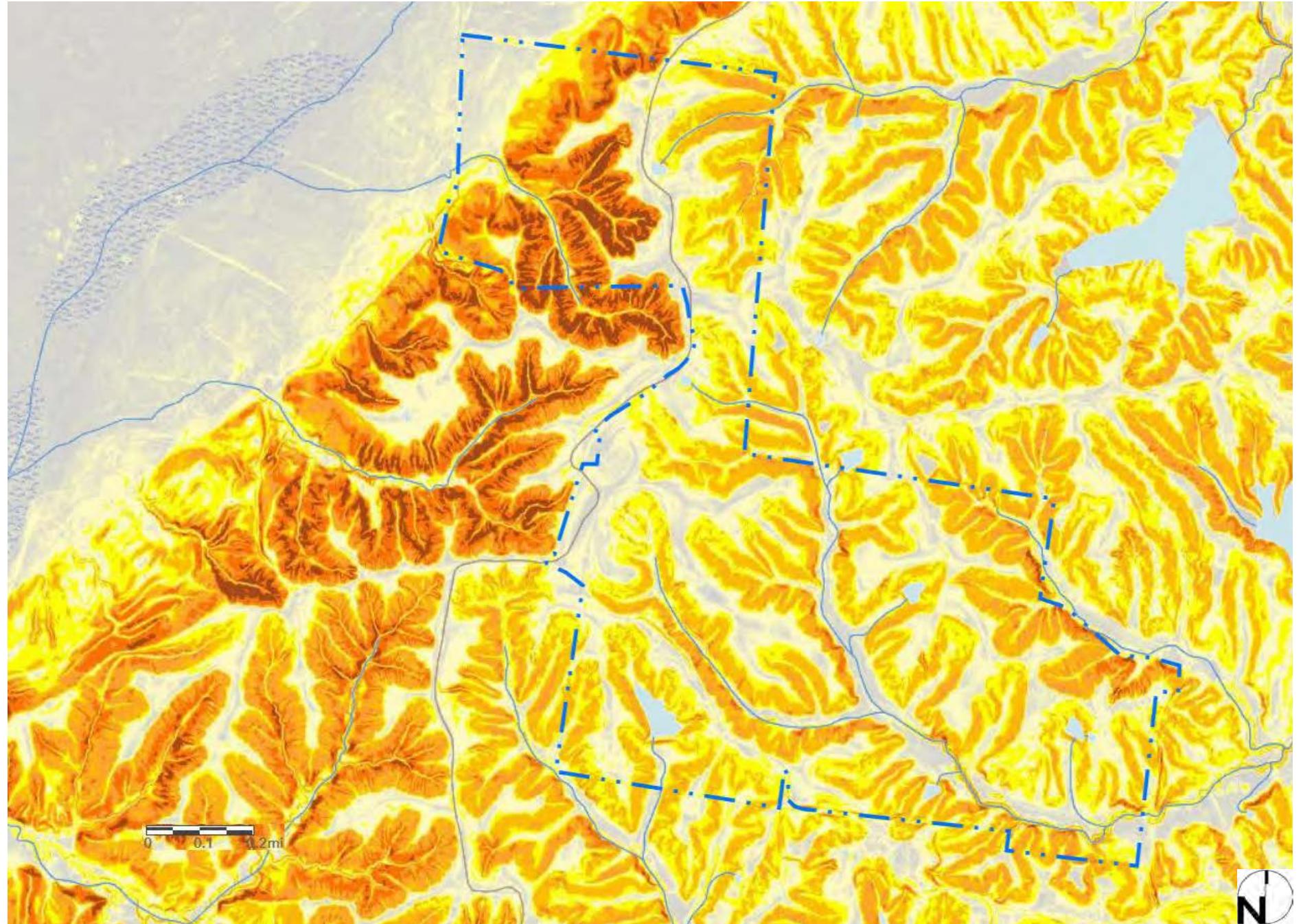
© 2018 ANDY HAYS, ASLA



SITE CONDITIONS - SOIL TYPES

EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN
DECEMBER, 2018





SITE CONDITIONS - SLOPE ANALYSIS

EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN

DECEMBER, 2018



ANDY HAYS
LANDSCAPE ARCHITECT
AH
© 2018 ANDY HAYS, ASLA

8. EXISTING STRUCTURES

All existing structures are on the primary property - none exist on the Brunswick site. Existing structures include a Field Research Laboratory, the Edward J. Meeman Conference Center, a dormitory, a caretaker's residence, a shop, storage buildings and an old farm barn.

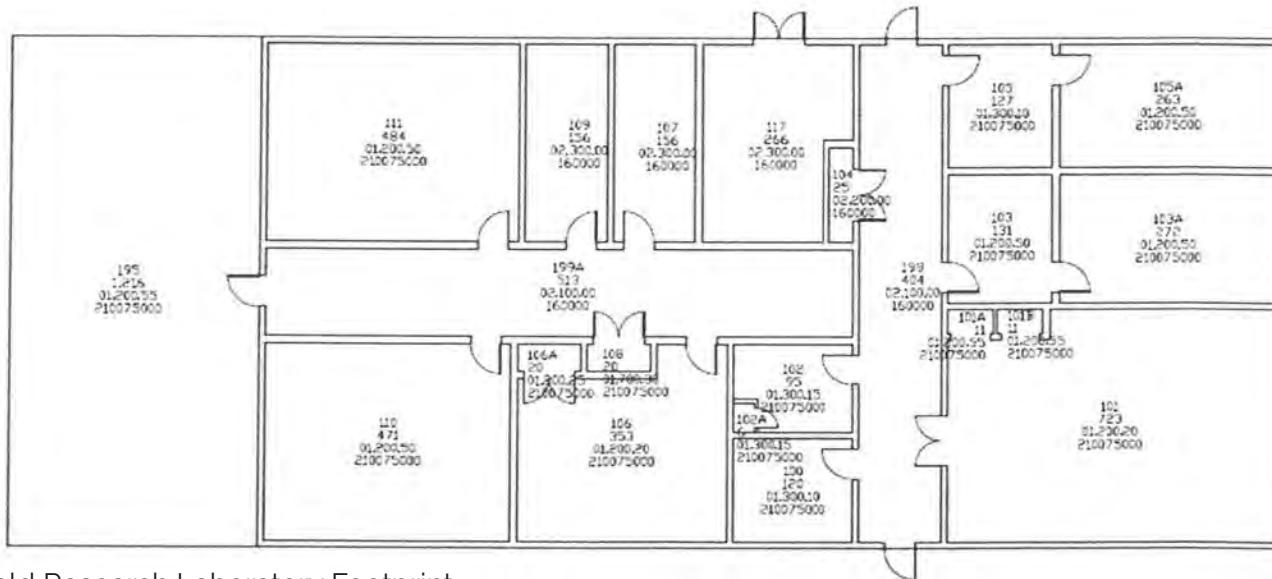
The 6,300 square foot (sf) Field Research Laboratory was erected in 1968 on the north side of the property. It is a substantial concrete block building that is still very serviceable. It contains a large classroom that can hold approximately 30 students, three smaller classrooms used for lecture, two general purpose laboratories with accompanying offices, a small kitchenette, a small storage closet and restrooms. The two rudimentarily equipped laboratories limit the number of scientists that use the space and cannot accommodate modern research needs. The classrooms are used for teaching and small meetings, as well as areas for initial curation of plant and animal collections. The laboratories are primarily used for water chemistry analyses and macroinvertebrate identifications using light microscopy.

The conference center is the original, two-story Meeman home. Built in 1937, it is about 2,600 sf. Its great room and dining room serve as meeting space for small conferences. Three bedrooms and an upstairs study provide additional conference break-out rooms and potential office space for faculty and visiting researchers. The detached garage currently has a shop/maintenance area and two additional rooms used for personal storage. In addition, there is an outdoor screened summer cottage - which was used heavily by Mr. Meeman and his guests. It is about 240 sf on a covered concrete slab with screened outdoor kitchen with sink and wooden stove, and dining room with fireplace.

