

PLANNING AND BUILDING TRAILS IN UNDER-SERVED URBAN COMMUNITIES WITH MULTIPLE PROJECT PARTNERS

2019 INTERNATIONAL TRAILS SYMPOSIUM

2019
INTERNATIONAL
TRAILS
SYMPOSIUM
and
TRAINING INSTITUTE



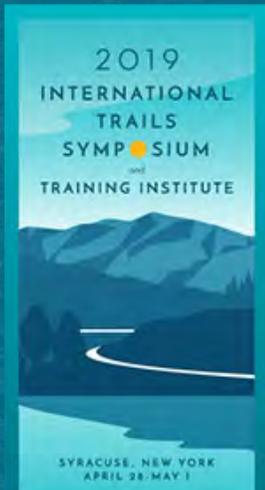
SYRACUSE, NEW YORK
APRIL 26-MAY 1



SARA PATTERSON, Ph.D
Technical Specialist, Michael Baker International

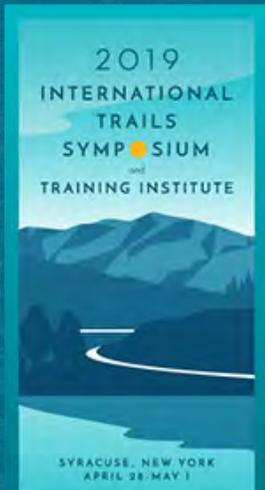


DANIEL ASHWORTH, JR., PLA, ASLA, AICP
Senior Associate, Alta Planning + Design



LEARNING OBJECTIVES

1. How to leverage a variety of investments and partnerships to complete gaps in the trail network.
2. How to accomplish the phasing of a project from master plan to construction.
3. How to prepare trail phases for regulatory design reviews and approvals, bidding, and construction based on the type of funding available.





Memphis, Tennessee

WOLF RIVER GREENWAY

2019 INTERNATIONAL TRAILS SYMPOSIUM



THE VISION

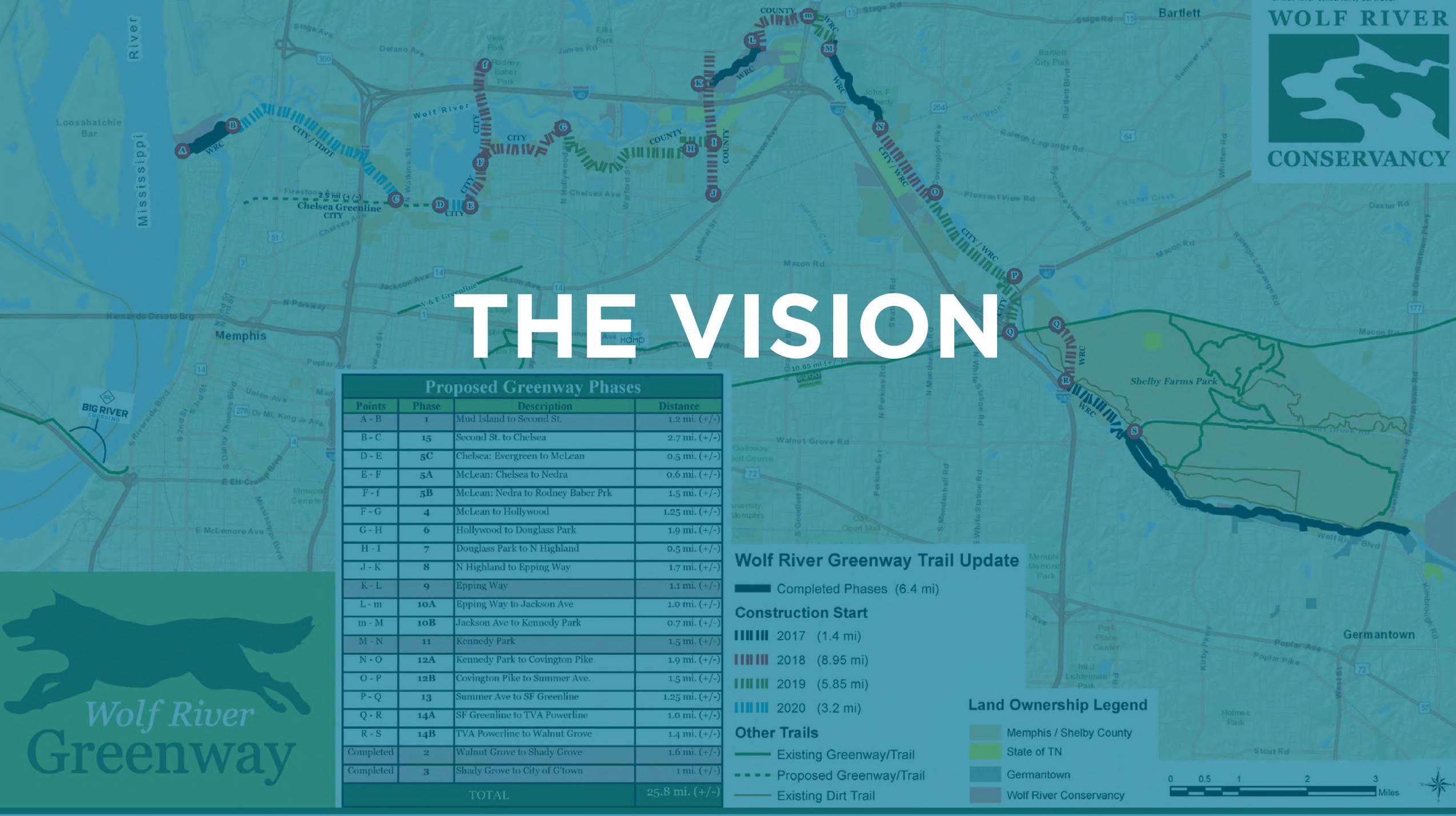
Proposed Greenway Phases			
Points	Phase	Description	Distance
A - B	1	Mud Island to Second St.	1.2 mi. (+/-)
B - C	15	Second St. to Chelsea	2.7 mi. (+/-)
D - E	5C	Chelsea: Evergreen to McLean	0.5 mi. (+/-)
E - F	5A	McLean: Chelsea to Nedra	0.6 mi. (+/-)
F - f	5B	McLean: Nedra to Rodney Baber Prk	1.5 mi. (+/-)
F - G	4	McLean to Hollywood	1.25 mi. (+/-)
G - H	6	Hollywood to Douglass Park	1.9 mi. (+/-)
H - I	7	Douglass Park to N Highland	0.5 mi. (+/-)
J - K	8	N Highland to Epping Way	1.7 mi. (+/-)
K - L	9	Epping Way	1.1 mi. (+/-)
L - m	10A	Epping Way to Jackson Ave	1.0 mi. (+/-)
m - M	10B	Jackson Ave to Kennedy Park	0.7 mi. (+/-)
M - N	11	Kennedy Park	1.5 mi. (+/-)
N - O	12A	Kennedy Park to Covington Pike	1.9 mi. (+/-)
O - P	12B	Covington Pike to Summer Ave.	1.5 mi. (+/-)
P - Q	13	Summer Ave to SF Greenline	1.25 mi. (+/-)
Q - R	14A	SF Greenline to TVA Powerline	1.0 mi. (+/-)
R - S	14B	TVA Powerline to Walnut Grove	1.4 mi. (+/-)
Completed	2	Walnut Grove to Shady Grove	1.6 mi. (+/-)
Completed	3	Shady Grove to City of G'town	1 mi. (+/-)
TOTAL			25.8 mi. (+/-)

