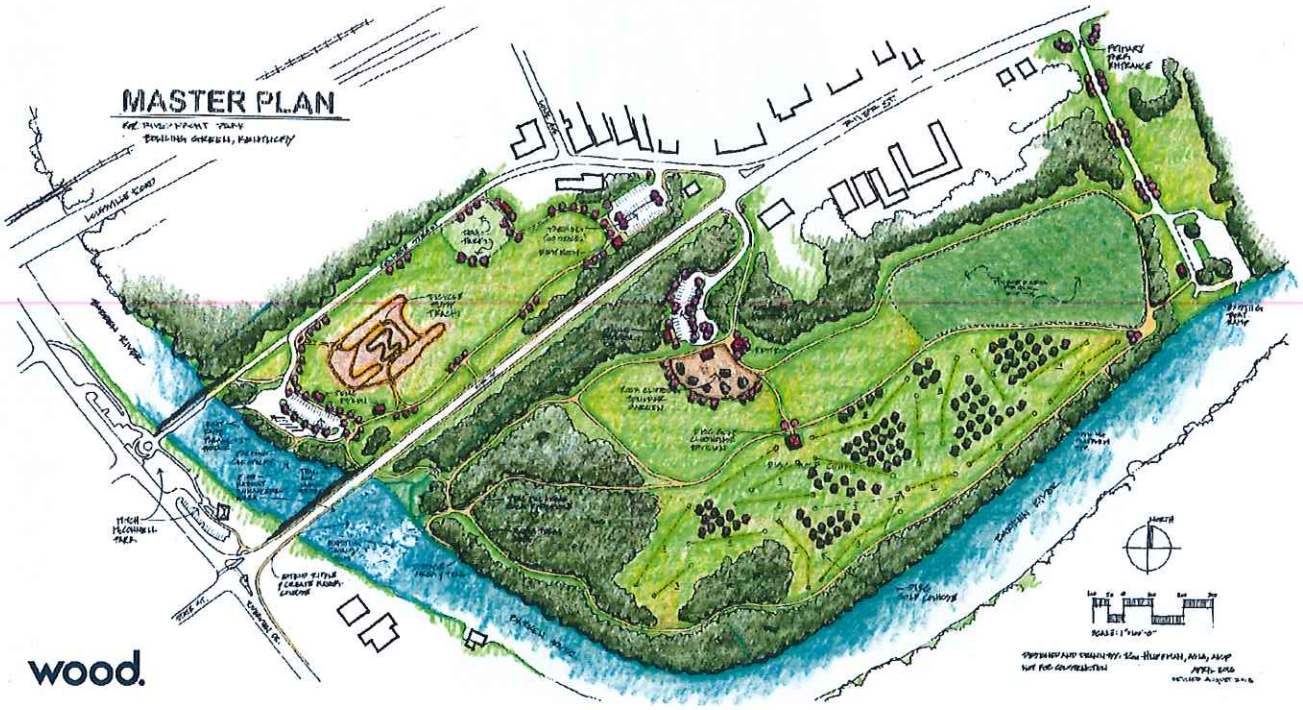
City of Bowling Green, Kentucky
Riverfront Park, Bowling Green, KY

Environment Assessment
Riverfront Park Development Project

March 2021



National Park Service
Outdoor Recreation Legacy Partnership Grant Program

CITY OF BOWLING GREEN

LAND AND WATER CONSERVATION FUND

OUTDOOR RECREATION LEGACY PARTNERSHIP PROGRAM

RIVERFRONT PARK PROJECT

ENVIRONMENTAL ASSESSMENT

TABLE OF CONTENTS

EXHIBITS

City of Bowling Green, Kentucky
Riverfront Park, Bowling Green, KY

I. INTRODUCTION

Purpose

The purpose of the Riverfront Park Development Project is to revitalize distressed park areas for new outdoor recreation opportunities for public benefit and enjoyment.

Riverfront Park is comprised of two park areas, Riverfront Park West and Riverfront Park East, which are separated by River Street (KY 3225). At approximately 17 acres, Riverfront Park West consists of a short pedestrian walking bridge crossing the Barren River and a three quarter mile walking/biking trail. The walking bridge connects a parking lot/river view area across the river from the park to the walking/biking trail at Riverfront Park West, which lies on the grounds of a closed Construction & Debris (C&D) Landfill. The walking trail is a gravel oval path located on open land parallel to River Street. The lower perimeter of the park is characterized by wooded, steep terrain where it eventually adjoins the Barren River.

Riverfront Park East encompasses a 54 acre area which includes walking/biking trails, open space, and a no-mow quale preservation area. The perimeter of the park is characterized by wooded, steep terrain where it adjoins River Street and wooded, inclined terrain throughout the majority remaining perimeter where it adjoins the Barren River. The vast majority of the park is open space pasture. The northern perimeter of the park includes an entrance where it adjoins Weldon Peete Park, which is owned and maintained by the Warren County Fiscal Court. Weldon Peete Park is a much smaller area than Riverfront Park East and contains a narrow incline of open space and a parking area and boat ramp to the Barren River.

Need

Riverfront Park is a distressed park, which is significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. A master plan was created to reinvigorate Riverfront Park. The City of Bowling Green received pre-application approval from the National Park Service for a $750,000 Outdoor Recreation Legacy Partnership Grant for Phase I of the master plan. The City is contributing $1,500,000 of local funds to the project. Below are the proposed Phase I improvements to the park.

As stated above, Riverfront Park is made up of two areas divided by River Street identified as 'Riverfront Park East' and 'Riverfront Park West'. The three quarter mile walking/biking trail at Riverfront Park West, and a 1 ¾ mile walking/biking trail at Riverfront Park East are a part of Bowling Green's 20 mile greenway network system. Currently the two greenways trails at Riverfront Park East and Riverfront Park West are not connected. To access either trail,

pedestrians and bicyclists must cross River Street. River Street, a major thoroughfare with an annual average daily traffic count exceeding 11,000, presents added safety risks to users of the greenways at this location. This project will contribute to the elimination of this current safety risk.

The Kentucky Transportation Cabinet is currently undertaking an erosion control project for stabilization of the structural integrity of the River Street Bridge. The project presents a unique and short window of opportunity to install a stabilized greenways path beneath the bridge. The City of Bowling Green has utilized local funds for the design and construction of the short pathway. However additional funding is required for connection of the new greenways path to the existing pathways at Riverfront Park East and West. To connect to the new greenway and existing pathways, the City is proposing to install an approximately 50 foot pedestrian bridge with adjoining gravel trails. The pedestrian bridge is required due to the steep terrain at Riverfront Park East.

Public fishing and boating facilities are limited within the Bowling Green Urbanized Area. Located at the center of the City's urban core, Riverfront Park is an ideal location for these activities, however, the steep terrain and lack of adequate vehicular and pedestrian access facilities makes the area very unsafe for individuals seeking fishing and boating access. One of only two motorized boat ramps available in the jurisdiction is located at the nearby Weldon Peete Park. However, the river is only navigable from Weldon Peete Park for about a half of a mile downstream due to the flow through dam located just upstream of Riverfront Park. Currently for boaters to gain access to any part of the Barren River beyond the flow through dam, they must access the City's only other boat ramp nearly 8.5 miles downriver at Boatlanding Road.

The boat ramp is also needed to improve search and rescue efforts for first responders within the Barren River. Currently there is a makeshift access point, which is the only vehicular access to the river existing downstream of the flow through dam for 8.5 miles. The access point is very steep and difficult to navigate in a four wheel drive vehicle and navigating a truck, and trailer on this terrain is extremely treacherous. Numerous instances of the need for emergency access to the river have occurred in recent years. For example, during a prior winter a vehicle with passengers failed to navigate the River Street Bridge and plunged into the river. Before that a boat with a failed motor was trapped for several hours at the top of the flow through dam, and in a separate tragic instance the body of a drowning victim went unrecovered for days, while the Bowling Green Fire Department was unable to deploy a boat at all due to heavy flows. All of these calls for emergency assistance occurred within yards of the proposed boat ramp. The BGFD's watercraft deployments at this location are dangerous and heavily delayed by the

terrain. In particularly heavy river flow conditions, they cannot deploy from this location at all. Therefore, the proposed boat ramp not only provides better recreational access, but also dramatically decreases response times and improves safety for emergency responders.

The project will improve and enhance access to the Barren River with the installation of a boat ramp and fishing access facilities at Riverfront Park West. This portion of the project includes riverbank stabilization, riparian zone restoration, a boat access ramp, a driveway and parking lot, restrooms, fishing platforms, picnic/shade pavilions, fishing habitat improvements, sidewalks, signage, trash receptacles, seating areas, and landscape planting.

A closed landfill site at Riverfront Park West restricts the amount of available redevelopment opportunities for a large portion of the park. The boat access ramp, driveway and parking lot, restrooms, fishing platforms, and picnic/shade pavilions will be located outside the bounds of the closed landfill. Included in a future Phase II, a bicycle pump track and dog park are a suitable reuse for development at the former landfill site.