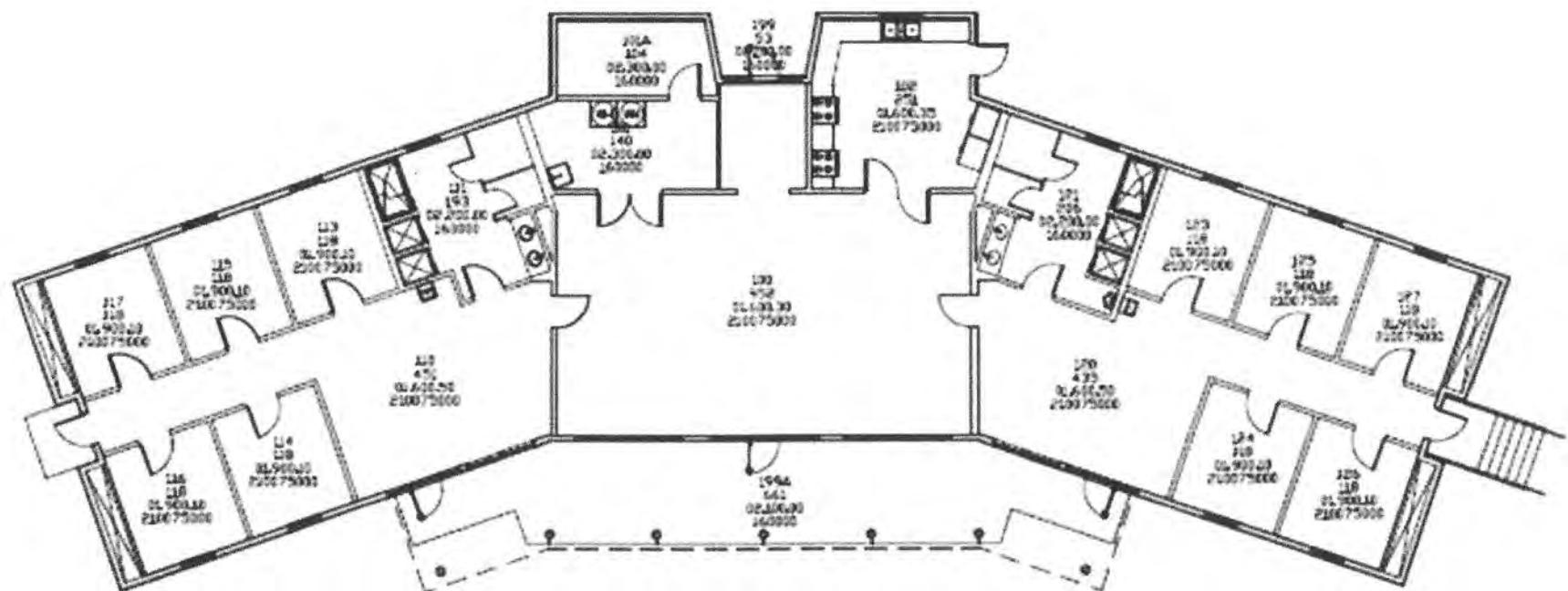
The 5,100 sf dormitory was built in 2003 with National Science Foundation funding in a large field south of the conference center. The dormitory has two wings of living quarters separated by a multi-purpose dining/meeting space. Each wing consists of five double-occupancy bunkrooms, a community bathroom with showers and a furnished lounge. The dining/meeting space can seat up to 75 people. The attached kitchen has two stoves, ovens, refrigerators, sinks and food preparation tables.

The caretaker residence was built in 1989. The building has been vacant almost a decade and has deteriorated. It is a small three bedroom home with about 1,100 sf on the south side of the county road dividing the property. The existing maintenance building adjacent to the caretaker's residence is in need of replacement.

The Meeman Barn was built as part of the original homestead in 1937. The structure was originally used for hay, horses and storage of other farm equipment. For the past two decades it has been the site of long-term research on a maternity colony of Big-eared bats, a species of conservation concern. No improvements are planned for the barn, although due to age and neglect, it is in poor condition. Current plans are to erect a "bat barn" nearby with hopes that the maternity colony will move to it before the barn falls down.



Existing Field Research Laboratory Footprint



Existing Dormitory Footprint

9. SITE PHOTOGRAPHS



Field Research Laboratory - Portico



Field Research Laboratory - South Side



Field Research Laboratory - East Side



Field Research Laboratory - Existing Storage



Field Research Laboratory - Boats and Storage



Field Research Laboratory - Mesocosms



Edward J. Meeman Conference Center - Front



Edward J. Meeman Conference Center - Summer Cottage



Edward J. Meeman Conference Center - Back



Edward J. Meeman Conference Center - Garage and Breezeway



Dormitory - Front



Dormitory - Back



Dormitory - Back



Dormitory - Rear Yard - West



Dormitory - Rear Yard - East



Caretaker's Residence - Front



Caretaker's Residence - Back



Caretaker's Residence - Workshop and Covered Storage



Original Meeman Barn



Payne's Pond Sign



Payne's Pond



Open Area Adjacent to Payne's Pond



Garden of the Ever Living Marker

10. RENOVATION AND REPAIR NEEDS OF EXISTING FACILITIES (in order of priority)

CARETAKER RESIDENCE: IMPROVEMENTS TO THE CARETAKER RESIDENCE WILL ALLOW RE-OCCUPATION BY THE CARETAKER AND HIS FAMILY. PHYSICAL PLANT AND THE DEPARTMENT OF BIOLOGICAL SCIENCES HAVE COLLABORATED ON PLANS FOR SOME RENOVATION AND REPAIR.

Needs:

- Repair water-damaged siding and fascia boards on exterior of building
 - Replace shingles on side of house
 - Repair or replace interior doors and frames
 - Paint interior and exterior
 - Renovate main and half bath
 - Repair or replace appliances in kitchen
 - Upgrade kitchen counters and cabinets
 - Replace floor covering
 - Repair screened back porch
 - Replace personal storage building behind residence
 - Upgrade internet and wireless service
 - Add master bedroom and bath to back of the existing building
- Estimated cost: \$100,000 - \$125,000

CONFERENCE CENTER: RENOVATION AND REPAIR OF THE CONFERENCE CENTER IS IMPERATIVE TO CURRENT AND FUTURE DEVELOPMENT AND PROGRAMMING OF MBS. THIS SPACE SHOULD BE RESTORED TO ITS DESIGNATED USE AS A SMALL CONFERENCE CENTER WITH BREAK-OUT ROOMS. THE ATTACHED GARAGE SHOULD BE CONVERTED TO ADMINISTRATIVE OFFICE SPACE FOR THE MBS DIRECTOR AND OTHER KEY PERSONNEL. RENOVATION OF THE CONFERENCE CENTER WILL ALLOW USE OF THIS SPACE FOR REVENUE-GENERATING PURPOSES.

Needs:

- Repair roof leaks
- Repair storm damage to external fireplace
- Remove mildew from exterior siding
- Replace worn, storm-damaged or out of code wiring
- Upgrade HVAC system
- Upgrade wireless service and coverage
- Replace carpet and other floor coverings
- Paint interior
- Expand wooden deck

Re-establish garden walkway between conference center and dormitory

Re-establish landscaping around conference center and cottage

Estimated cost: \$300,000

DETACHED GARAGE AT CONFERENCE CENTER: THIS BUILDING SHOULD BE RENOVATED INTO CENTRAL OFFICE SPACE FOR MBS ADMINISTRATION.

Needs:

Form three offices and a restroom

Replace existing garage door with regular door and window

Provide HVAC system

Paint interior

New floor covering

Office furnishings

Provide internet service and coverage

Bring wiring up to code

Estimated cost: \$150,000

SUMMER COTTAGE AT CONFERENCE CENTER: THE BUILDING IS DETERIORATED DUE TO LACK OF MAINTENACE AND USE. IT CAN EASILY BE RENOVATED FOR USE AS MEETING AND GATHERING SPACE.

Needs:

Clean kitchen and assure it is in working order

Renovate screen doors and windows

Certify wooden stove is working properly

Bring wiring up to code

Upgrade lighting to LED

Estimated cost: \$25,000.

FIELD RESEARCH LABORATORY: THIS FACILITY IS THE MOST HEAVILY USED BUILDING ON SITE AT PRESENT. IT'S HEAVY USE HAS LEAD TO NORMAL WEAR AND TEAR, AND NEEDS TO BE EXPANDED FOR FUTURE USE. THE UNIVERSITY'S PHYSICAL PLANT CONTRACTED AND COMPLETED REPAIR AND REPLACEMENT OF THE ROOF AND GUTTERS IN JULY 2016.