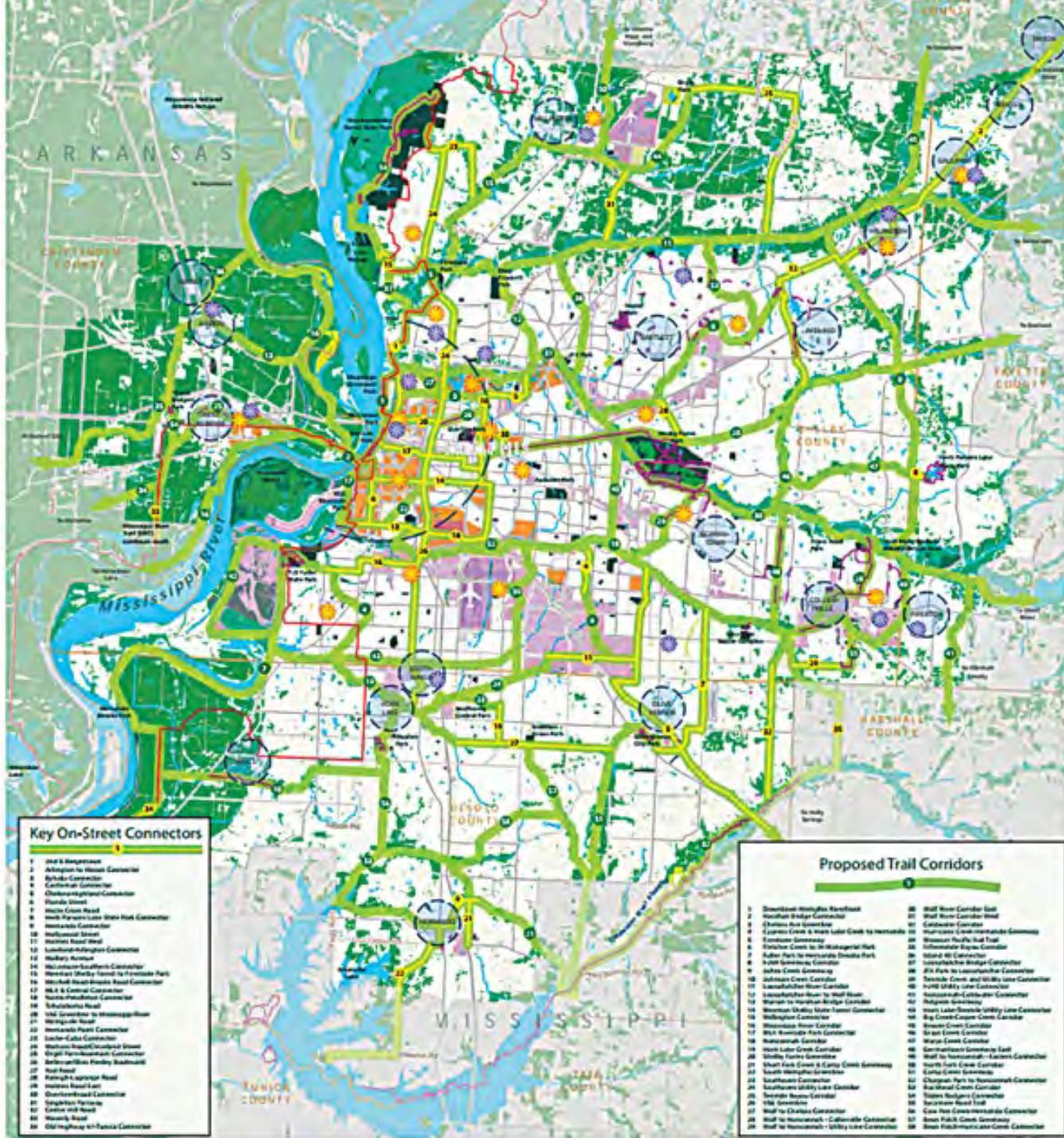
Wolf River Greenway Trail Update

-  Completed Phases (6.4 mi)
- Construction Start**
-  2017 (1.4 mi)
-  2018 (8.95 mi)
-  2019 (5.85 mi)
-  2020 (3.2 mi)

Land Ownership Legend

-  Memphis / Shelby County
-  State of TN
-  Germantown
-  Wolf River Conservancy





Key On-Street Connectors

- 1 J.W. & Montgomery
- 2 Arlington to Home Connector
- 3 Byrds Connector
- 4 Cantrell Connector
- 5 Chalmers/Grand Connector
- 6 Florida Street
- 7 North Cross Road
- 8 North Poplar to State Park Connector
- 9 Hernando Connector
- 10 Holladay Street
- 11 Hickory Road Trail
- 12 Leuker/Highway Connector
- 13 Holly Avenue
- 14 Jackson-Southern Connector
- 15 Memphis-Shelby Transit to Riverside Park
- 16 McCall Road-Bridges Road Connector
- 17 M.A. & Central Connector
- 18 North Peachtree Connector
- 19 Schuylkill Road
- 20 Van Leuzer to Home/Poplar
- 21 Memphis Road
- 22 Hernando Park Connector
- 23 Leuker-Lake Connector
- 24 Memphis Road-Central Street
- 25 Grand Park/Highway Connector
- 26 Antioch/Bridges Road/Leuker
- 27 Red Road
- 28 Memphis-Lexington
- 29 Holmes Road-East
- 30 Overland Connector
- 31 Telegraph Avenue
- 32 Center and Road
- 33 Waverly Road
- 34 Old Highway 91-Pulaski Connector

Proposed Trail Corridors

- | | |
|---|--|
| <ol style="list-style-type: none"> 1 Downtown-Memphis Riverside 2 Memphis Bridge Connector 3 Eastman Avenue 4 Fulton Creek & West Lake Creek to Hernando 5 Exchange Greenway 6 Hutchins Creek to McManis/Highway Park 7 Kuba Park to Memphis Bridge Park 8 Park Greenway Connector 9 White Creek Greenway 10 Jackson Creek Connector 11 Leuker/Highway Greenway 12 Leuker/Highway River to Wolf Run 13 Warren to Memphis Bridge Connector 14 Memphis Bridge to State Park Connector 15 Wolf Run Connector 16 Wolf Run to Leuker/Highway 17 Wolf Run to Leuker/Highway 18 Wolf Run to Leuker/Highway 19 Wolf Run to Leuker/Highway 20 Wolf Run to Leuker/Highway 21 Wolf Run to Leuker/Highway 22 Wolf Run to Leuker/Highway 23 Wolf Run to Leuker/Highway 24 Wolf Run to Leuker/Highway 25 Wolf Run to Leuker/Highway 26 Wolf Run to Leuker/Highway 27 Wolf Run to Leuker/Highway 28 Wolf Run to Leuker/Highway 29 Wolf Run to Leuker/Highway 30 Wolf Run to Leuker/Highway | <ol style="list-style-type: none"> 31 Wolf Run Connector East 32 Wolf Run Connector West 33 Wolf Run Connector 34 Wolf Run Connector 35 Wolf Run Connector 36 Wolf Run Connector 37 Wolf Run Connector 38 Wolf Run Connector 39 Wolf Run Connector 40 Wolf Run Connector 41 Wolf Run Connector 42 Wolf Run Connector 43 Wolf Run Connector 44 Wolf Run Connector 45 Wolf Run Connector 46 Wolf Run Connector 47 Wolf Run Connector 48 Wolf Run Connector 49 Wolf Run Connector 50 Wolf Run Connector 51 Wolf Run Connector 52 Wolf Run Connector 53 Wolf Run Connector 54 Wolf Run Connector 55 Wolf Run Connector 56 Wolf Run Connector 57 Wolf Run Connector 58 Wolf Run Connector 59 Wolf Run Connector 60 Wolf Run Connector |
|---|--|