As stated earlier, Riverfront Park East encompasses a 54 acre area which includes walking/biking trails, and a no-mow quale preservation area. While the park is greatly underutilized, it offers an abundance of space and provides numerous opportunities for outdoor recreation activities. The City is proposing to install a bouldering course for rock climbing. Rock climbing is a non-traditional outdoor recreation activity growing in popularity. There are currently no facilities of this kind in the Bowling Green Urbanized Area or the region. Members of local climbing groups, such as the Southeast Climbers Coalition, currently travel great distances to Eastern Kentucky and Tennessee to utilize such facilities, demonstrating that local interest currently exists. The bouldering course will provide a unique family friendly outdoor recreational opportunity available for nearly all ages. The Bowling Green Riverfront Foundation's Master Plan demonstrated the lack of a bouldering course or similar facility as a recreational deficiency within the community for a number of years.

Additional improvements at Riverfront Park East include fishing platforms, a portage area along the river for paddlers, a disc golf course and club house, signage, parking lot, sidewalks, lighting, restrooms, picnic/shade pavilions, trash receptacles, seating areas, and landscape planting. While there are several disc golf courses located throughout the urbanized area and county, opportunities are limited in the vicinity of the downtown area. Also Bowling Green is nationally known for its disc golf activities and hosts the largest Amateur Disc Golf tournament in the world which brings thousands of enthusiasts to local parks each year. This project affords a unique opportunity to bring a course to the riverfront area. The local visitor bureau believes

this project could generate new tourism revenue into the community and new private investment to the riverfront area.

A critical component of this project is addressing the lack of supporting facilities at both the park and greenways. Mentioned before, this project aims to provide the necessary supporting facilities which include lighting, picnic/shade pavilions, picnic tables, proper signage, waste receptacles, benches, ADA accessible parking, and access drives. The supporting facilities will make the park environment more accessible and inviting resulting in more frequent usage of the park.

The City of Bowling Green's park system provides traditional recreational facilities such as baseball and soccer fields, disc golf courses, and basketball and tennis courts, but significantly lacks facilities for non-traditional outdoor recreation activities such as boating, fishing, paddling, and rock climbing. The proposed project will provide new outdoor recreation opportunities that are currently limited or unavailable to the urbanized area, revitalize an existing underutilized park, redevelop an existing landfill site, and will contribute to improving the connectivity and safety of existing walking/biking trails. The project will transform the Riverfront Park area into an integrated outdoor recreation area with features that are attractive to a wide variety of age groups and skill levels. Especially the City's significantly large low-to-moderate income population.

The City of Bowling Green has a population that is 57% low to moderate income as defined by the U.S. Department of Housing and Urban development. Many residents only have the fiscal capacity to access close-to-home outdoor recreation opportunities. As mentioned earlier, fishing and boating opportunities are scarce within the urbanized area. Residents with the available financial resources travel approximately an hour to Barren River Lake or Nolin Lake to access fishing and boating facilities. Unfortunately many individuals within the City have limited financial resources and lack personal transportation, and therefore do not have the opportunity to access close-to-home fishing and boating facilities. The same holds true for individuals wanting to engage in non-traditional outdoor activities such as boulder climbing or paddle sports. While there are several disc golf courses located throughout the urbanized area and county, opportunities are limited in the vicinity of the downtown area. Accessibility of these outdoor recreation activities is especially difficult for City residents living across the river from Riverfront Park in the Bowling Green Reinvestment Area.

The Bowling Green Reinvestment Area (BGRA), a U.S. Department of Housing and Urban Development (HUD) designated Neighborhood Revitalization Strategy Area, is a six census tract area encompassing the City's urban core. This geographic area possesses the lowest incomes,

oldest housing stock, and highest concentration of minorities in comparison to the rest of the overall City. The BGRA has a per capita income representing 47% of the national average and seventy-seven percent 74% of the population in this area is considered by HUD as low-to-moderate income. Nearly every 4 out of 10 people in the BGRA have no available vehicle. The portion of the BGRA located across from Riverfront Park previously received Opportunity Zone designation from the U.S. Treasury to encourage private investment into the area.

Economic benefits produced by the project include short-term construction jobs over the 12-month construction period, however it is the long term economic impacts of the project that present the most opportunities. Riverfront Park is located in the River Street corridor, an area current with blight and underutilized properties. A grassroots effort, by property owners on River Street, started in recent years to revitalize the corridor. Thus far the property owners successfully petitioned the rebranding of the corridor through changing the name from Old Louisville Road to River Street. One of the property owners currently owns over 30 acres of land on River Street, much of which is riverfront property connecting to Riverfront Park. This property owner has a plan for developing restaurants, shops, mixed income housing, recreational facilities, and entertainment venues resulting in hundreds of jobs and millions of dollars in private investment. This property owner expressed that the development of Riverfront Park is the catalyst needed to jumpstart the revitalization of the River Street corridor.

II. DESCRIPTION OF ALTERNATIVES

In all alternatives Riverfront Park will continue to be a city park utilized for outdoor recreation opportunities. Alternatives considered include Alternative A: No Action, Alternative B: Complete Phase I of Riverfront Park Master Plan, and Alternative C: Complete Phase 1 and Phase II of Riverfront Park Master Plan.

Alternative A: No Action, was considered and rejected. The trend of the Riverfront Park remaining distressed and underutilized would likely continue in the absence of the project. Alternative C: Complete Phase I and Phase II of Riverfront Park Master Plan was considered and rejected. The City of Bowling Green received pre-application approval of a $750,000 Outdoor Recreation Legacy Partnership Grant from the National Park Service. Additionally, the City provided a local matching funds contribution in the amount of, $1,500,000 for a total project budget of $2,250,000. Phases I and II of the Riverfront Park Master Plan have a total estimated cost of $4,050,000, which far exceeds the available project budget of $2,250,000. Alternative B: Complete Phase I of Riverfront Park Master Plan, was considered and selected. Alternative B will breathe life into distressed park areas significantly underutilized due to a lack of amenities

and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. The improvements will provide access to new recreational opportunities while addressing recreational deficiencies in the community. Alternative B is within the available project budget and does not result in adverse impacts to the environment.

Alternative A: No Action

Riverfront Park would continue to be designated as a City of Bowling Green Parks and Recreation facility utilized for outdoor recreation opportunities. However, under this alternative, the park would remain distressed and continue to be significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime.

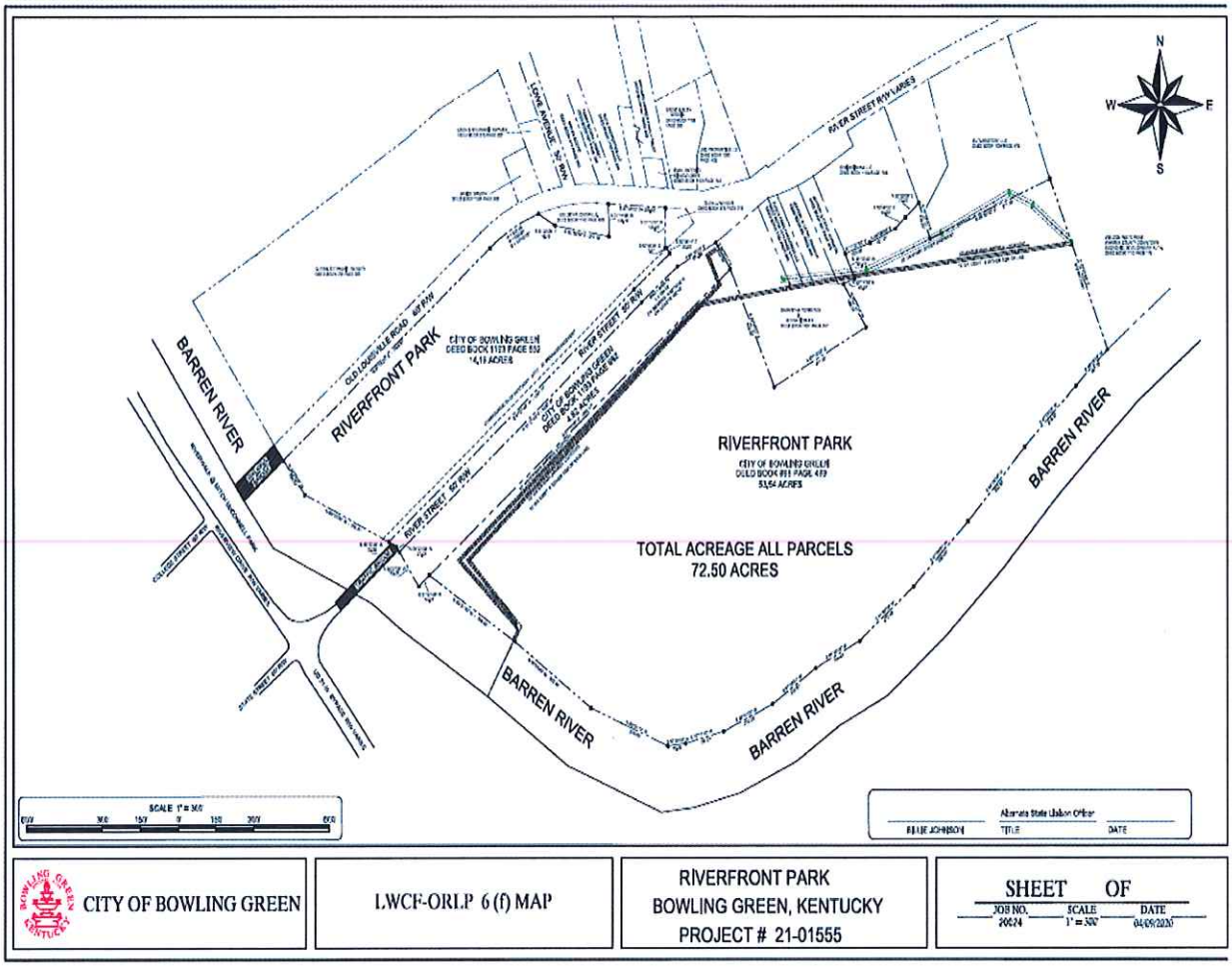
Alternative B (Preferred Alternative): Complete Phase I of Riverfront Park Master Plan