Needs:

Upgrade wireless service and coverage

Remove rust from exterior; prime and paint exterior

Paint interior

Replace water damaged ceiling tiles

Replace windows
Replace fluorescent lighting with LED fixtures
Install clear vinyl curtains to portico for weatherproof use
Install industrial heaters on portico for use in cold weather
Estimated cost: \$200,000.

DORMITORY: THIS BUILDING IS IN GOOD SHAPE AND HAS MINIMAL NEEDS. PHYSICAL PLANT CONTRACTED AND COMPLETED SOME REPAIRS IN APRIL, 2016.

Needs:

Upgrade internet and wireless service and coverage
Replace 20 year old furniture with gently used or new furniture
Gutters around the entire building
Estimated cost: \$75,000.

MISCELLANEOUS: THESE ITEMS APPLY TO ALL BUILDINGS OR ARE REPAIR OR REHABILITATION OF PROPERTY, PROPERTY LINES, ROADS, TRAILS AND HABITAT.

Needs:

Upgrade internet service in conference center, dormitory and laboratory
Upgrade computer capabilities in conference center, dormitory and laboratory
Replace underground gas tanks and repair or replace gas pumps
Build wooden bridges for walking trails
Build bridges for vehicular access to all parts of the MBS
Repair washed-out culverts on roads
Electronic gate at main entrance
Surveillance cameras on main buildings and storage
Establish improved signage on MBS
Clear property perimeter, repair fencing and add NO TRESPASSING signs
Install pollinator gardens in the heart of the station entrance fields
Establish trails in Garden of the Ever Living, between dormitory and laboratory, from laboratory through Beck's Woods, etc.
Rehabilitate forest-field edge around "Heart of the Station" and Payne's Pond
Remove invasive species such as Kudzu, Autumn Olive and Chinese Privet
Estimated Cost: \$500,000.

11. DEVELOPMENT OF NEW FACILITIES



Modern Field Research Building: A new building with laboratories that have water, air and gas supplies, water purification equipment and fume hoods is needed to attract scientists conducting cutting edge research. This building should accommodate at least four scientists with space for technicians and students as well as laboratory and office space. The laboratory space should be collaborative open-plan design, with restricted areas for DNA and RNA processing and it should be approximately the same size (~6000 sq. ft.) as the existing Field Research Laboratory.
Estimated cost: \$3.0 million.



Field Research Storage: A pre-fabricated, multipurpose enclosed building for storage of research equipment and supplies including boats, canoes, utility vehicles, trucks and other large field equipment. It should be approximately 30' x 120'. It should have a concrete floor, one tall garage door (for SeaArc Mississippi River boat), two regular garage doors (for vehicles and equipment) and two walk-in doors on each end of the building. It will need electricity, lighting, and water supplies, no windows and no HVAC.
Estimated cost: \$75,000.



Maintenance/Shop/Storage: A pre-fabricated, multipurpose, partially enclosed building for dry storage. This will replace the existing wooden structure at the caretaker's home and will become the central location for maintenance and storage of farm equipment, above grade gas tanks, tools, blowers, trimmers, and other small equipment and supplies used for maintenance of the property. The building should include an enclosed shop of approximately 20' x 40' with a concrete floor. Each end should have open covered storage area with gravel floor of approximately 20' x 40'. The enclosed shop should have large garage doors, water and electrical supply and HVAC. The entire building should be 20' x 120'.

Estimated cost: \$75,000.



Additional Dormitories: The ability to reach full capacity to teach multiple summer courses simultaneously is limited by the present 20-person double-occupancy dormitory. Additional lodging space would permit small meetings and conferences with extended stays to be held at the Station. Two additional dormitories, using the same footprint and layout of the existing dormitory, but as two-story structures, would increase lodging capacity to over 100. The buildings can be placed adjacent to the existing dormitory without compromising the existing trees or field.

Estimated cost: \$2.5-3.0 million.



Long-Term Housing: The ability to study large rivers and their tributaries require that scientists be on-site for extended periods. Providing housing that would accommodate up to four scientists (and their families) would provide the opportunity to attract large river scientists from around the country and the world in a collaborative atmosphere. The housing could be apartment-style or "tiny house" style located between the Conference Center and Field Research Laboratory.
Estimated cost: \$500,000



Meeting/Multi-Purpose/Classroom Building: Due to its small size, the existing Conference Center only has the ability to hold very small meetings or administrative retreats of about 25-40 people comfortably. A multi-purpose meeting facility is needed that can accommodate up to 150 people for regional conferences or small membership national meetings. The building should have a large auditorium-style room and 4-6 break out or classrooms with capacity to hold 15-30 people. It should have moveable walls to increase classroom capacity when needed. All rooms should be 'smart classrooms' with appropriate technology. This building should be situated adjacent to the current Conference Center and be connected with walkways to both the conference center and dormitories.
Estimated cost: \$5 million.

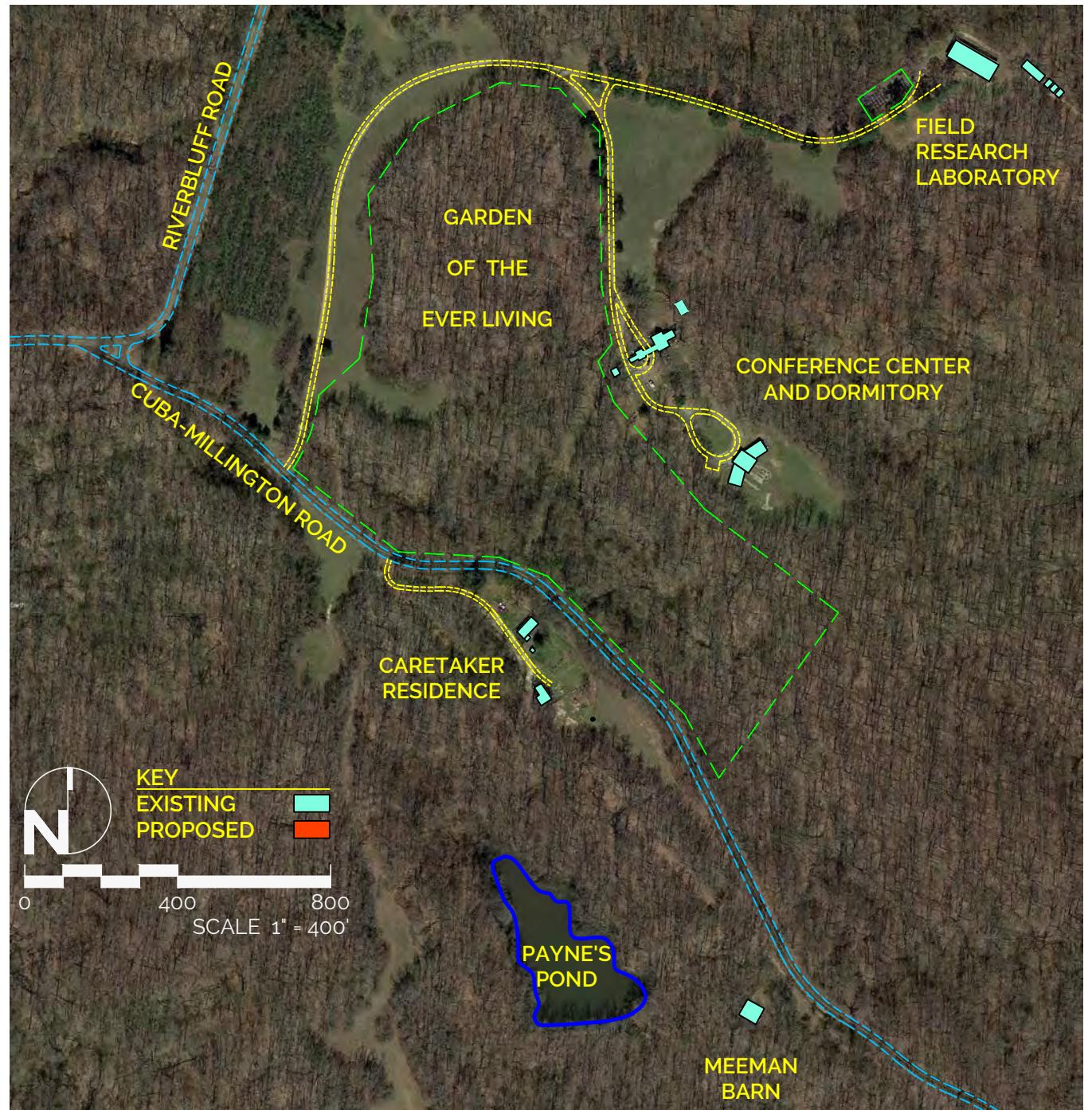


Amphitheater: There is a need for a covered outdoor space for lectures, inspection of collected specimens, dining and other activities. The structure should accommodate seating for about 100 people and have a small stage for presentations. Ideally, this would be located with the backdrop of Payne's Pond.
Estimated cost: \$75,000.