MID-SOUTH REGIONAL
GREENPRINT



CONNECTING COMMUNITIES FOR OUR FUTURE

WOLF RIVER GREENWAY



A 36 MILE TRAIL SYSTEM

ECONOMIC BENEFIT REPORT



TOTAL BENEFITS

1,126,000 MORE BIKE TRIPS PER YEAR

4,650,000 MORE WALK TRIPS PER YEAR

\$1,467,000 IN HEALTH BENEFITS PER YEAR

\$2,842,000 IN TRANSPORTATION BENEFITS PER YEAR

\$7,185,000 IN ENVIRONMENTAL BENEFITS PER YEAR

\$2,920,000 IN ECONOMIC BENEFITS PER YEAR

over

\$14 MILLION

IN TOTAL BENEFITS PER YEAR

AMBITIOUS PLAN

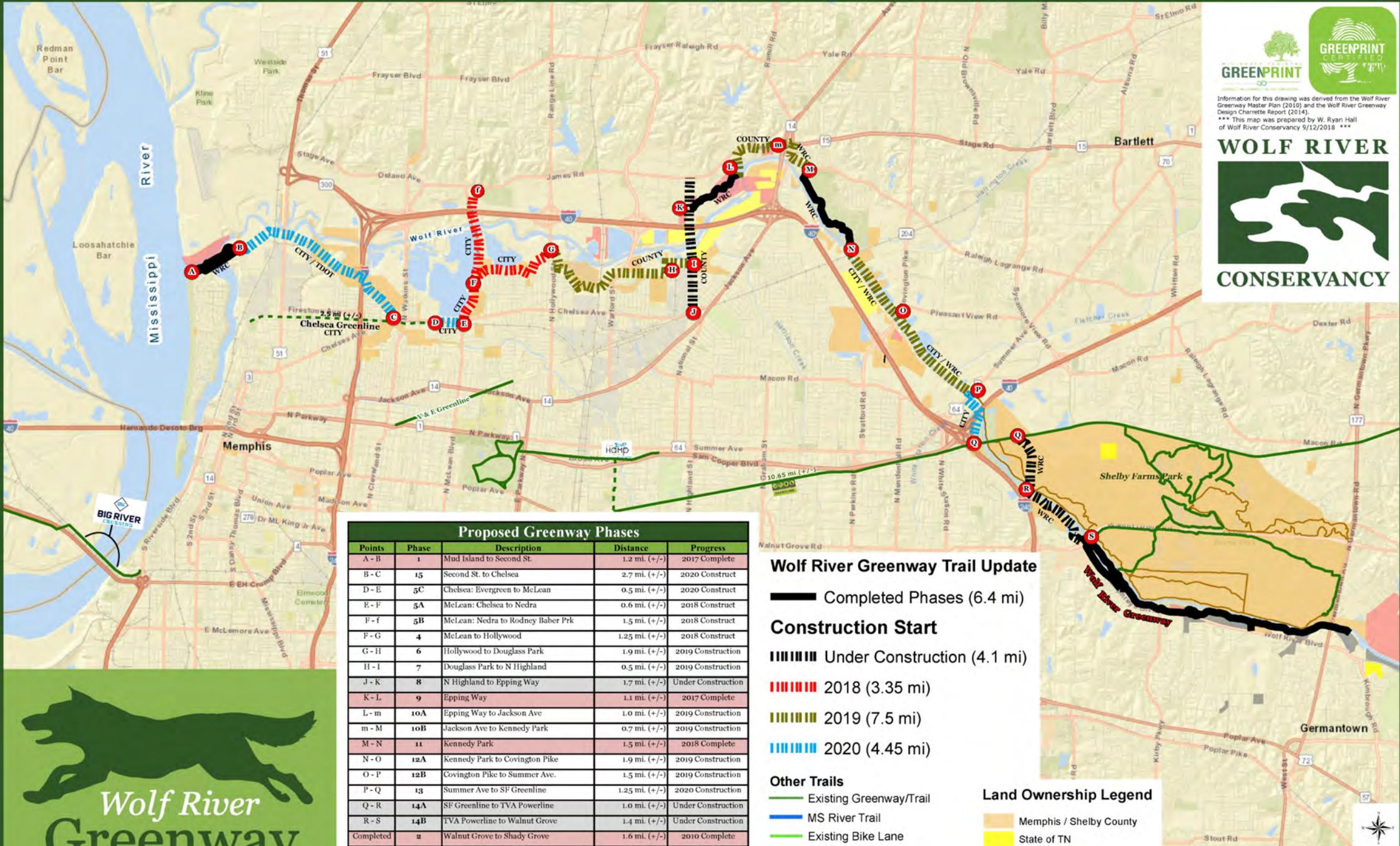
CONCEPT TO OPENING IN 5 YEARS

- **Challenge Grant (Private)**
- **Other Foundations Supporting**
- **Private Donations/Fundraising**
- **City/County Partnership**





Information for this drawing was derived from the Wolf River Greenway Master Plan (2010) and the Wolf River Greenway Design Charrette Report (2014).
 *** This map was prepared by W. Ryan Hall of Wolf River Conservancy 5/12/2018 ***



Proposed Greenway Phases				
Points	Phase	Description	Distance (+/-)	Progress
A - B	1	Mud Island to Second St.	1.2 mi. (+/-)	2017 Complete
B - C	15	Second St. to Chelsea	2.7 mi. (+/-)	2020 Construct
D - E	5C	Chelsea: Evergreen to McLean	0.5 mi. (+/-)	2020 Construct
E - F	5A	McLean: Chelsea to Nedra	0.6 mi. (+/-)	2018 Construct
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J - K	8	N Highland to Epping Way	1.7 mi. (+/-)	Under Construction
K - L	9	Epping Way	1.1 mi. (+/-)	2017 Complete
L - m	10A	Epping Way to Jackson Ave	1.0 mi. (+/-)	2019 Construction
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M - N	11	Kennedy Park	1.5 mi. (+/-)	2018 Complete
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Completed	2	Walnut Grove to Shady Grove	1.6 mi. (+/-)	2010 Complete
Completed	3	Shady Grove to City of G'town	1 mi. (+/-)	2012 Complete
TOTAL			25.8 mi. (+/-)	

Wolf River Greenway Trail Update

- Completed Phases (6.4 mi)
- Construction Start**
- Under Construction (4.1 mi)
- 2018 (3.35 mi)
- 2019 (7.5 mi)
- 2020 (4.45 mi)

- #### Other Trails
- Existing Greenway/Trail
 - MS River Trail
 - Existing Bike Lane
 - Existing Dirt Trail
 - Proposed Greenway/Trail