The proposed installation of a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities (i.e. trash receptacles, signage, benches, etc.) will provide access to new recreational opportunities while addressing recreational deficiencies in the community. The project will breathe life into distressed park areas significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. The project's boat ramp will improve search and rescue efforts within the Barren River while increasing safety of first responders. Furthermore, the project compliments the revitalization of the River Street corridor led by a grass roots effort poised to remove blight, attract new private investment, and increase jobs in a distressed area. The project location adjoins a federally designated Opportunity Zone and Neighborhood Revitalization Strategy Area. Please see below LWCF Section 6(f) boundary map.

Consultation regarding this alternative with the Kentucky Heritage Council, State Historic Preservation Office, resulted in a recommendation that the proposed project would result in No Adverse Effect to Historic Properties. Consultation with the U.S. Army Corps of Engineers indicated that a Department of the Army (DA) Permit may be required as mapping provided by the City of Bowling Green shows work in or near "waters of the U.S.", the Barren River. Correspondence with the U.S. National Resource Conservation Service provided that the project will have no negative impact on agricultural lands and an AD-1006 form will not be required, and this office has no additional concerns at this time. Consultation with the U.S. Fish & Wildlife Service revealed significant impacts to federally-listed species are not likely to result

from this project as currently proposed and project re-coordination is needed if the project changes of if new species or critical habitats are listed that could be impacted by the project.

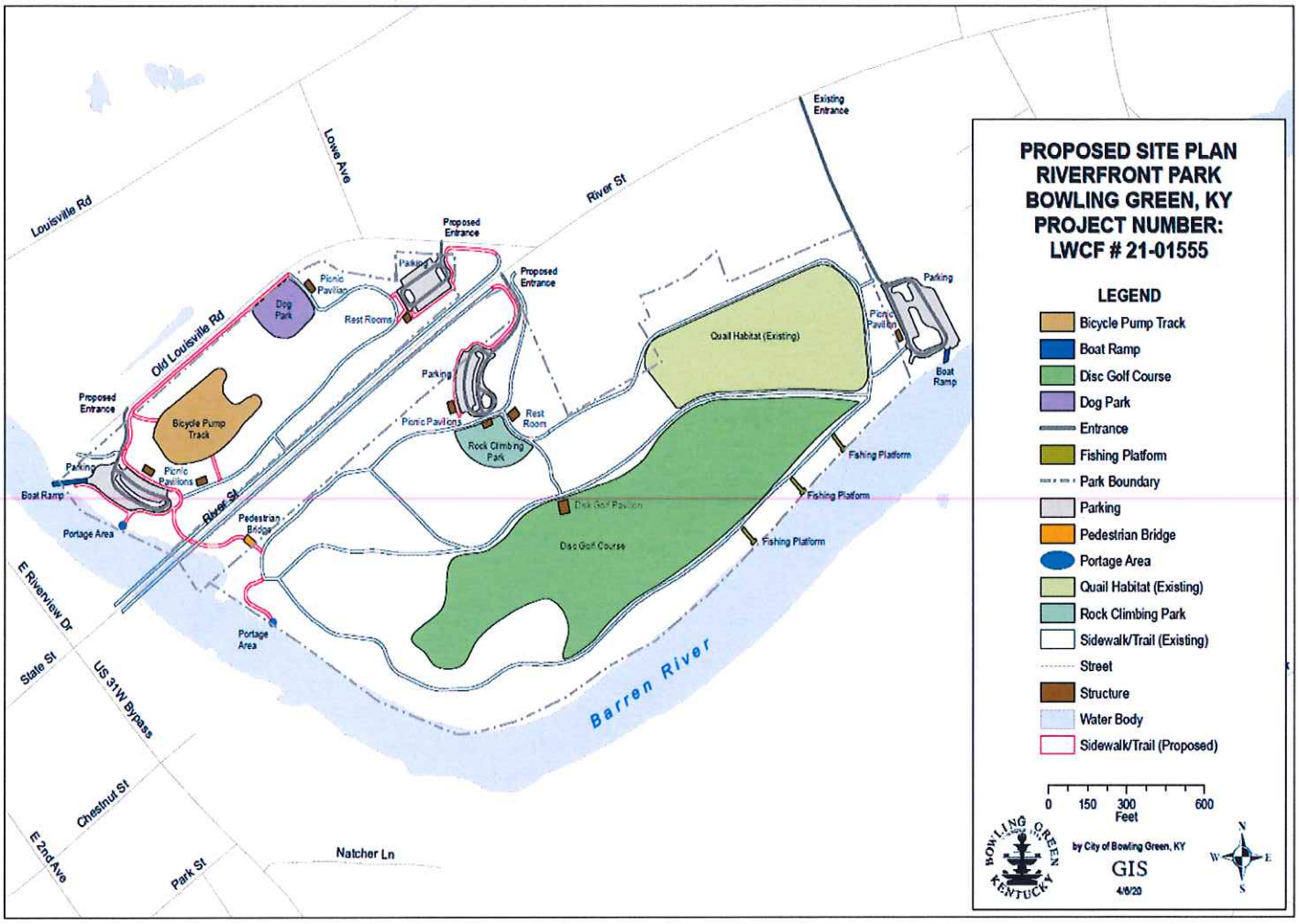
The total cost for the Phase I improvements are estimated at $2,250,000. Please see below LWCF Section 6(f) boundary map.



Alternative C: Complete Phases I & II of Riverfront Park Master Plan

In addition to the Phase I Riverfront Park Master Plan improvements stated above, the proposed Phase II Master Plan improvements entail a bicycle pump track and dog park located at Riverfront Park West at the site of the closed C & D Landfill. Additionally included in Phase II is a riffle extension in the Barren River for recreational whitewater rafting opportunities. Rounding out Phase II improvements are supporting facilities are asphalt paving and chain link fencing to serve the dog park and bicycle pump track.

The total cost for the Phase II improvements are estimated at $1,800,000 for a total combined Phase I & Phase II cost of $4,050,000. Please see below ORLP Site Plan 21-01555 for both phases of the Master Plan.



III. AFFECTED ENVIRONMENT

Riverfront Park is comprised of two park areas, Riverfront Park West and Riverfront Park East, which are separated by River Street (KY 3225). At approximately 17 acres, Riverfront Park West consists of a short pedestrian walking bridge crossing the Barren River and a three quarter mile walking/biking trail. The walking bridge connects a parking lot/river view area across the river from the park to the walking/biking trail at Riverfront Park West, which lies on the grounds of a

closed Construction & Debris (C&D) Landfill. The walking trail is a gravel oval path located on open land parallel to River Street. The lower perimeter of the park is characterized by wooded, steep terrain where it eventually adjoins the Barren River.