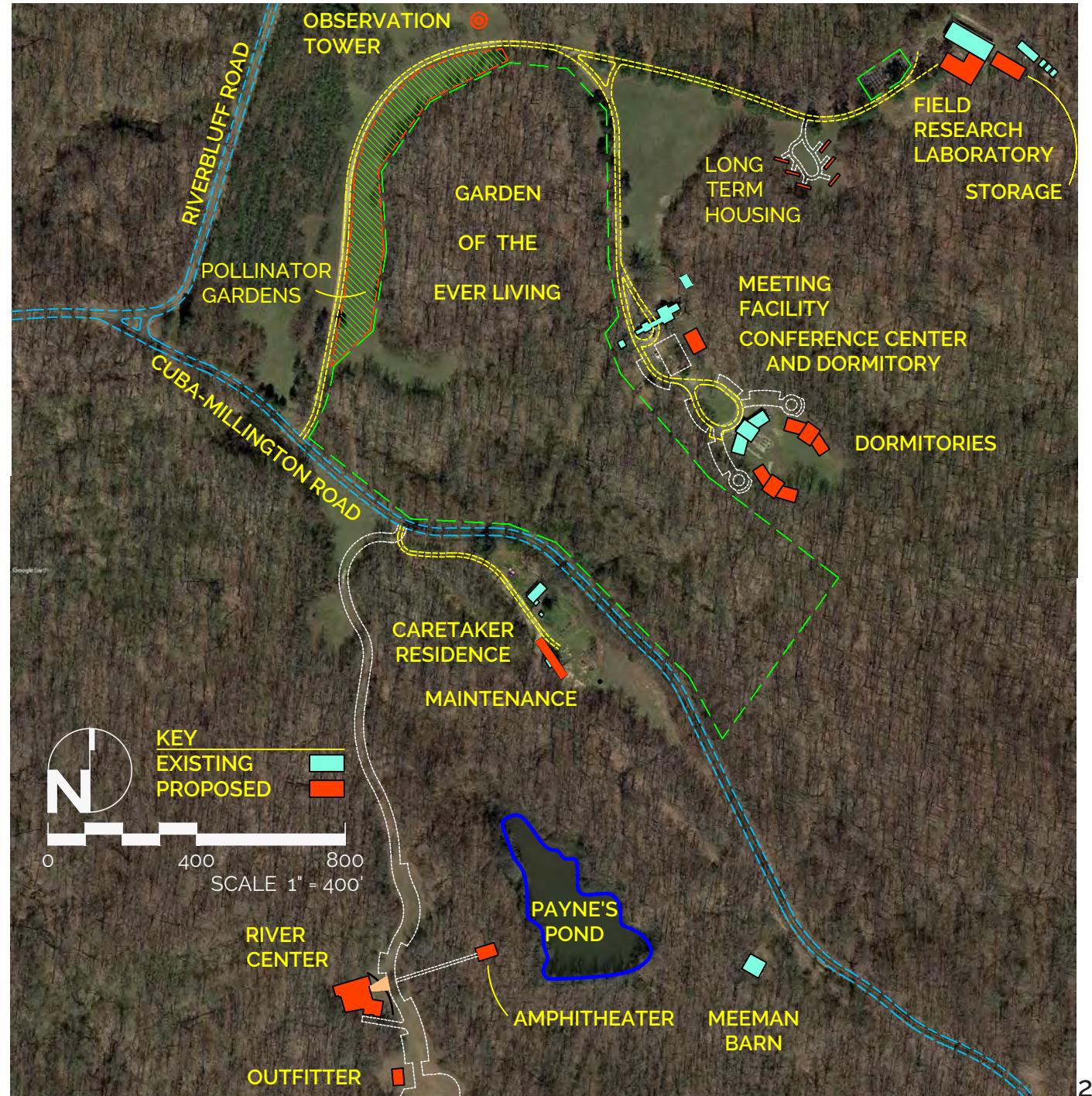


Observation Tower: Meeman Biological Station sits on the 3rd Chickasaw Bluff near the Mississippi River. An observation tower could rise above the tree canopy offering vistas of the Mississippi River, downtown Memphis and the unique forest ecosystem where the MBS is located. This would provide the opportunity to observe seasonal changes in vegetation and migratory species.
Estimated cost: \$250,000.