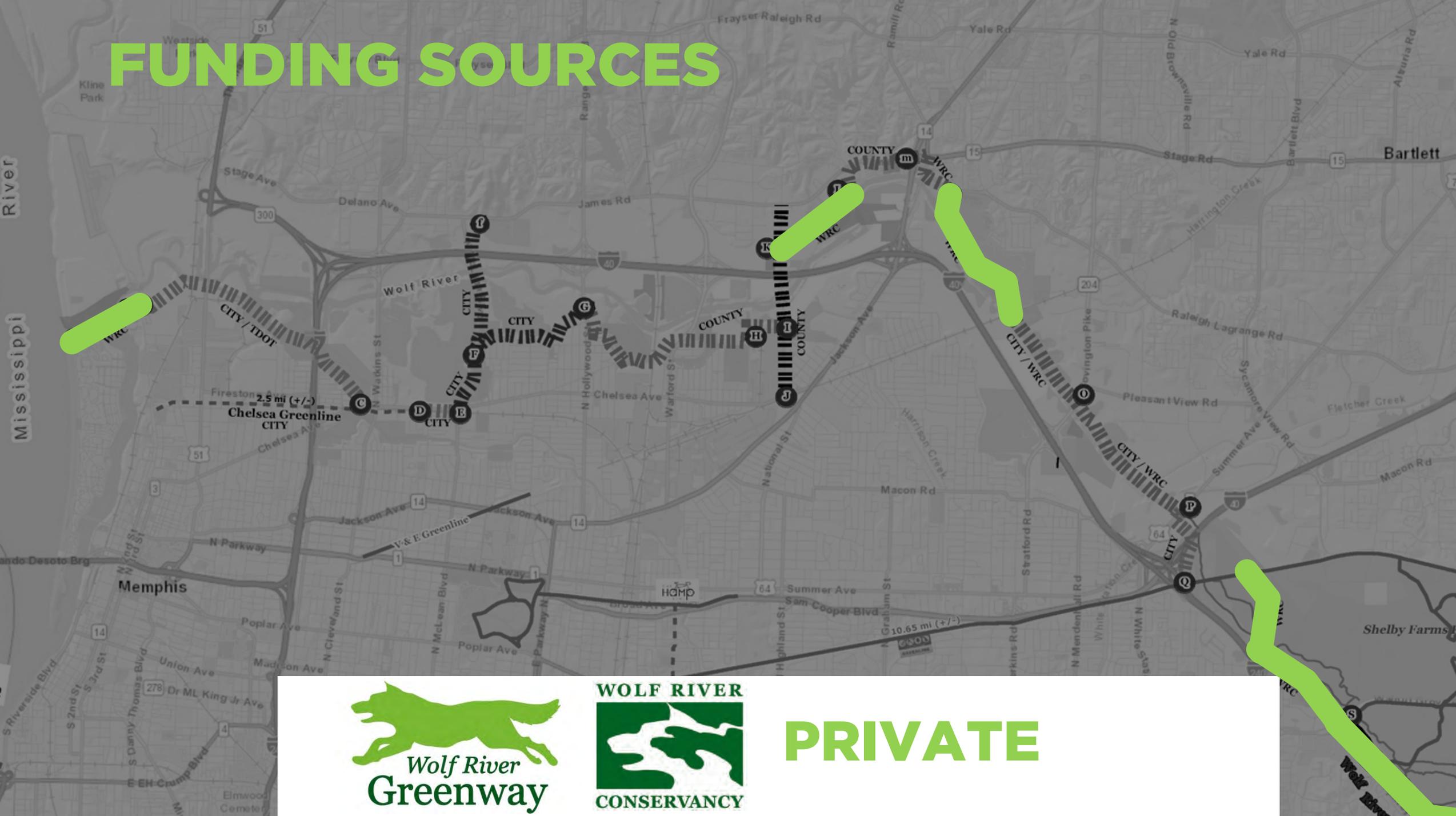
Land Ownership Legend

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- Wolf River Conservancy



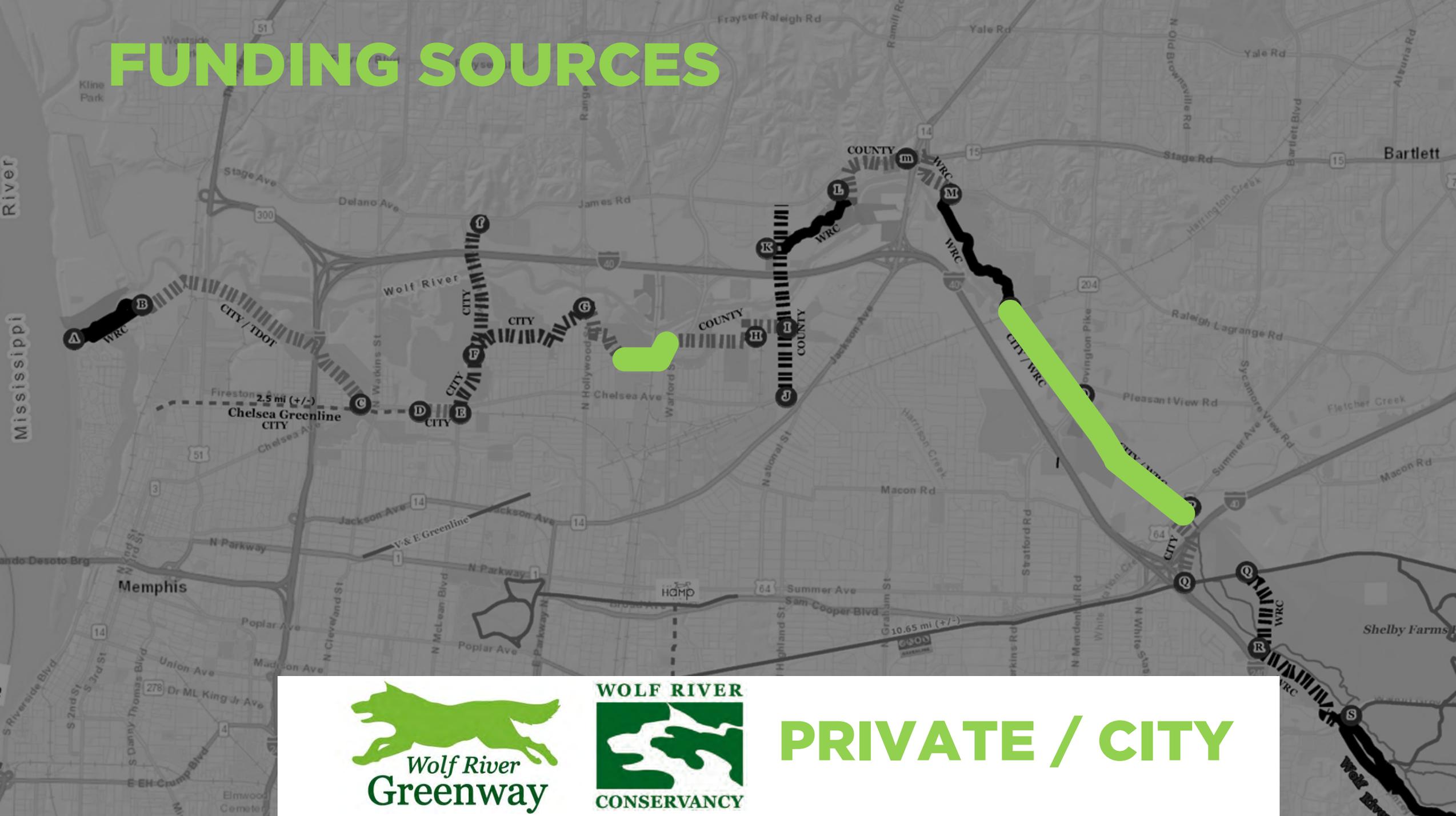
Wolf River Greenway

FUNDING SOURCES



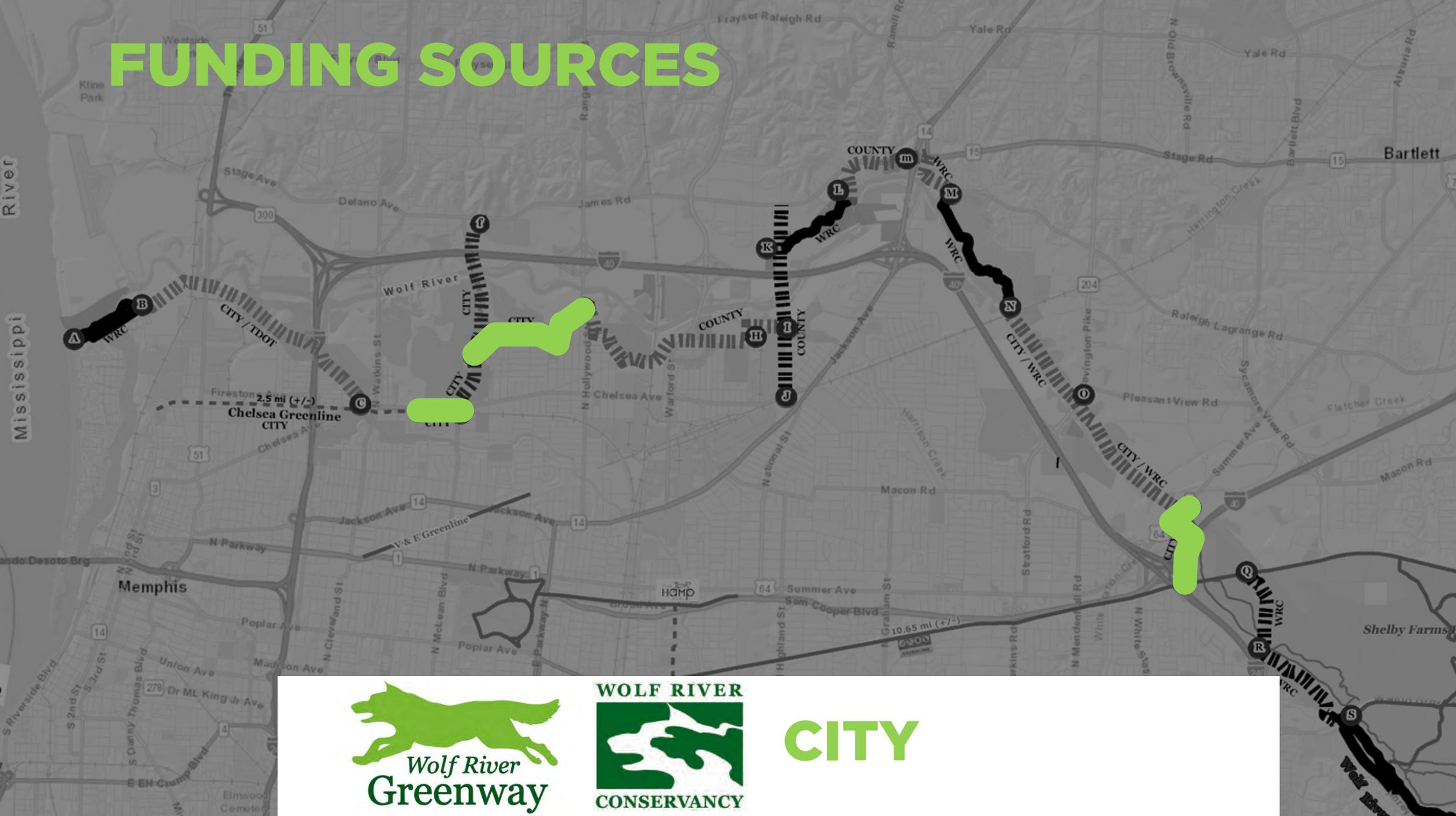
PRIVATE

FUNDING SOURCES



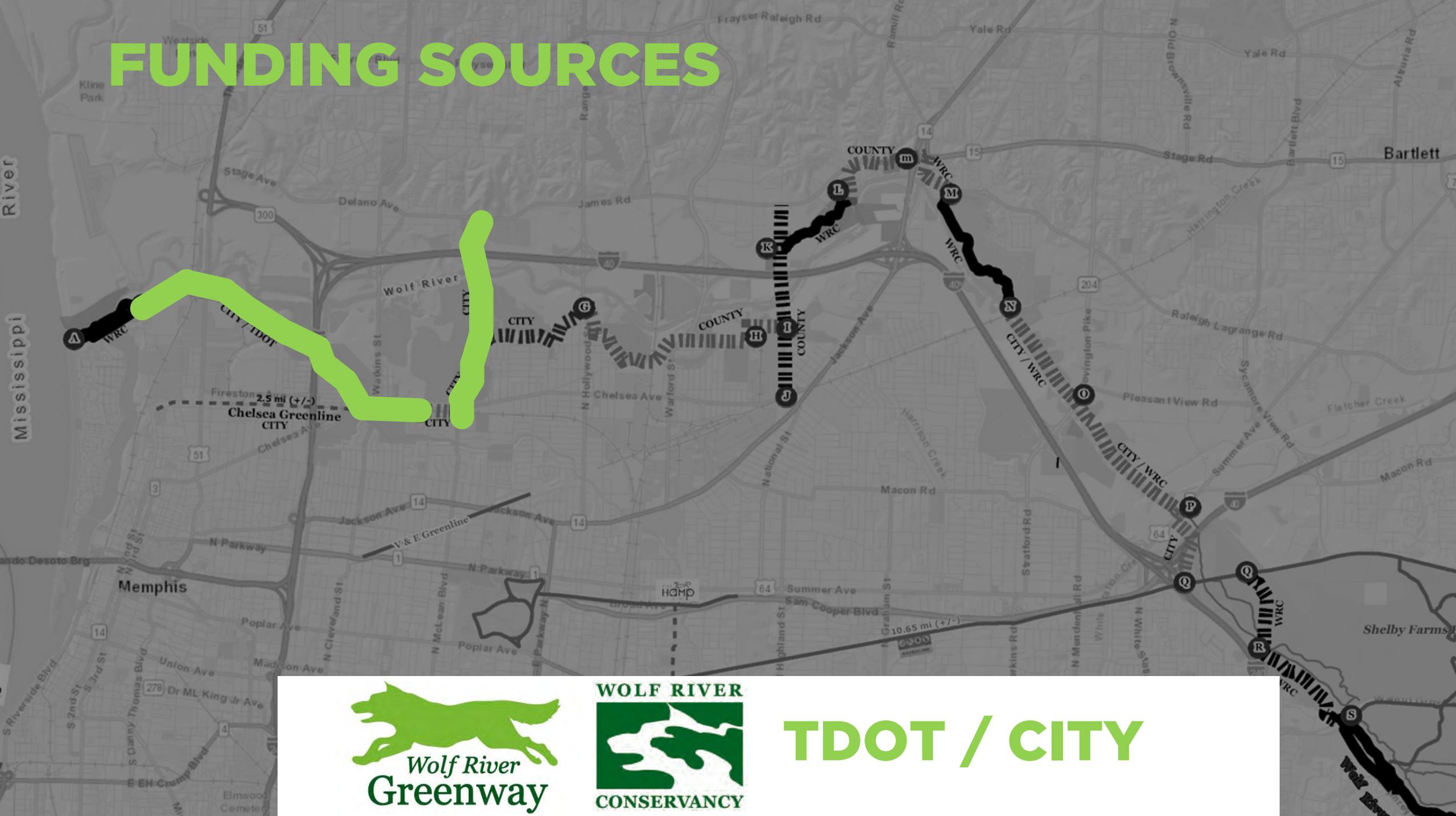
PRIVATE / CITY

FUNDING SOURCES



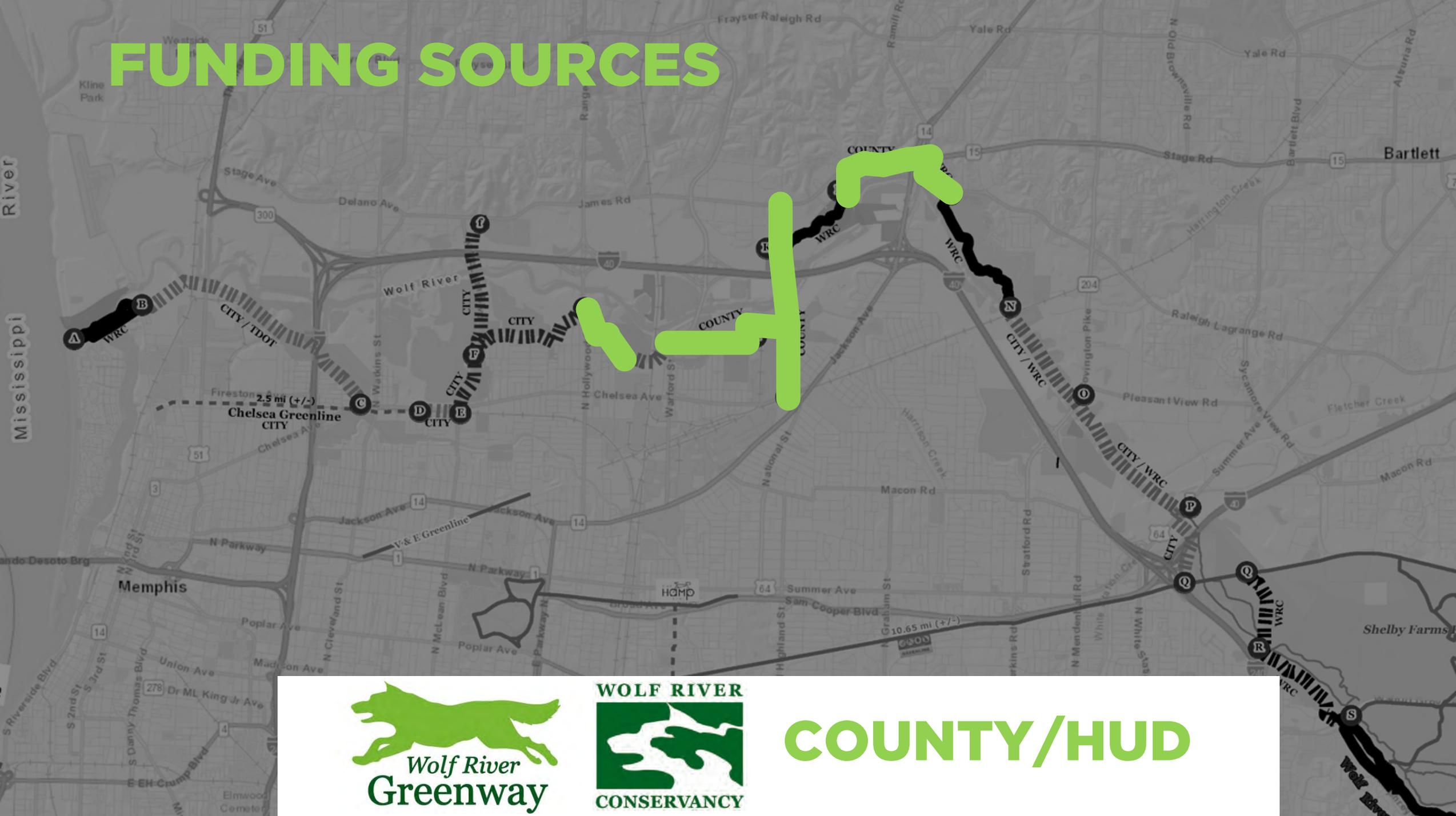
CITY

FUNDING SOURCES



TDOT / CITY

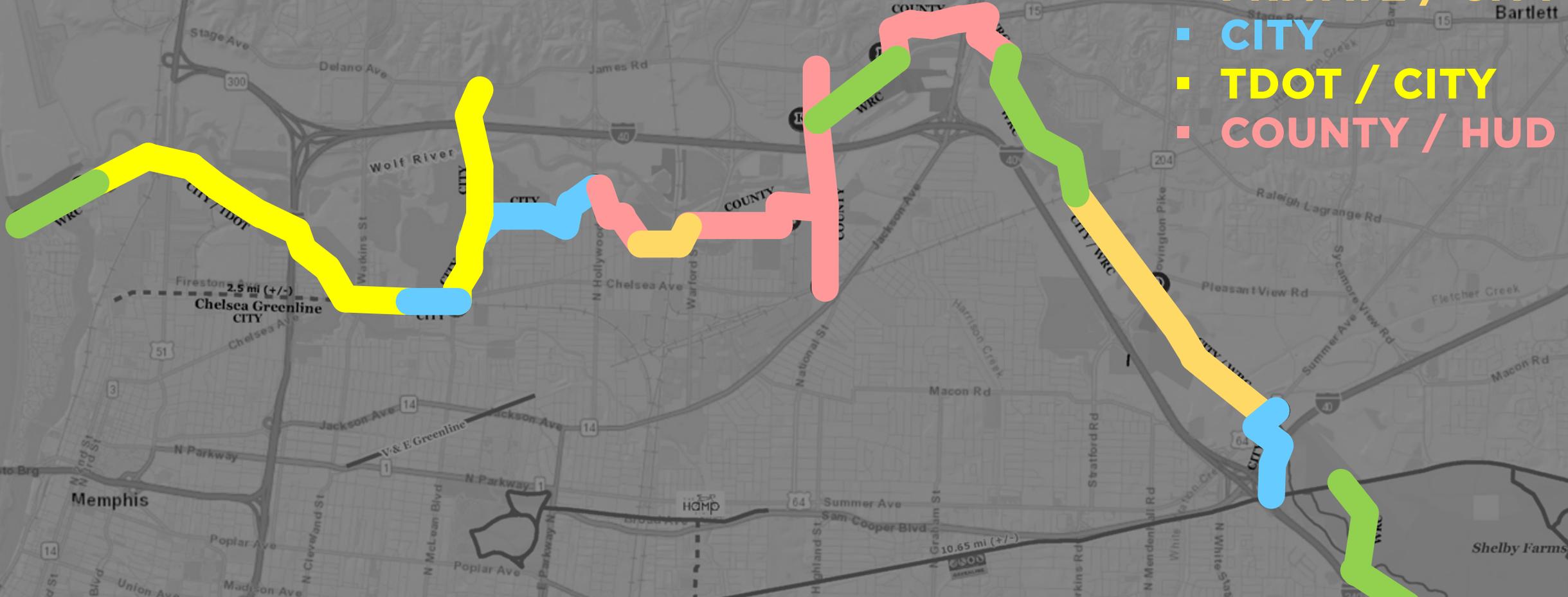
FUNDING SOURCES



COUNTY/HUD

FUNDING SOURCES

- PRIVATE
- PRIVATE / CITY
- CITY
- TDOT / CITY
- COUNTY / HUD



ALL SOURCES

WOLF RIVER GREENWAY CHARRETTE

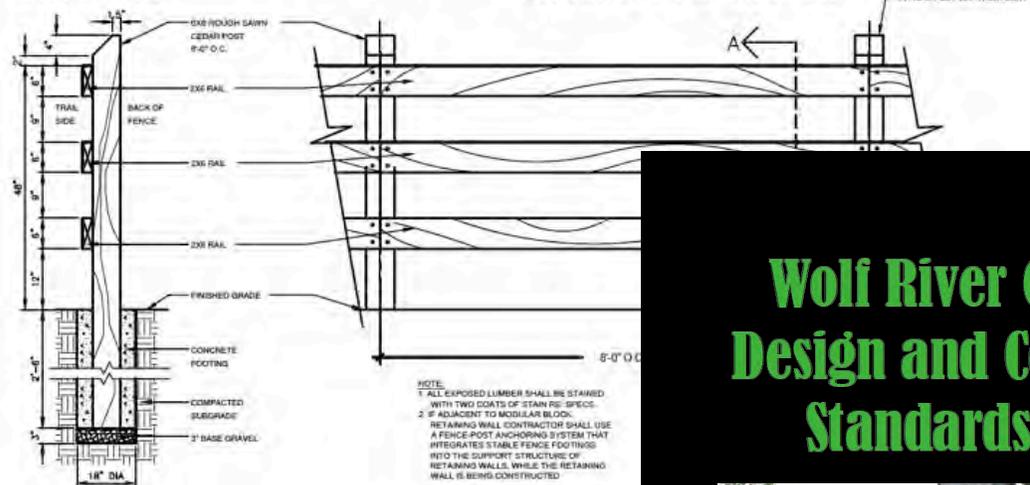


ROUTE AND ALIGNMENT GUIDELINES

- **Experiential**
- **Feasibility**
- **Ease of Securing R.OW**
- **Environmental Compatibility**
- **Safety and Security**
- **User Remoteness vs. Integration**
- **Good Neighbor**
- **Cost of Construction/Operation**
- **Long Term Sustainability**
- **Linkage**
- **WOW! Factor**

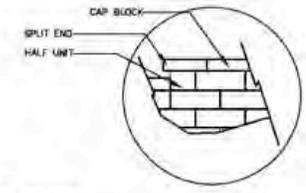
DESIGN MANUAL

SECTION A-A



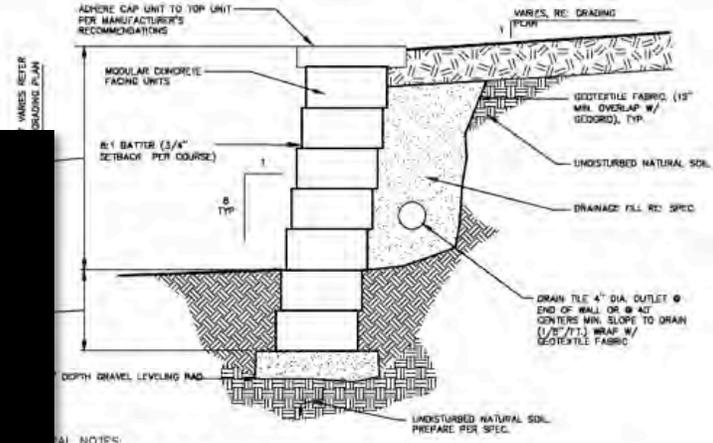
NOTE:
 1. ALL EXPOSED LUMBER SHALL BE STAINED WITH TWO COATS OF STAIN PER SPEC.
 2. IF ADJACENT TO MODULAR BLOCK RETAINING WALL CONTRACTOR SHALL USE A FENCE POST ANCHORING SYSTEM THAT INTEGRATES STABLE FENCE FOOTINGS INTO THE SUPPORT STRUCTURE OF RETAINING WALLS WHILE THE RETAINING WALL IS BEING CONSTRUCTED

3 - RAIL WOOD FENCE - N.T.S.



CAPPING DETAIL
 SCALE: NONE

- GENERAL NOTES FOR CAPPING:
1. CAPS SHALL BE PLACED ON ALL WALLS.
 2. CAPS SHALL BE ADHERED TO WALL USING CONCRETE ADHESIVE AND PER MANUFACTURER'S RECOMMENDATIONS.