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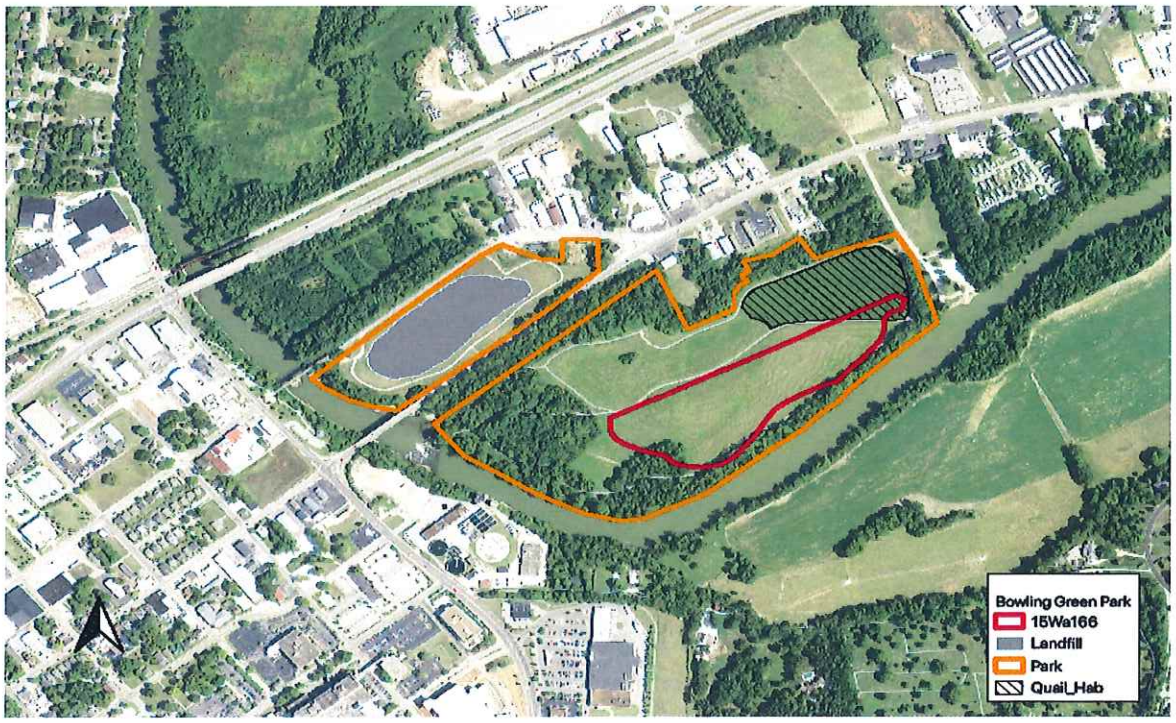
Cultural/ Historic Resources

Riverfront Park East is home to one archaeological site – 15Wa166. Consultation regarding this alternative with the Kentucky Heritage Council, State Historic Preservation Office, resulted in a recommendation that the proposed project would result in No Adverse Effect to Historic Properties. This recommendation is based on a previously completed archaeological investigation by Kentucky Archaeological Survey completed in October 2020. During the survey, the investigators revisited one previously reported site – 15Wa166.



City of Bowling Green, Kentucky
Riverfront Park, Bowling Green, KY

The City of Bowling Green proposes to construct a disc-golf course on this site. The City committed to relocating a proposed pavilion to avoid the site, and that gravel or bark mulch tee pads will be used instead of concrete. Limited disturbance would result from the excavation of post-holes to install signposts at the 18 tee locations and to install the 18-19 disc golf baskets to complete the course. Based on the limited amount to disturbance, the Kentucky Heritage Council does not feel the proposed activities would significantly diminish the integrity of the site.

Sensitive Species

Consultation with the U.S. Fish & Wildlife Service (USFWS) revealed significant impacts to federally-listed species are not likely to result from this project as currently proposed and project re-coordination is needed if the project changes of if new species or critical habitats are listed that could be impacted by the project. This consultation is based on the premise the City has not completed the full engineering and design for the project. Further consultation with the USFWS entailed the following with regards to a list of potential species in the project area:

- Bat Habitat – With regards to bats in the project area, there are no caves on the properties at all, further the project that we propose will most likely not result in the City removing any trees greater than 3" DBH. In the event the City does need to remove any trees that may provide bat habitat, then the City will coordinate will in advance with the appropriate agencies to ensure compliance. The City currently does not anticipate any impacts to bat habitat with the project.
- Mussels – The majority of the remaining species are mussels. The project potentially has two aspects that may impact the river directly. A boat ramp and fishing access platforms. While the City is still awaiting final design for both of these items, at this time we don't anticipate the platforms having any structure below Ordinary High Water Mark at all. The boat ramp will be directly beneath a disused state highway bridge that is now a city owned pedestrian bridge. The stream bank and bed there is silty and muddy rather than cobbled/rocky. We currently anticipate no impact to any of these species through either of these potential projects. We will be seeking jurisdictional determination/approval from the U.S. Army Corps of Engineers and any other appropriate agency for both of these aspects of the plan.
- Cave Shrimp – With regard to cave shrimp, the City does not believe there is any habitat associated with our project.
- Potato Bean – The potato bean prefers shallow soils and exposed limestone, a barren plains style of habitat, which the project area does not possess similarities to. The project area is in river deposited deep soils in a floodplain.

Waters of the US: Barren River

The project aims to install a boat ramp and fishing platforms in and near the Barren River. This activity will require a Department of Army (DA) Permit. The City will coordinate with the U.S. Army Corps of Engineers or all permitting and compliance measures required for the project.

Executive Order 12898, Environmental Justice in Minority and Low-Income Populations

The City of Bowling Green has a population that is 57% low to moderate income as defined by the U.S. Department of Housing and Urban development. Many residents only have the fiscal capacity to access close-to-home outdoor recreation opportunities. As mentioned earlier, fishing and boating opportunities are scarce within the urbanized area. Residents with the available financial resources travel approximately an hour to Barren River Lake or Nolin Lake to access fishing and boating facilities. Unfortunately many individuals within the City have limited financial resources and lack personal transportation, and therefore do not have the opportunity to access close-to-home fishing and boating facilities. The same holds true for individuals wanting to engage in non-traditional outdoor activities such as boulder climbing or paddle sports. While there are several disc golf courses located throughout the urbanized area and county, opportunities are limited in the vicinity of the downtown area. Accessibility of these outdoor recreation activities is especially difficult for City residents living across the river from Riverfront Park in the Bowling Green Reinvestment Area.

The Bowling Green Reinvestment Area (BGRA), a U.S. Department of Housing and Urban Development (HUD) designated Neighborhood Revitalization Strategy Area, is a six census tract area encompassing the City's urban core. This geographic area possesses the lowest incomes, oldest housing stock, and highest concentration of minorities and female heads of households in comparison to the rest of the overall City. The BGRA has an average combined poverty rate exceeding 50% and seventy-seven percent 77% of the population in this area is considered by HUD as low-to-moderate income. The average percentage of people with no available vehicles in the BGRA is 12.1% which is more than double the City and National averages and nearly quadruples the State average. The portion of the BGRA located across from Riverfront Park recently received Opportunity Zone designation from the U.S. Treasury to encourage private investment into the area.

Economic benefits produced by the project include short-term construction jobs over the 12-month construction period, however it is the long term economic impacts of the project that present the most opportunities. Riverfront Park is located in the River Street corridor, an area current with blight and underutilized properties. A grassroots effort, by property owners on River Street, started earlier this year to revitalize the corridor. Thus far the property owners

successfully petitioned the rebranding of the corridor through changing the name from Old Louisville Road to River Street. One of the property owners currently owns over 30 acres on River Street, most of which is riverfront property connecting to Riverfront Park. This property owner has a plan for developing restaurants, shops, mixed income housing, recreational facilities, and entertainment venues resulting in hundreds of jobs and millions of dollars in private investment.

Former Construction and Debris (C&D) Landfill

Riverfront Park West is home to a closed C&D landfill. A Phase I Environmental Assessment was completed for the property in April 2020 by EnSafe as part of a Brownfields Assessment Grant awarded to the City of Bowling Green. The C&D landfill, currently owned by the City of Bowling Green, comprises approximately 18 acres within two separate parcels. The subject property was used as a C&D landfill for 11 years and is now occupied by a walking trail and access to the Barren River. Asphalt-paved roads are located on three sides of the subject property: the former College Street to the north, Lowe Avenue and the intersection of Lowe Avenue and River Street to the east, and River Street to the south. The Barren River borders the property to the west. The subject property is adjoined to the north by wooded land to the east by a pub, muffler shop, former gentleman's club, print shop, auto repair shops, carpet and furniture store, auto paint shop, former woodworking shop, former residences, and a former car sales lot. (closed); to the south by Weldon Peete Park (municipal park with bike trails and river access); and to the west beyond the Barren River by the Riverwalk at Mitch McConnell Park.

The approximate 18-acre subject property is grass-covered with no current structures. The subject property is comprised of two property parcels (Warren County Parcels 039A-01-002 and 051A-01-009). Parcel number 039A-01-002 was purchased by the City of Bowling Green in 2019 from the Kentucky Department of Transportation and is approximately 17.8 acres. Parcel number 051A-01-009 was purchased by the City of Bowling Green in 2016 from the Gray family. This roughly 0.3-acre parcel contained a residential building that was later used as a veterinarian clinic. The structure was demolished in 2016 and the debris was reportedly transported offsite for disposal. The Phase I Environmental Assessment found there were reportedly no drinking water wells or septic systems associated with the demolished buildings.