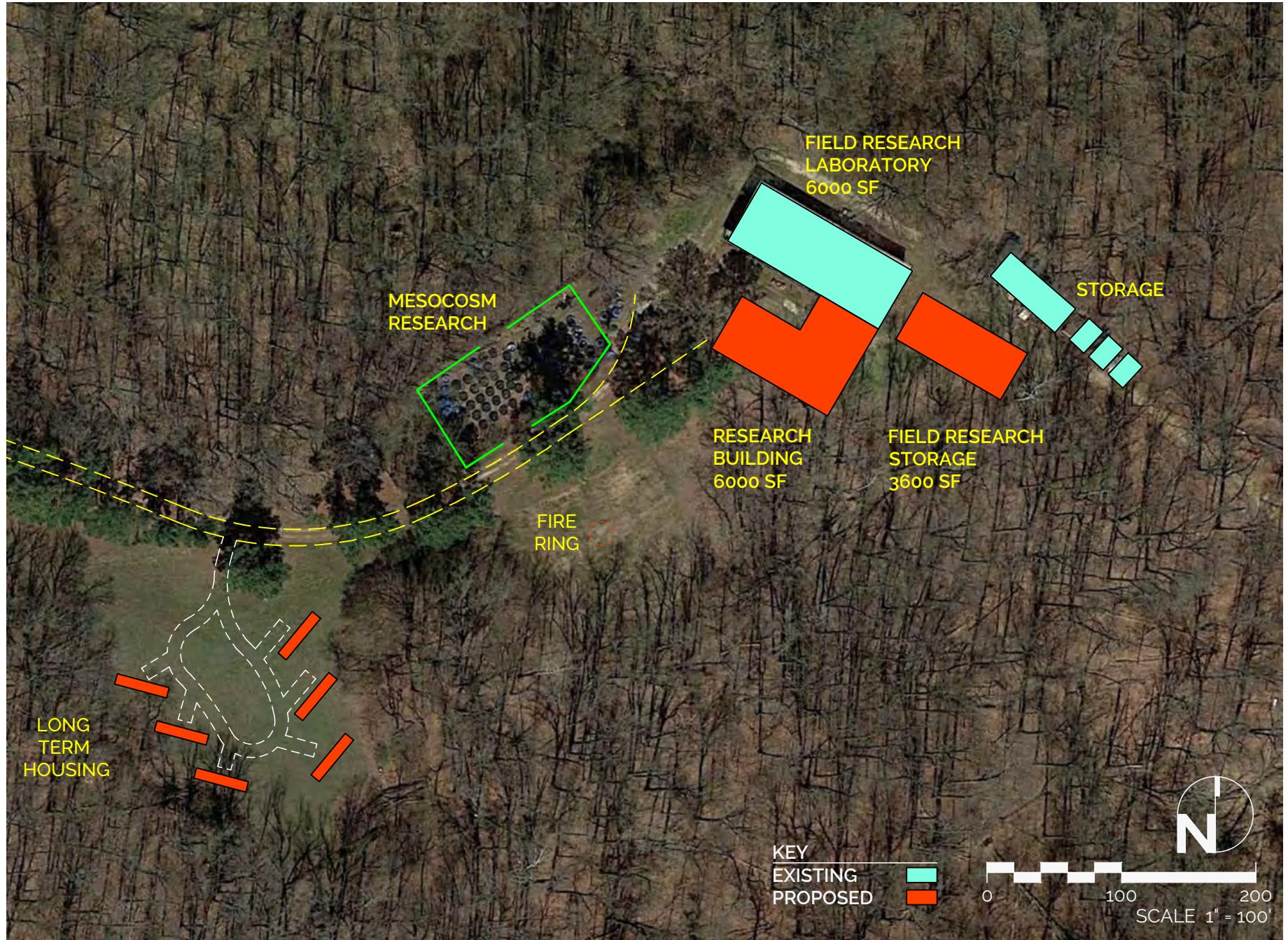
**12. CONCEPTUAL
MASTER PLAN**



28



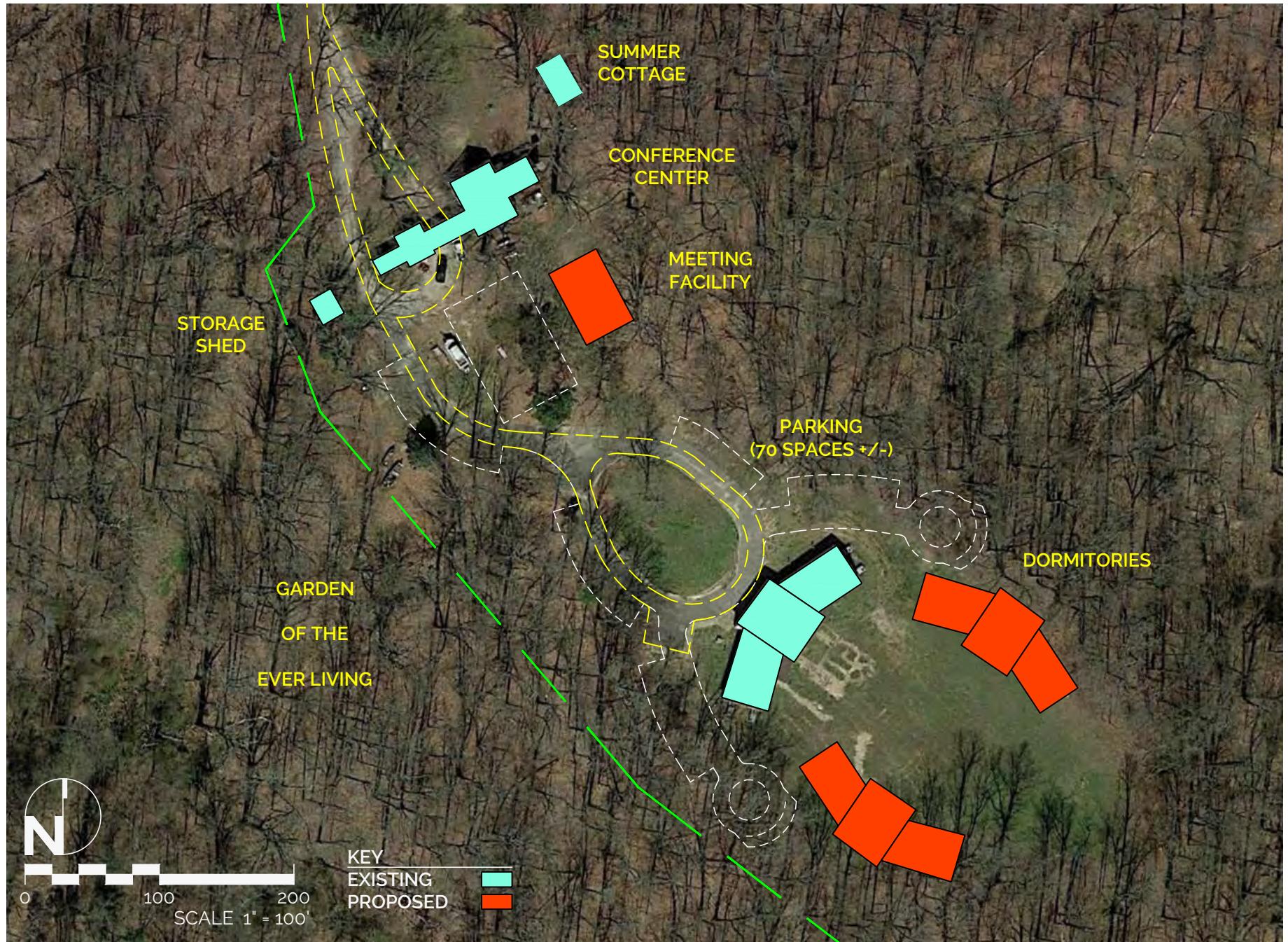
MASTER PLAN - OVERALL
EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN
DECEMBER, 2018



30

MASTER PLAN - RESEARCH, STORAGE AND LONG TERM HOUSING
 EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN
 DECEMBER, 2018

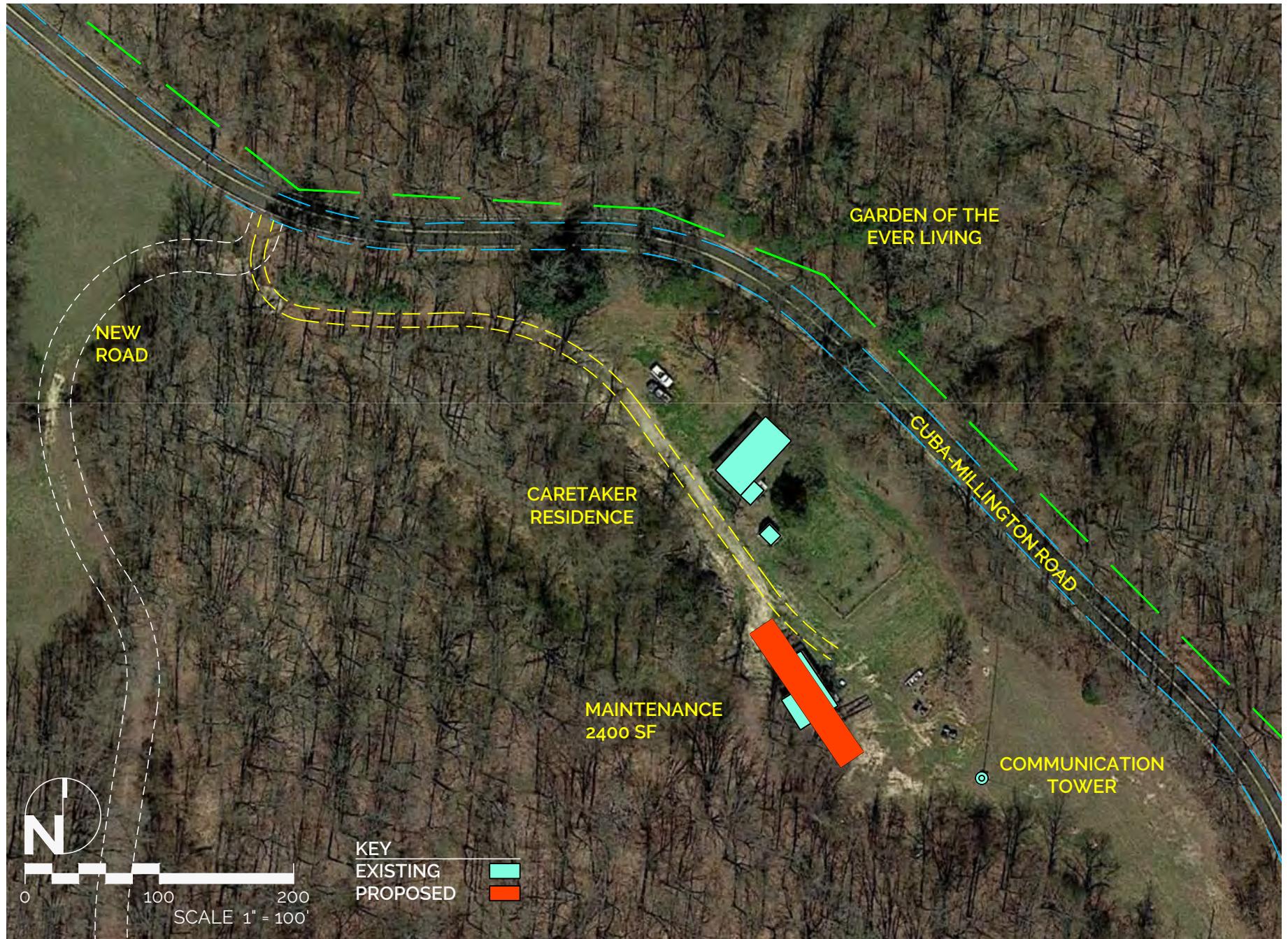




31

MASTER PLAN - EDWARD J. MEEMAN CONFERENCE CENTER AND DORMITORIES
EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN
DECEMBER, 2018