 3. WHEN CUTTING CAP LIST FOR WALL END DO NOT USE A CAP SECTION LESS THAN 8" WIDE.
 4. CAPS TO BE PLACED WITH A 3/4" OVERHANG ON TOP OF WALL.
 5. CONTRACTOR IS RESPONSIBLE FOR PROVIDING FINAL DESIGN OF GEGRID WALL.



GENERAL NOTES:
 MIN EMBEDMENT OF WALL BELOW FINISH GRADE SHALL BE 10"
 IN APPROPRIATE PROVISIONS OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS. MAKE FILL 10" THICK SHALL BE INSTALLED BEHIND THE WALL TO WITHIN 10" OF THE TOP OF THE WALL. FILL AND COMPACT IN FRONT OF THE WALL AS WALL IS INSTALLED.
 ACTION SHALL BE TO SOLE OF MAXIMUM STANDARD PROCTOR DENSITY DESIGNED TIGHT PRIOR TO BACKFILLING.
 LATERAL DRAINAGE CHANNELS TO DIRECT FLOWS AROUND THE ENDS OF THE WALL.
 REINFORCING FOR TRENCH USING EXTENSIBLE (GEOTEXTILE) REINFORCEMENT SHALL BE PREPARED ACCORDING TO DESIGN GEOLOGY PRESENTED IN NATIONAL CONCRETE MASONRY ASSOCIATION "DESIGN MANUAL FOR SEGMENTAL REINFORCED WALLS" AND CONFORM TO THE MINIMUM SAFETY FACTORS AS SPECIFIED. OWNER RESERVES ALL RIGHTS IN OBTAINING COMPLIANCE FOR PLAN APPROVAL AND MAY REQUEST ANY SUBMITTALS.
 CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF ALL SEGMENTAL REINFORCED WALLS AS SHOWN IN THE CONSTRUCTION DOCUMENTS. OGI ENGINEERING ASSOCIATES, INC. ASSUMES NO LIABILITY OR RESPONSIBILITY FOR DESIGN OR CONSTRUCTION OF ANY SEGMENTAL RETAINING WALL SYSTEM RELATED TO SITE IMPROVEMENTS.

SEGMENTED RETAINING WALL 6 N.T.S.

Wolf River Greenway Design and Construction Standards Manual



July 2015 Draft



OPERATION & MANAGEMENT PLAN

FIRST DRAFT

March 15, 2015

WOLF RIVER GREENWAY GOVERNANCE, OPERATIONS and MANAGEMENT PLAN



Submitted to:
City of Memphis & The Wolf River Conservancy

Submitted by:
Charles A. Flink, FASLA