Historically the subject property was used by the Kentucky Department of Transportation as a borrow pit while constructing the Bowling Green/Cave City Highway. The aforementioned veterinarian clinic operated in a building on the northern portion of the subject property from 1964 to 1992. The City of Bowling Green began using the subject property as a permitted

C&D landfill in 1975. Landfilling operations ceased in 1986 and a clay cap was installed, and the City applied for a closure permit. During a 1995 landfill closure inspection the Kentucky

Division of Waste Management (KDWM) discovered a leachate release from the landfill into the Barren River. The City of Bowling Green responded and stopped the discharge of leachate. Due to high water levels in the Barren River multiple inspections after this incident were unable to determine if the release had been adequately addressed. In 2001 a leachate recovery system comprised of a recovery trench, underground leachate storage tank, and pump were installed on the subject property. The Phase I Environmental Assessment found that very little information was obtained as to the operation of the leachate recovery system and this ESA has been unable to determine whether leachate was recovered or disposed, or if so when the recovery system stopped being used.

The subject property is currently being used to stockpile soil from a nearby construction project at the Bowling Green Municipal Utilities (BGMU) water treatment facility located at 110 U.S. 31W By-Pass. The BGMU site (also the former location of Bale Tire Center) is listed in the environmental database report as a closed State Hazardous Waste site. According to the No Further Action (NFA) letter issued by the Kentucky Department for Environmental Protection (KDEP) – Superfund Branch in February 2004, petroleum hydrocarbon concentrations above screening levels in effect at the time were identified in soil at the former Bale Tire Center site but no additional excavation or treatment was required due to logistical issues (i.e., proximity to the river bank, depth of petroleum impacts) or low petroleum hydrocarbon concentrations that KDEP indicated "do not pose a risk to human health or the environment." It is also noteworthy that the petroleum hydrocarbon concentrations reported in soil in 2003 are below KDEP cleanup standards that would be applicable currently. According to the site contact, City Environmental Manager, Matt Powell, a portion of the stockpiled soil will be returned to the BGMU construction site and some will remain on the subject property for "re-crowning" of the landfill cap.

The Phase I Environmental Assessment revealed evidence of the following recognized environmental condition: Operation of a C&D landfill at the subject property in the 1970s and 1980s, including the potential for disposal of hazardous substances or petroleum products along with the lack of groundwater monitoring data and/or leachate management information, is identified as a recognized environmental condition. The Phase I Environmental Assessment revealed no evidence of historical recognized environmental conditions or business environmental risks. As stated above, included in a future Phase II, a bicycle pump track and dog park are a suitable reuse for development at the former C&D landfill site. Please see below maps of the current C&D Landfill.

City of Bowling Green, Kentucky
Riverfront Park, Bowling Green, KY

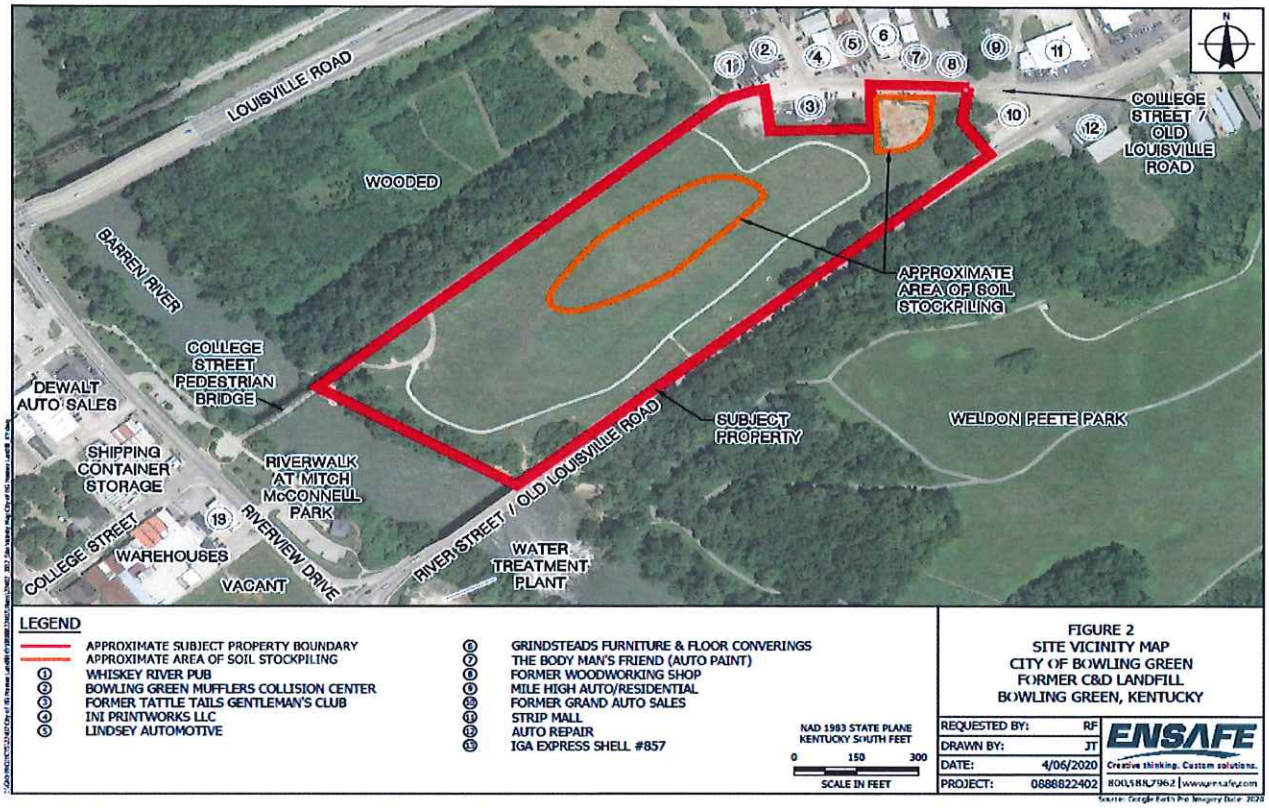


FIGURE 2
SITE VICINITY MAP
CITY OF BOWLING GREEN
FORMER C&D LANDFILL
BOWLING GREEN, KENTUCKY

REQUESTED BY:	RF
DRAWN BY:	JT
DATE:	4/06/2020
PROJECT:	0888822402

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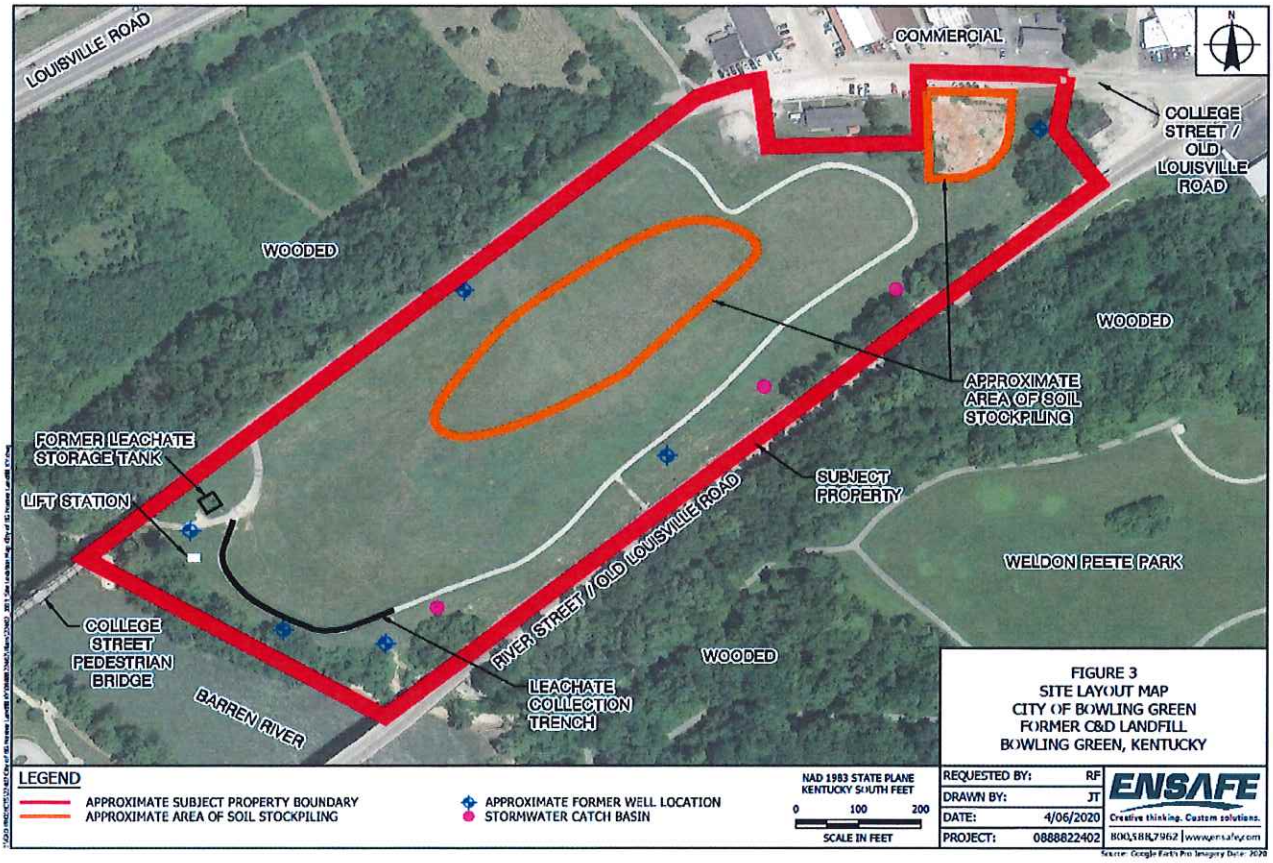

FIGURE 3
SITE LAYOUT MAP
CITY OF BOWLING GREEN
FORMER C&D LANDFILL
BOWLING GREEN, KENTUCKY

REQUESTED BY:	RF
DRAWN BY:	JT
DATE:	4/06/2020
PROJECT:	0888822402

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City of Bowling Green, Kentucky
Riverfront Park, Bowling Green, KY

Park Visitors

Park visitors will be positively impacted by the project as they will have access to new outdoor recreation opportunities, many of which either don't currently exist or are very limited throughout the associated urbanized area. Furthermore, project features of new facilities and lighting will bring additional visitors to the park and provide a more inviting and safer park environment. Whereas, currently the park is significantly underutilized and characterized by a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime.