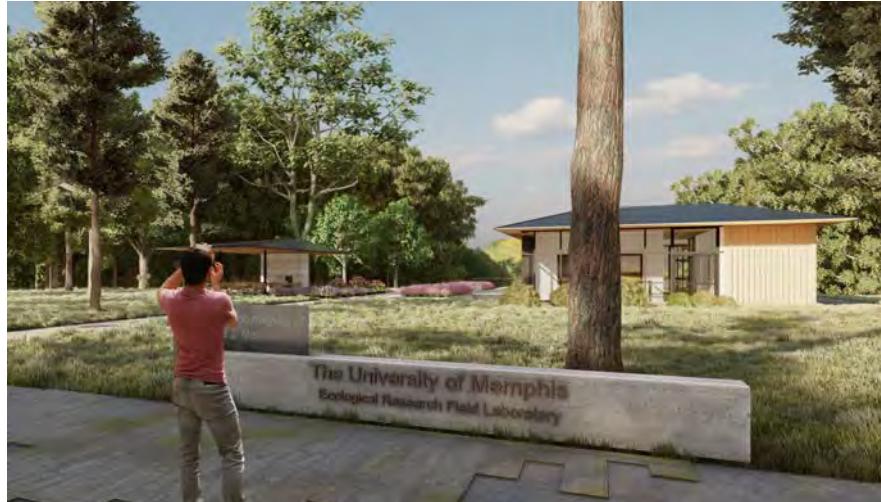
32

MASTER PLAN - CARETAKER RESIDENCE AND MAINTENANCE SHOP
EDWARD J. MEEMAN BIOLOGICAL STATION CONCEPTUAL MASTER PLAN
DECEMBER, 2018



13. ECOLOGICAL RESEARCH FIELD LABORATORY AND EDUCATION CENTER

The following renderings of an Ecological Research Field Laboratory and Education Center were conceptualized by Holly-Lynn Tedder (University of Memphis Department of Architecture, 2019) as part of her graduate program. Located in the northwest quadrant of the property, this building would emphasize an underutilized and underappreciated habitat of the MBS. The building is designed to meld research and education experiences in one of the most unique settings of Meeman Biological Station - perched atop the bluff. The location overlooks the eroded hillside and a stream 100 feet or more below and faces the Mississippi River - which is only two miles to the west.



Entrance



Interior



Courtyard



Elevation



Site Plan

34

14. MISSISSIPPI RIVER CENTER AND MUSEUM COMPLEX

Meeman Biological Station is uniquely situated along the bluffs of the Mississippi River approximately half way from the confluence of the Missouri and Illinois Rivers to the Gulf of Mexico at its terminus. River ecology changes dramatically over the course of the middle and lower Mississippi River and has long been a source for exploration and exploitation. Many communities have recognized the importance of the river to their existence for commerce, recreation, and of course, its natural beauty. Meeman Biological Station proposes the development of a Mississippi River Center and Museum Complex to emotionally and physically connect stakeholders of the northwest Shelby County community with the River, the history of the area, and with The University of Memphis. The Mississippi River Center and Museum Complex would provide a highly relevant and adaptable educational experience for residents and visitors and could expand economic opportunity with an outfitter and retail store providing all the trappings necessary for exploration of nearby natural resources

MBS has many potential avenues for growth in research, education, outreach and event hosting. The combination of unique natural resources, proximity to a major city, collaboration with a Tennessee State Park and federal agencies (such as U. S. Fish and Wildlife Service, U. S. Geological Survey, U. S. Army Corps of Engineers, U. S. Forest Service, etc.) make expansion and enrichment of MBS facilities and capacity desirable for the University of Memphis, the City of Memphis and the midsouth region.

At present Memphis is in the process of envisioning and enabling a six-mile renovation and repurposing of its downtown riverfront, spurred on by completion of the Big River Crossing (the longest public pedestrian/bicycling bridge across the Mississippi River). Visitors from all over the world are flocking to the Crossing and downtown Memphis, bringing significant economic impact. The musical history of Memphis is also a significant attraction (Beale Street and Graceland), but from there, an exodus south to the Mississippi Blues Trail drains economic input from Tennessee. Carol Coletta (President, Memphis River Parks Partnership), says the plan for the riverfront was guided by these principles: "Foster positive encounters, civic pride and identity, and new understanding of the Mississippi River; restore natural conditions, native ecology, and a more dynamic relationship between people and the river; and connect assets along the river, the riverfront to the city (downtown and the neighborhoods beyond).



Location Map

and people with each other." Coletta wants to take the "growing momentum of downtown and push it not just east, but also north and south."

Additionally, Meeman-Shelby Forest State Park recently received over \$2 million for renovation and upgrades to its facilities and trails. Six of their main cabins received new flooring, decking, electrical upgrades and on-demand water heaters in 2017. Kitchens and bathrooms were updated and new appliances were added in 2018. A new playground was built and new equipment was added to an existing playground. A handicapped-accessible kayak launch was also built. Work on renovation of the Civilian Conservation Corps lodge, bath house and group cabin will begin in 2019. Repairs to existing trails and construction of new trails will also begin in 2019. Some of this work was based on a restoration plan developed by the University of Memphis and funded by Tennessee Department of Environment and Conservation.

These developments are why building the Mississippi River Center and Museum Complex on or near MBS is important. It could be the organizing principle for driving tourism north from Memphis rather than south into Mississippi. Already, on-street bike lanes connect downtown, Meeman-Shelby Forest State Park (~18 miles) and the Mississippi River Trail. The Great River Road also extends biking and sight-seeing north along the western border of Tennessee. More than 50 points of interest exist between Memphis and Reelfoot Lake (~125 mi), including multiple scenic views of the river, wildlife refuges, wildlife management areas, historic and military parks, museums and other amenities, culminating in the northwest corner of Tennessee at Reelfoot Lake. The six counties of west Tennessee, with Shelby County anchoring the southern border and Lake County anchoring the northern border, provide exceptional opportunities for biking and motorized eco-tourism. A compelling center of interest that draws people in and northward is needed in every west Tennessee Mississippi River border county. The convergence of downtown riverfront development, upgrades to trails and facilities at Meeman-Shelby Forest State Park and plans for expanded and enhanced development of MBS provide such a narrative for establishment of the Mississippi River Center and Museum Complex in northwest Shelby County.