Alta Planning + Design

MEMORANDUM OF UNDERSTANDING FOR THE MEMPHIS WOLF RIVER GREENWAY AND TRAIL PROJECT BETWEEN CITY OF MEMPHIS DIVISION OF PARKS AND NEIGHBORHOODS, and WOLF RIVER CONSERVANCY, INC.

- I. **PURPOSE.** The purpose of this Memorandum of Understanding (MOU) between the City of Memphis, through its Division of Parks and Neighborhoods (hereinafter "the City") and the Wolf River Conservancy, Inc. (hereinafter "WRC, referred to collectively as the Memphis Greenway Partnership Group (hereinafter "the Partnership"), is to establish a framework for cooperation upon which the Wolf River Greenway trail system, including any amenities, may be planned, funded, developed and maintained (hereinafter the "Project") as outlined in the Memphis Wolf River Greenway and Trail Master Plan approved by the Memphis City Council in April 2007.

This MOU supersedes the prior MOU between the parties dated December 26, 2009 also referred to as City Contract #26388.

- II. **PARTNER BACKGROUND.** The identities and interests of the Partners are as follows:

- A. City of Memphis, Division of Parks and Neighborhoods is responsible for the development, operation and maintenance of the City's park and recreation facilities.
- B. WRC is a 501(c) (3) Tennessee non-profit corporation and land trust committed to the conservation and enhancement of the Wolf River watershed as a sustainable natural resource.

- III. **STATEMENT OF MUTUAL INTERESTS AND BENEFITS.** The parties enter into this MOU with the goal of developing a public trail for the use, benefit and to promote the safety, health and general welfare of the citizens of Memphis and Shelby County.