Currently the two greenways trails at Riverfront Park East and Riverfront Park West are not connected. To access either trail, pedestrians and bicyclists must cross River Street. River Street, a major thoroughfare with an annual average daily traffic count exceeding 11,000, presents added safety risks to users of the greenways at this location. This project will contribute to the elimination of this current safety risk. The Bowling Green-Warren County Greenways Commission has requested the City to apply for grant funding in previous years to address this recreational deficiency and improve safety.

First Responders

The project's boat ramp will improve search and rescue efforts within the Barren River while increasing safety of first responders. The Bowling Green Fire Department (BGFD) strongly supports this project as they are in dire need for access and a boat ramp at Riverfront Park. Currently there is a makeshift access point, which is the only vehicular access to the river existing downstream of the flow through dam for 8.5 miles. The access point is very steep and difficult to navigate in a four wheel drive vehicle, and navigating a truck and trailer on this terrain is treacherous. The BGFD's watercraft deployments at this location are dangerous and heavily delayed by the terrain. In particularly heavy river flow conditions, they cannot deploy from this location at all. A ramp here not only provides better recreational access it dramatically decreases response times and improves safety for emergency responders to this area.

River Street Corridor

The grass roots effort led by property owners to revitalize the River Street Corridor to reduce blight and improve economic opportunities is depending on the Riverfront Park Redevelopment as a catalyst to ignite the revitalization of the area as current efforts remain stagnant.

IV. ENVIRONMENTAL IMPACTS

Methodology for Assessing Impacts

For the purposes of this analysis, intensity and duration of the impact are defined as:

- *Negligible* – the impact is barely perceptible or not measurable, and confined to a small area
- *Minor* – the impact is perceptible or measurable, and it is localized
- *Moderate* – the impact is clearly detectable and could have an appreciable effect
- *Major* – the impact would have a substantial, highly noticeable influence
- *Short-term* – the impact would be less than 5 years in duration
- *Long-term* – the impact would be 5 years or more in duration

Cumulative Impacts were determined by combining the impacts of the alternatives with other past, present, and reasonably foreseeable future actions within Riverfront Park East and West and the surrounding area.

Alternative A: No Action

Cultural/ Historic Resources – There would be no impacts.

Sensitive Species – There would be no impacts.

Waters of the US: Barren River – There would be no impacts.

Executive Order 12898, Environmental Justice in Minority and Low-Income Populations – Lack of access for low income population to fishing and boating opportunities and non-traditional outdoor activities, such as boulder climbing or paddle sports, will continue in the absence of the project.

Former Construction and Debris (C&D) Landfill – There would be no impacts.

Park Visitors – Park visitors would continue to have limited outdoor recreation opportunities at Riverfront Park. Pedestrians would continue to have an unsafe connection between accessing Riverfront Park East and West. Park visitors would continue to be dismayed from accessing the park lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime.

First Responders – First responders would continue to have unsafe conditions for accessing the Barren River at Riverfront Park for water rescues.

River Street Corridor – The current blight and underutilization of properties would most likely continue and the revitalization efforts of the corridor could remain stagnant.

Cumulative Effects: Doing nothing will result in continued underutilization of the park. Local, especially low income, residents will continue to have limited fishing and boating opportunities and non-traditional outdoor activities, such as boulder climbing or paddle sports, as these activities currently require traveling outside of the urbanized area for engagement.

Impact Analysis and Conclusion: There would be minor, long-term impacts to minority and low income populations, park visitors, River Street Corridor, and first responders. Minority and low-income populations along with park visitors will continue to have limited access to non-traditional outdoor recreation opportunities locally and at Riverfront Park. Over time, the River Street Corridor will most likely continue to decline and lack of a safe park connection, along with hindered access for first responders to the Barren River, could result in serious injury. This alternative does not address the project's need to revitalize a distressed park area and provide access to non-traditional outdoor recreation opportunities currently lacking in the community. The actions described in this alternative do not adversely affect a resource, but do present long term implications in the event of no action.

Alternative B (Preferred Alternative): Complete Phase I of Riverfront Park Master Plan

Cultural/ Historic Resources – There would be no impacts.

Sensitive Species – There would be no impacts, which is based on the premise the City has not completed the full engineering and design for the project. Further consultation with the U.S. Fish and Wildlife Service (USFWS) will be completed once the project design is complete.

Waters of the US: Barren River – There would be no impacts, which is based on the premise the City has not completed the full engineering and design for the project. Further consultation with the U.S. Army Corps of Engineers (USACE) will be completed once the project design is complete. The project aims to install a boat ramp and fishing platforms in and near the Barren River. This activity will require a Department of Army (DA) Permit. The City will coordinate with USACE for all permitting and compliance measures required for the project.

Executive Order 12898, Environmental Justice in Minority and Low-Income Populations – There would be minor, long-term positive impacts for residents in the adjacent, BG Reinvestment Area, which would now have access to new outdoor and non-traditional recreation opportunities currently limited or not available in the urbanized area.

Former Construction and Debris (C&D) Landfill – There would be no impacts.

Park Visitors – There would be minor, long-term positive impacts for park visitors as there would not only be new amenities available at the park, but also a safe connection between accessing Riverfront Park East and West. New amenities, along with supporting facilities such as with new lighting, will increase park visitors and improve safety perceptions of the park.

First Responders – There would be minor, long-term positive impacts for first responders as a new boat ramp will provide a safer access point for first responders and would improve response times of water rescues, increasing safety of residents.

River Street Corridor – There would be minor, long-term positive impacts for the River Street Corridor as Phase I of the Riverfront Development Project provides the opportunity for a catalyst to ignite the grass roots led effort to revitalize the River Street Corridor.

Cumulative Effects: Completing Phase I of the Riverfront Park Master Plan will result in a higher and better use for the City's downtown riverfront park areas. New park amenities will provide access to non-traditional outdoor recreational opportunities currently limited or not available in the area, and will result in increased utilization of the park.

Impact Analysis and Conclusion: There would be minor, long-term positive impacts to minority and low income populations, park visitors, River Street Corridor, and first responders. Minority and low-income populations along with park visitors would have new access to non-traditional outdoor recreation opportunities locally and at Riverfront Park. The project presents the opportunity to serve as a catalyst to ignite the revitalization of the River Street Corridor, provide a safe park connection, and improve access for first responders to the Barren River, which could help save lives. This alternative meets the project's need to provide revitalize a distressed park area and provide access to non-traditional outdoor recreation opportunities currently lacking in the community. The actions described in this alternative do not adversely affect a resource.

Alternative C: Complete Phases I & II of Riverfront Park Master Plan

Cultural/ Historic Resources – There would be no impacts.

Sensitive Species – It's anticipated that the riffle extension in the Barren River would minor, short term impacts on sensitive mussel species. The City would work with USFWS to mitigate any impacts to sensitive muscle species.

Waters of the US: Barren River – It's anticipated that that the riffle extension, for whitewater rafting, in the Barren River would have minor, long term impacts on waters of the U.S. The City

would work with the USACE to obtain a DA permit and mitigate any impacts to waters of the U.S.

Executive Order 12898, Environmental Justice in Minority and Low-Income Populations – There would be minor, long-term positive impacts for residents in the adjacent, BG Reinvestment Area, which would now have access to new outdoor and non-traditional recreation opportunities currently limited or not available in the urbanized area, including a BMX pump track, white water rafting, and dog park.

Former Construction and Debris (C&D) Landfill – There would be no impacts. The proposed BMX pump track, dog park, and supporting facilities are a suitable reuse for development at the former C&D landfill site.

Park Visitors – There would be minor, long-term positive impacts for park visitors as there would not only be new amenities available at the park, but also a safe connection between accessing Riverfront Park East and West. New amenities, along with supporting facilities such as with new lighting, will increase park visitors and improve safety perceptions of the park. Furthermore, whitewater rafting, BMX pump track, dog park, and supporting facilities will additional recreational opportunities.