VISION

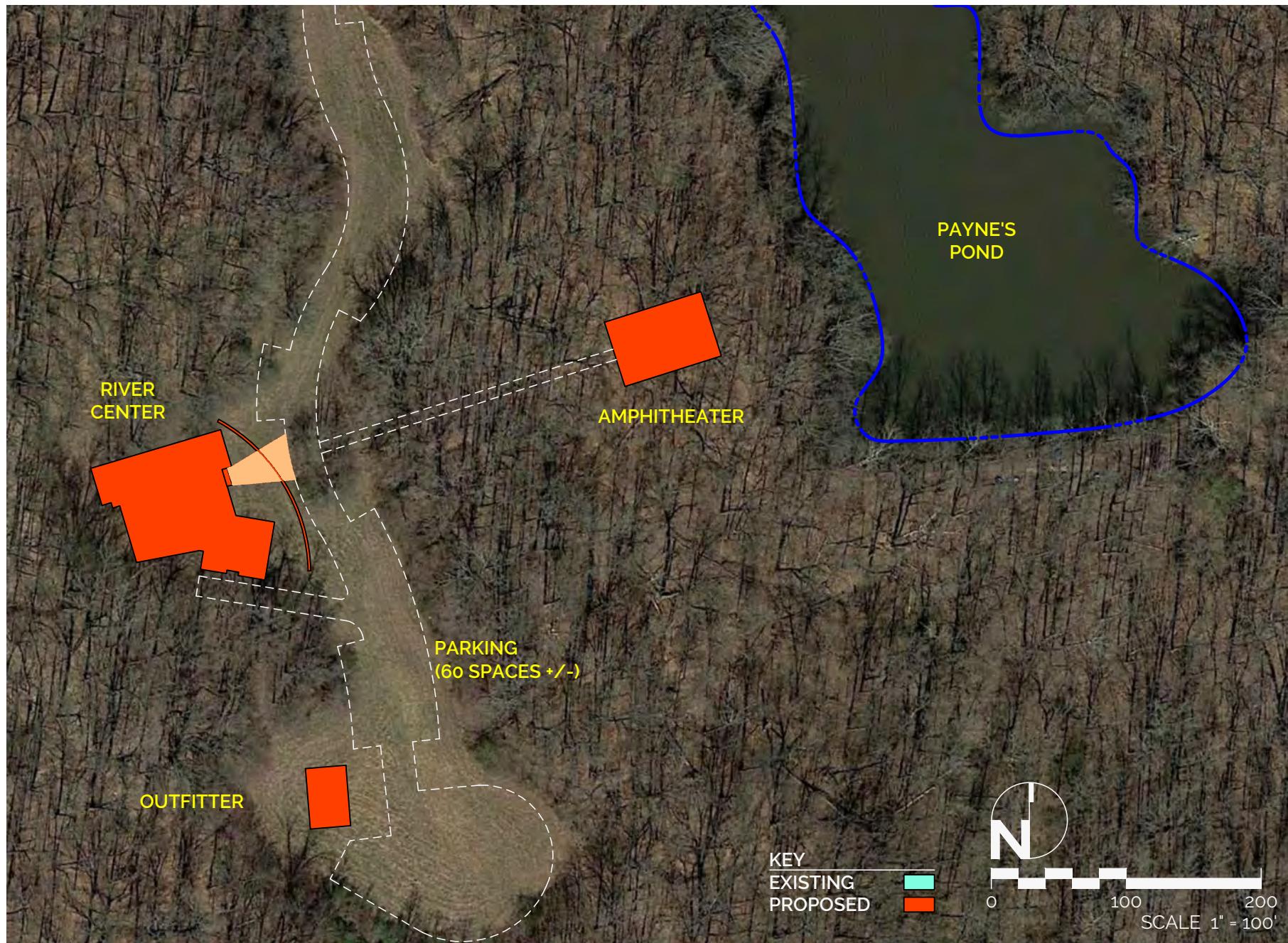
The vision is for the River Center and Museum Complex to provide a specialized educational experience related to the area's history, culture and proximity to the Mississippi River and to expand and enhance economic development in the area by pairing it with an outfitter and rental/retail store that will permit users to explore nearby natural resources.

PURPOSE

To tell the story of how west Tennessee lands were formed (loess soils; bluffs; erosion);
To tell the story of the middle and lower Mississippi River and its tributaries;
To tell the story of Edward J. Meeman and his contribution to the region;
To help develop closer relationships among regional stakeholders (state park, university, schools, others);
To provide economic development opportunities;
To provide diverse educational experiences for students and citizens;
To highlight the proximity of the proposed Mississippi River Center and Museum Complex to the Great River Road – National Scenic Byway, the Mississippi River Trail (a biking trail along the Mississippi River), Mississippi Flyway, Meeman-Shelby Forest State Park, the Mississippi River and other west Tennessee amenities

NEEDS

Permanent museum exhibit space (documenting Mr. Meeman's contributions; expressing the geologic history that created the Chickasaw bluffs; detailing the natural and cultural history associated with the Mississippi River; an historic timeline of development in the area; etc.)
Temporary exhibit space or open space for presentations and talks (needs "smart classroom" technology)
Gift Shop / Outfitters Rental and Retail Store
Storage for exhibit and other materials
Outfitters operation and storage building (bicycles, kayaks, canoes, etc.) including dry equipment storage (life vests, paddles, helmets, etc.)
Parking and wide turn-around for buses, trucks with trailers and large recreational vehicles



38

PRECEDENTS

National Great Rivers Research and Education Center (NGRREC) was founded in 2002 as a collaborative partnership between the University of Illinois at Urbana-Champaign, the Illinois Natural History Survey and Lewis and Clark Community College. The center is located on the banks of the Mississippi River in East Alton, Illinois – near the confluence of the Missouri, Illinois and Mississippi Rivers. In 2010 the Jerry F. Costello Confluence Field Station was dedicated. It serves as a model of green construction with minimal environmental impact, integrated renewable energy systems, and internal recycling systems.

The NGRREC is dedicated to the study of great river systems and the communities that use them. NGRREC is constantly developing strategies that regularly apply lessons learned from the river/watershed sites to ongoing sustainable management practices, continuing research, and policy development. Their mission includes research, outreach and education. Some of the programs which fulfill this mission include education programs for all ages, teacher workshops, and professional development. Research includes the Great Lakes to Gulf Virtual Observatory, Aquatic Ecology, Mesocosms, Terrestrial Ecology, Human Dimensions, Flooding Impacts, and the Great Rivers Ecological Observation Network (GREON).



The Water Campus is being developed in partnership with Louisiana and East Baton Rouge Parish governments, the Louisiana Coastal Protection and Restoration Authority, Louisiana universities, and nonprofits on the banks of the Mississippi River in Baton Rouge, Louisiana. It will be a world-class collaborative research campus devoted to the study of coastal restoration and sustainability. Its purpose is to enhance traditional industry to expand the regional economy and foster innovation, entrepreneurship and regional collaboration. It will also promote information-sharing and best practices among higher educational institutions and leaders; cultivate scientific and technological development/exploration centers. The Campus will be the focal point of a new skyline for Baton Rouge and will enhance the efforts to restore and enhance coastal environments.



More than \$50 million has been committed by a variety of partners for developing the first phase which will include tenants such as The Water Institute of the Gulf, the Louisiana Coastal Protection and Restoration Authority, and LSU Center for River Studies. Additional phases will be completed over the next two decades.

The following conceptual designs were submitted by student Kelly May at the University of Memphis as part of an architectural design class competition. These are an example of a River Center and Museum building which include temporary and permanent exhibition, gallery and meeting space.