Construction of this Project, in the heart of the City and Shelby County, will provide the following benefits:

- A. During a time of increased competition for relocating or expanding businesses, it allows Memphis to join the ranks of progressive communities in attracting forward-thinking global businesses whose leaders value the alternative-transit and recreational opportunities a trail provides for their workers;
- B. It allows us to connect the diverse neighborhoods in our community; and
- C. It provides a convenient and safe opportunity for our citizens to exercise,

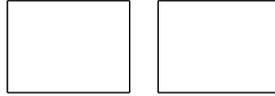
CONSTRUCTION DOCUMENTS

INDEX OF SHEETS

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2	GENERAL NOTES
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9-11	EXISTING CONDITIONS AND LAYOUT PLANS
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23	DRAINAGE MAP
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51	85' PEDESTRIAN BRIDGE
52	30' PEDESTRIAN BRIDGE
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57	42" CULVERT CROSSING
58	TRAFFIC CONTROL PLAN NOTES
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THE WOLF RIVER CONSERVANCY and THE CITY OF MEMPHIS

Jim Strickland - Mayor

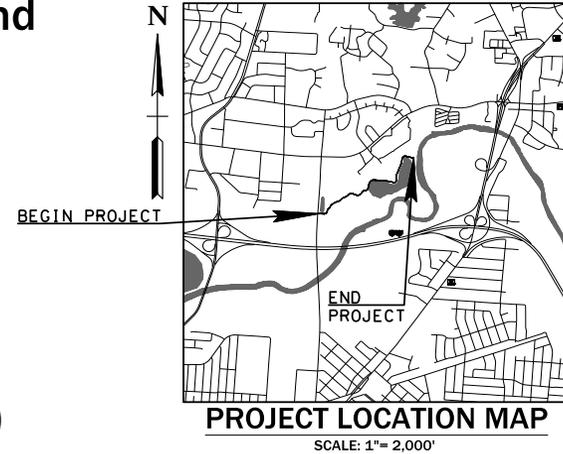


CONSTRUCTION DRAWINGS OF PROPOSED WOLF RIVER GREENWAY TRAIL

CITY PROJECT NUMBER: 15P198B.09

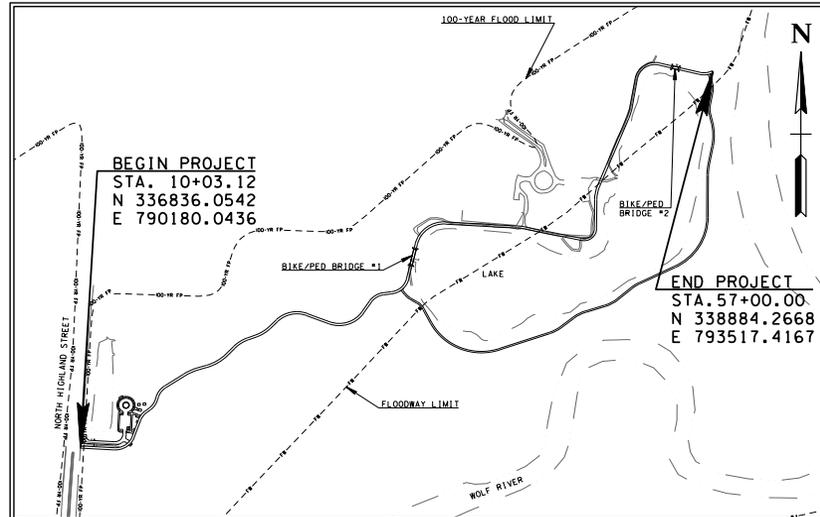
MARCH 7, 2016

WOLF RIVER GREENWAY, PHASE 9 EPPING WAY



Project Site Map

SCALE: 1" = 300'



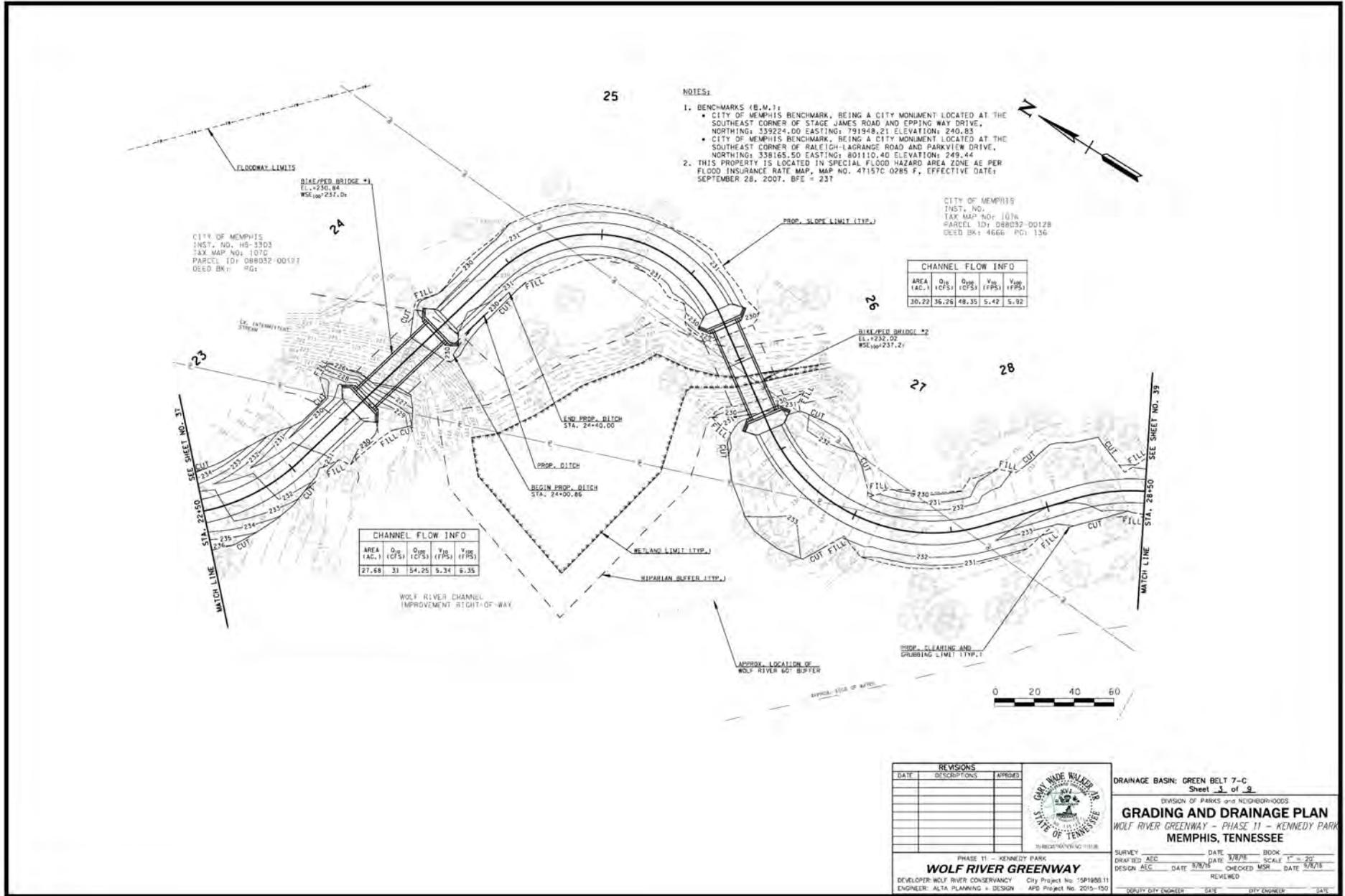
BID SET No. _____



LEGEND

	EXISTING PLAN	PROPOSED PLAN
RIGHT OF WAY LINE	EXISTING: --- PROPOSED: - - - - -	
CURB & GUTTER, NO. 6-72 INLET		— —
NO. 11 INLET		■
CULVERT		— — —
DRAIN PIPE		— — — —
SEWER PIPE		— — — — —
DRAIN MANHOLE	⊙ DMH	●
SEWER MANHOLE	⊙ SMH	
ELECTRICAL MANHOLE	⊙ EMH	
TELEPHONE MANHOLE	⊙ TMH	
WATER METER	⊙ W.M.	
GAS OR WATER VALVE	⊙ G.V. W.V.	
POWER POLE	●	
TELEPHONE OR TELEGRAPH POLE	●	
LIGHT POLE	⊙	
FIRE PLUG	⊙	
GUY POLE	⊙	
TOP OF CUT		— — —
TOE OF FILL		- - - - -
OVERHEAD ELECTRICAL	— — — — — —	
UNDERGROUND ELECTRICAL	— — — — — —	
UNDERGROUND WATER	— — — — — —	
UNDERGROUND GAS	— — — — — —	
SHRUB	⊙	
TREE	⊙	
FENCE LINE	— — — — — —	
GUARDRAIL	— — — — — —	
TREELINE	— — — — — —	
FLOODWAY LIMITS	— — — — — —	
WETLAND LIMITS	— — — — — —	
100-YEAR FLOOD LIMITS	— — — — — —	
EDGE OF WATER	— — — — — —	
60' WATER BUFFER	— — — — — —	
		SEE LANDSCAPE SHEETS SEE LANDSCAPE SHEETS

CONSTRUCTION DOCUMENTS



GROUNDBREAKING CEREMONY

September 25, 2015





CONSTRUCTION

TAKEAWAYS

An aerial photograph showing a paved path that curves through a landscape. On the left, there is a large, cleared area with visible tire tracks and sparse vegetation. The path leads towards a dense forest on the right. A stream flows along the edge of the forest, adjacent to the path. Several people are seen walking and jogging along the path. The overall scene illustrates a project involving land clearing and path construction.