First Responders – There would be minor, long-term positive impacts for first responders as a new boat ramp will provide a safer access point for first responders and would improve response times of water rescues, increasing safety of residents.

River Street Corridor – There would be minor, long-term positive impacts for the River Street Corridor as Phase II of the Riverfront Development Project provides the opportunity for a catalyst to ignite the grass roots led effort to revitalize the River Street Corridor.

Cumulative Effects: Completing Phase II of the Riverfront Park Master Plan will result in a higher and better use for the City's downtown riverfront park areas. New park amenities will provide access to non-traditional outdoor recreational opportunities currently limited or not available in the area, and will result in increased utilization of the park.

Impact Analysis and Conclusion: There would be minor, long-term positive impacts to minority and low income populations, park visitors, River Street Corridor, and first responders. Minority and low-income populations along with park visitors would have new access to non-traditional outdoor recreation opportunities locally and at Riverfront Park. The project presents the opportunity to serve as a catalyst to ignite the revitalization of the River Street Corridor,

provide a safe park connection, and improve access for first responders to the Barren River, which could help save lives. This alternative meets the project's need to provide revitalize a

distressed park area and provide access to non-traditional outdoor recreation opportunities currently lacking in the community. However, this alternative substantially exceeds the available budget for the project, and therefore, isn't financially feasible. The actions described in this alternative do not adversely affect a resource.

V. COORDINATION

The following agencies, organizations and persons were contacted for information or assisted in identifying important issues, developing alternatives or analyzing impacts.

Chris Gunn – Kentucky Heritage Council Archaeological Review Coordinator
Craig Potts – Kentucky Heritage Council, Executive Director & State Historic Preservation Officer
David Pollack – Kentucky Archaeological Survey, Director
Matt Powell – City of Bowling Green, Environmental Manager
Carrie Allison – U.S. Fish & Wildlife Service, Wildlife Biologist
Jennifer Garland – U.S. Fish & Wildlife Service, Deputy Field Supervisor
Sarah Atherton – U.S. Army Corps of Engineers, Project Manager, South Branch
David Baldridge – U.S. Army Corps of Engineers, Chief, South Branch
Perry Pedley – U.S.D.A. National Resource Conservation Service, Soil Scientist
Brad Reddick – EnSafe – Geologist
Rid Federico – EnSafe – Bowling Green Business Lead
Clinton Lewis- Bowling Green Riverfront Foundation
Eddie Hanks – Autumnstone LLC
Cole Reagan - Wood Environment & Infrastructure Solutions, Inc., Senior II Project Manager

Exhibit 1

Pre-Award Inspection Report

THE STATE OF KENTUCKY
DEPARTMENT FOR LOCAL GOVERNMENT
Land and Water Conservation Fund
LWCF Pre-Award Inspection Report

Project Title: Riverfront Park Development Project

Project Sponsor: City of Bowling Green

Project Location: 1360 Old Louisville Rd., Bowling Green, KY, 42101

Project Type: D

A = Acquisition

D = New Development

R = Renovation Development

Inspection Date: 5/7/20

1. Is the acquisition and/or development in accord with the Project Proposal? Yes, the development is an existing park.

2. What are the natural features of the area, and is the land suitable for intended use? Open space, wooded areas, and a river. The land serves as an existing park and is suitable for park expansion.

3. Are any past uses of the land evident? Yes, a closed C&D landfill is present and the remaining areas are evident of a public park.

   What is its presents use? A public park,

4. Is the anticipated use compatible with surrounding lands? Yes, anticipated use is located within a 70 acre park area.

5. Is the site located in a flood plain area? Yes. If so, has the area been identified by HUD as eligible for flood insurance? No.

6. Does the acquisition and/or development involve, or is it adjacent to, a historic site listed or eligible for inclusion in the National Register? Yes, one archaeological site – 15Wa166.

7. Is the project adjacent to a National Wildlife Refuge, a National Fish Hatchery, or areas managed under the small waterfowl production program? No.

8. Is the area easily accessible? Yes, area is located along a state route and adjacent to two other state routes.

9. What is the location of the property in relation to the anticipated users (time/distance relationship)? The property is centrally located downtown in immediate proximity to anticipated users.

10. Are there manmade features in the area which detract from the quality of the proposed project? No. If so, how can their influence be minimized? N/A.

11. Are there improvements on the property? No. If so, are they presently occupied, and will displacements occur? N/A

12. Are there any reserved rights, restrictions, or other limitations on the property? Yes, a portion of the property is a closed C&D landfill and one archaeological site is present. If there are, will these adversely affect the use of the area, and how might their influence be minimized? No, the closed C&D landfill is capped and will not be located in the current project scope area. Future use of the closed C&D landfill will include activities suitable for reuse of the area. The archaeological site will not be disturbed due to construction methods agreed upon between the City of Bowling Green and the Kentucky Heritage Council/State Historic Preservation Office.

13. Will development involve dredging, filling, dumping, construction of structures and other actions in navigable waters thereby requiring the issuance of an Army Corps of Engineers and/or a U.S. Coast Guard permit? Yes, Department of Army permit will be obtained per consultation between the City of Bowling Green and U.S. Army Corps of Engineers.

14. Will development adequately provide for use of the facilities by the physically handicapped? Yes, the project will be designed in compliance with the American Disabilities Act.

15. Will there be any unique or new ideas in design or construction methods which might be of regional significance? Yes, the project includes non-traditional recreation opportunities currently not available in the region.

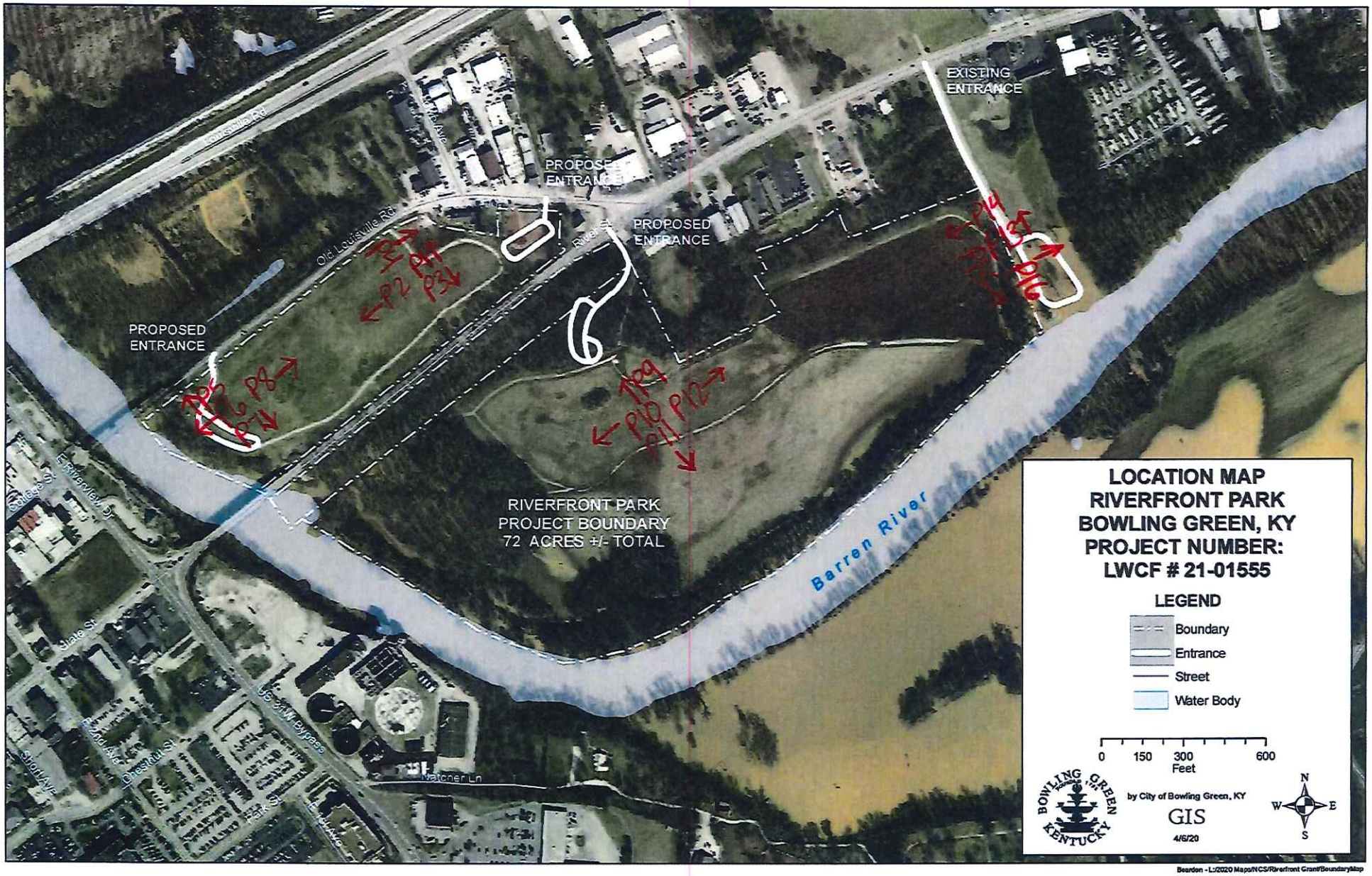
16. Are there any potential health or safety problems? No.