Building elevation, west view



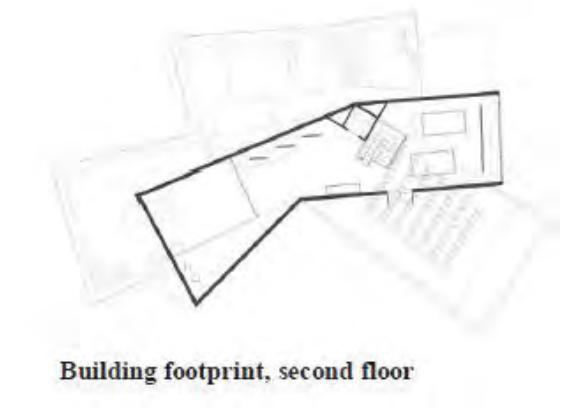
Building elevation, east view



Building elevation, south view



Building footprint, first floor



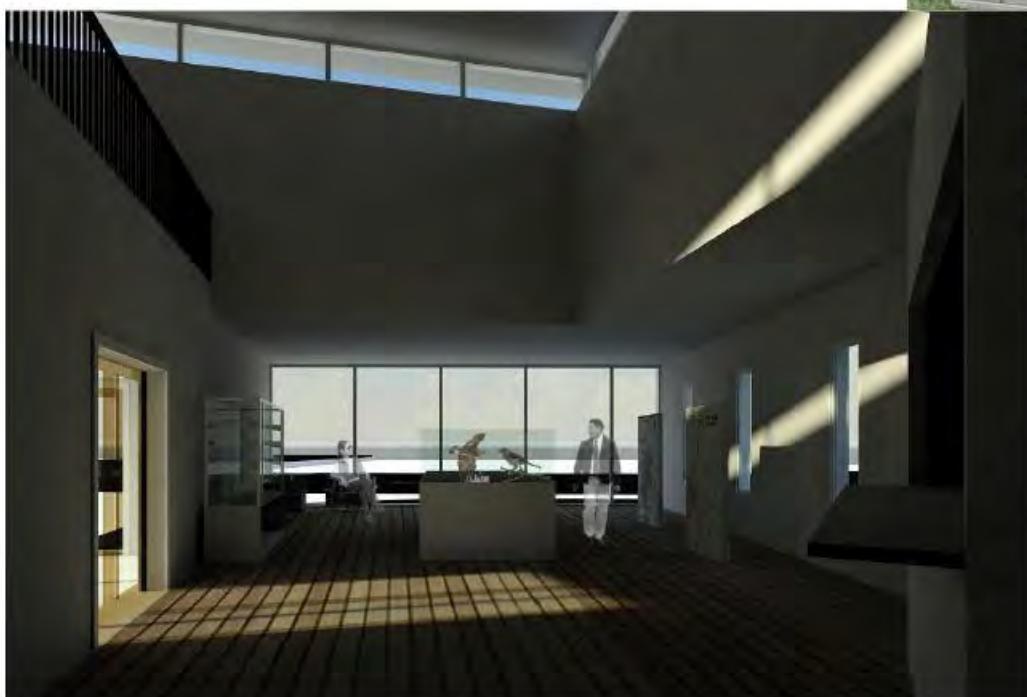
Building footprint, second floor



Building profile



Building entrance



Inside gallery



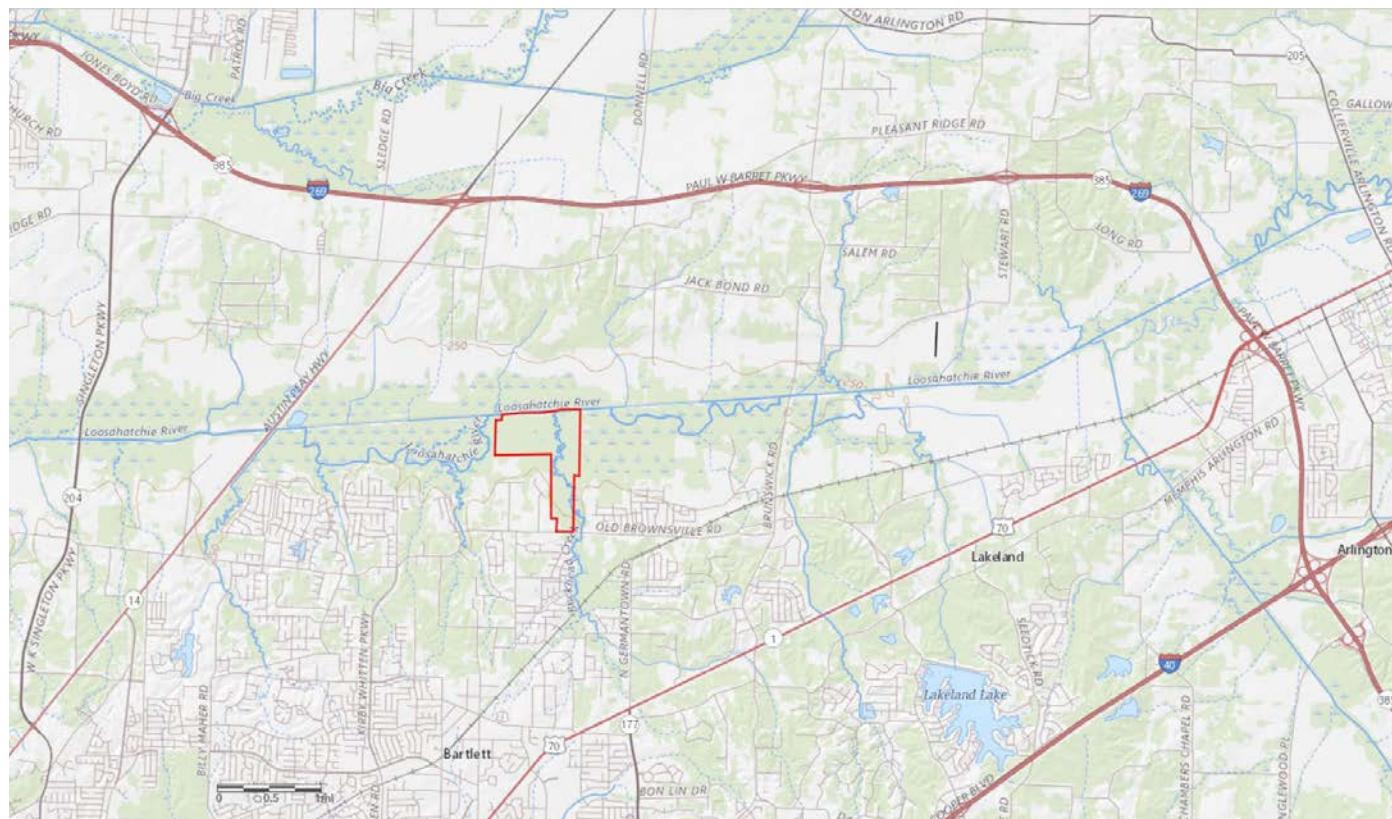
Building profile

15. BRUNSWICK PROPERTY

MAINTENANCE: NO PERMANENT STRUCTURES ARE ALLOWED ON THIS PROPERTY. HOWEVER, ONGOING MAINTENANCE IS NEEDED TO ENSURE THE PROPERTY IS KEPT IN ITS NATURAL STATE, TRESPASSING AND POACHING ARE LIMITED, AND IT REMAINS ACCESSIBLE AND USEABLE TO THE UNIVERSITY.

Needs:

- Signage (Property ownership, boundary and No Trespassing)
- Perimeter fencing repaired or replaced
- Road repairs including a new culvert
- Access and interpretive trail
- Boardwalk through wetlands
- Estimated cost: \$400,000



Brunswick Property - Context Map

16. SUMMARY AND CONCLUSION

The University of Memphis is the anchor institution of higher education in the midsouth. Through vision, persistence and investment, President David M. Rudd and his leadership team are on the way to achieving one of the highest designations obtainable - a Carnegie I Research Institution. This important and prestigious designation not only strengthens the University, but it also contributes significantly to the community by attracting high quality students and faculty who drive innovation and enhance economic development. The University is exploring all aspects of its operations and infrastructure to advance initiatives that will help reach this goal within the next five years. Improved facilities and programs at Meeman Biological Station, including an educational and economic driver such as the Mississippi River Center and Museum Complex, can help the University realize its important and strategic goal.



MBS is an irreplaceable natural resource asset for the University with an estimated value of greater than \$20 million dollars. Few academic institutions have the luxury of owning a nearly 1,000-acre biological field station within 25 miles of its main campus, 25 minutes of its urban core, and one 12,500-acre State Park away from the Nation's greatest river. The Meeman property's unique location between two physiographic regions creates a biological "hotspot" and the opportunity for original research in a multitude of habitats from upland forest and open meadow to bottomland forest, wetland and river flood zone. The Brunswick property provides the opportunity to conduct research in a truly urban setting on a major tributary of the Mississippi River. No other field station exists this close to the Mississippi River from Alton, Illinois to Baton Rouge, Louisiana.

The Mississippi Flyway. The Great River Road. The Big River Crossing. Downtown riverfront reimagining. Shelby Forest State Park restoration. The University reaching for Carnegie I status. The only field station on the Lower Mississippi River. The timing is right, the motivation is high, the vision is clear and the objectives are achievable. The Conceptual Master Plan and Development of a Mississippi River Center and Museum Complex is the blueprint that will bring Meeman Biological Station into the future. One can only imagine Mr. Meeman's delight at the conservation, research, educational and outreach opportunities, and economic development potential, if this vision is implemented in west Tennessee.

17. BIBLIOGRAPHY

Edward J. Meeman Personal Papers, The University of Memphis Archives.

Deed of Conveyance, Edward J. Meeman Personal Papers, University of Memphis Archives.

Raciti, Antonio. "Restoration Plan for the Mississippi River Group Camp in Meeman-Shelby Forest State Park". City and Regional Planning Department. University of Memphis. Memphis, Tennessee. 2017.

Sparks, J. W. Down by the Riverside: Carol Coletta leads the River Parks Partnership into a New Era. Inside Memphis Business | Memphis Evolution. June/July 2018. Volume XII. Number 5. Pages 46-47.

Wikipedia contributors. "Edward J. Meeman." Wikipedia, The Free Encyclopedia. Wikipedia, 24 Oct. 2018. Web. 14 Oct. 2018.