1. CLEARING

2. CHANGES / UNKNOWNNS

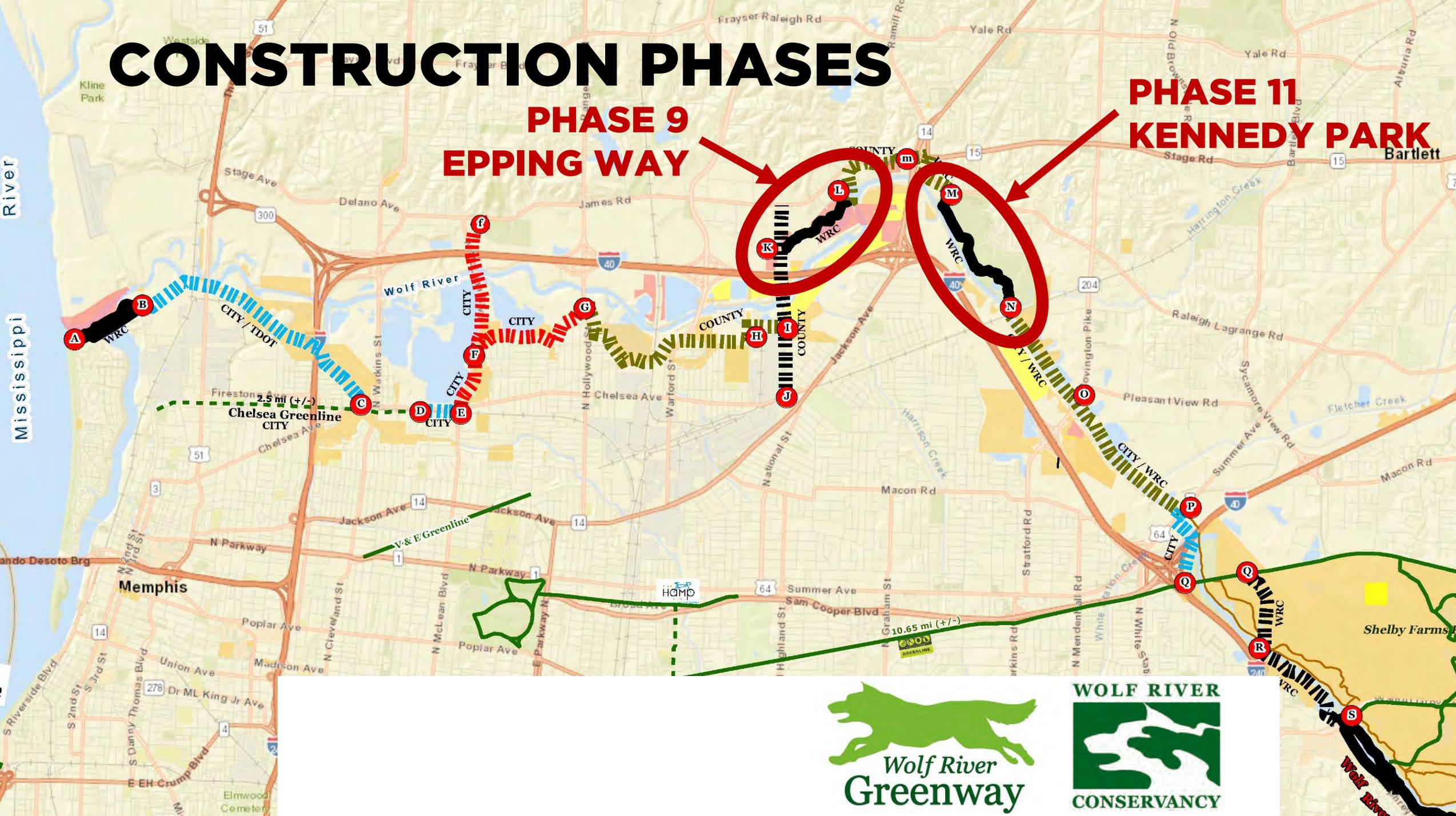
3. CONTRACTOR EXPERTISE

4. QUALITY CONTROL

CONSTRUCTION PHASES

**PHASE 9
EPPING WAY**

**PHASE 11
KENNEDY PARK**



PHASE 9 - EPPING WAY

COMPLETED DECEMBER, 2017

- 1. 12' wide asphalt trail with 1' gravel shoulders.**
- 2. Two pedestrian bridges (30' & 85' long).**
- 3. Two culvert crossings (18" and 30" diameter pipes).**
- 4. Access from Highland Street and Epping Way Drive cul-de-sac.**



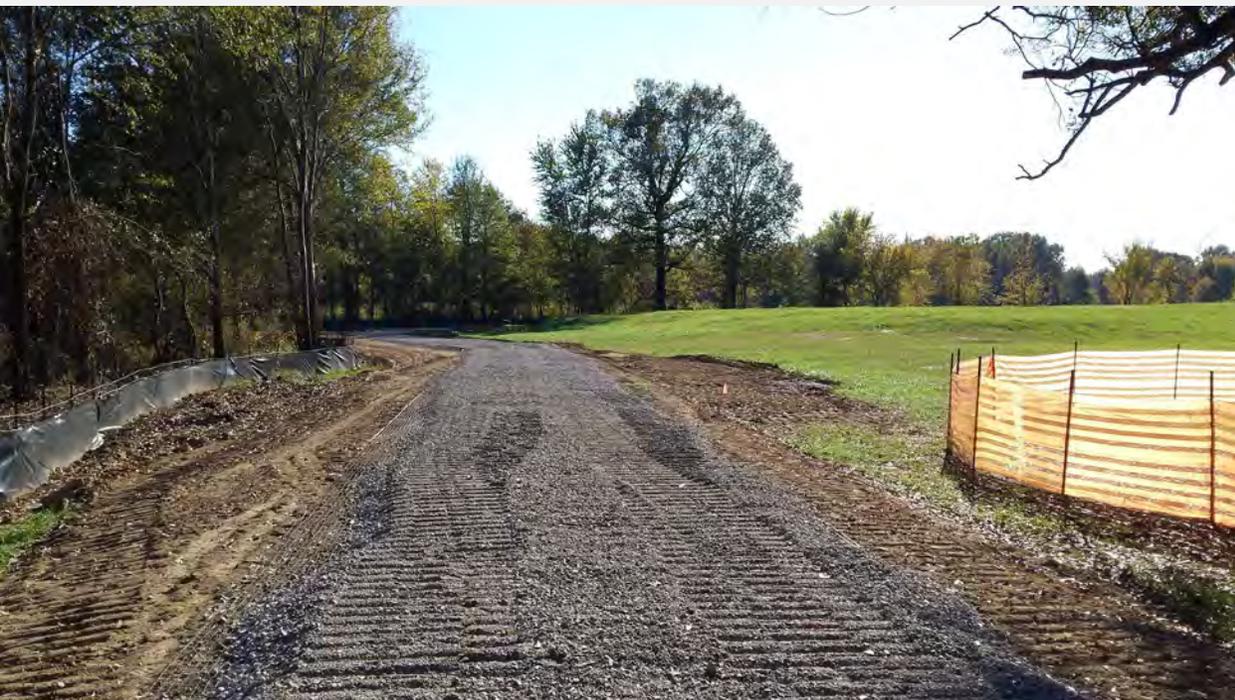






















PHASE 11 - KENNEDY PARK

COMPLETED SEPTEMBER, 2018

- 1. 12' wide asphalt trail with 1' gravel shoulders.**
- 2. Six pedestrian bridges (4 x 50', 109' and 135' long).**
- 3. Three culvert crossings (18", 30", and 36" dia. pipes).**
- 4. Access from Kennedy Park and Raleigh Lagrange Road.**























Horse















THANK YOU!

Sara Patterson – Michael Baker International
sara.patterson@mbakerintl.com

Daniel Ashworth, Jr. – Alta Planning + Design
danielashworth@altaplanning.com

2019
INTERNATIONAL
TRAILS
SYMPOSIUM
and
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SYRACUSE, NEW YORK
APRIL 28 - MAY 1