    If so, how might these be corrected? N/A

Additional Comments:

SIGNATURE OF PERSON INSPECTING: _____

ACCOMPANIED BY: _____


EXISTING ENTRANCE
PROPOSED ENTRANCE
PROPOSED ENTRANCE
PROPOSED ENTRANCE
Old Louisville Rd
RIVERFRONT PARK
PROJECT BOUNDARY
72 ACRES +/- TOTAL
Barren River
LOCATION MAP
RIVERFRONT PARK
BOWLING GREEN, KY
PROJECT NUMBER:
LWCF # 21-01555
LEGEND
Boundary
Entrance
Street
Water Body
0 150 300 600
Feet
by City of Bowling Green, KY
GIS
4/6/20
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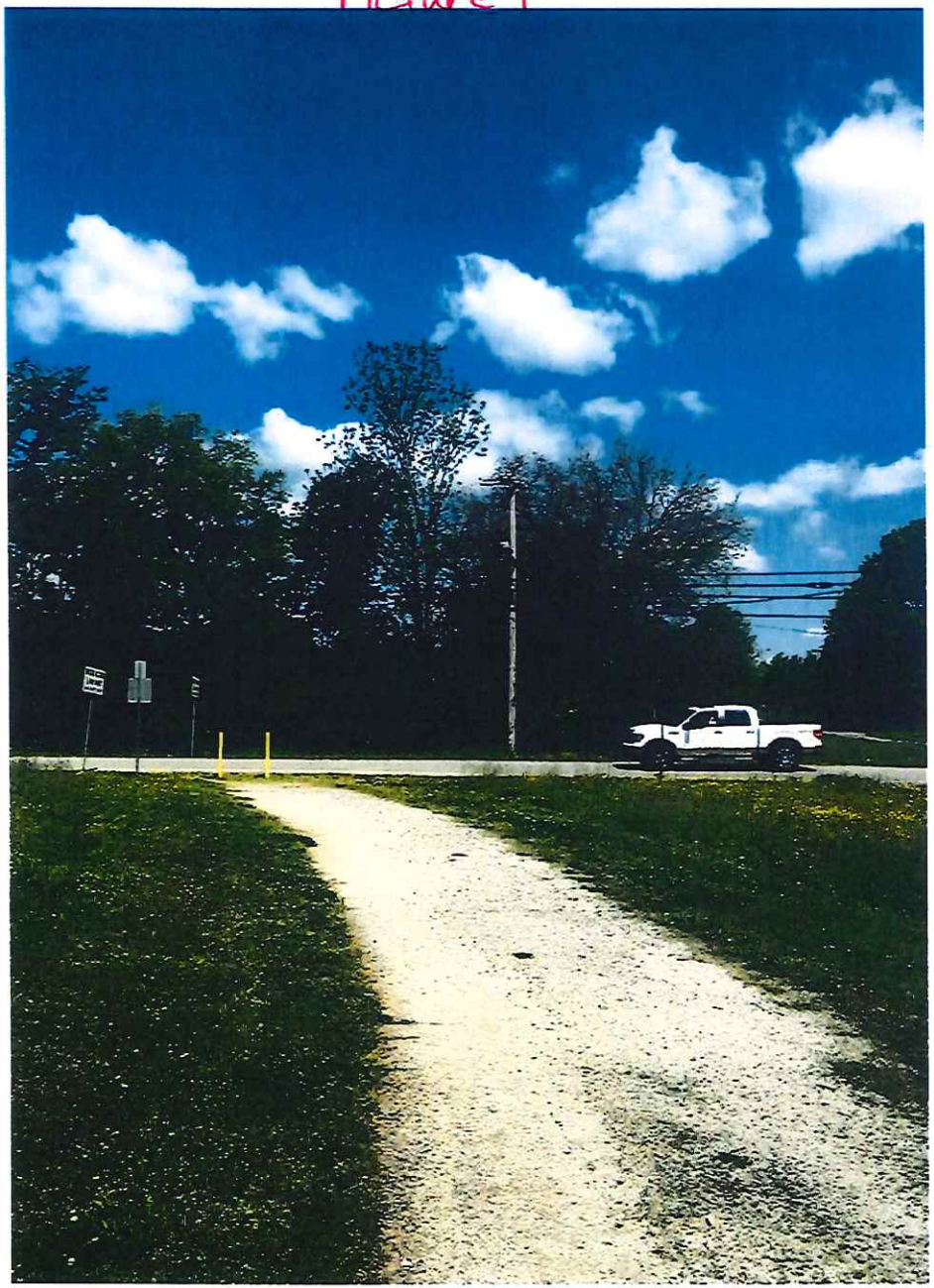
Bearden - L:/2020 Maps/NCS/Riverfront Grant/BoundaryMap

Picture 1



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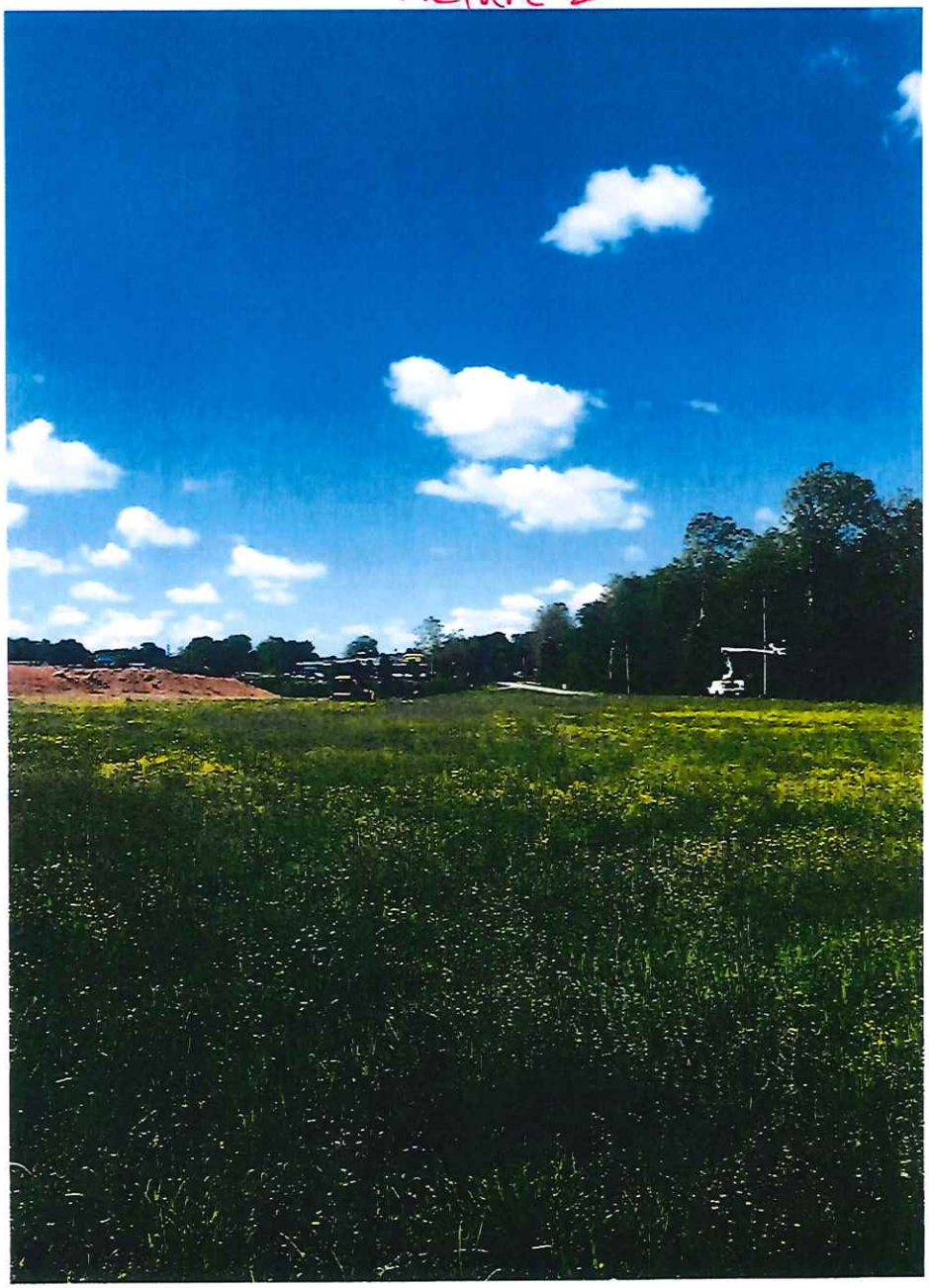
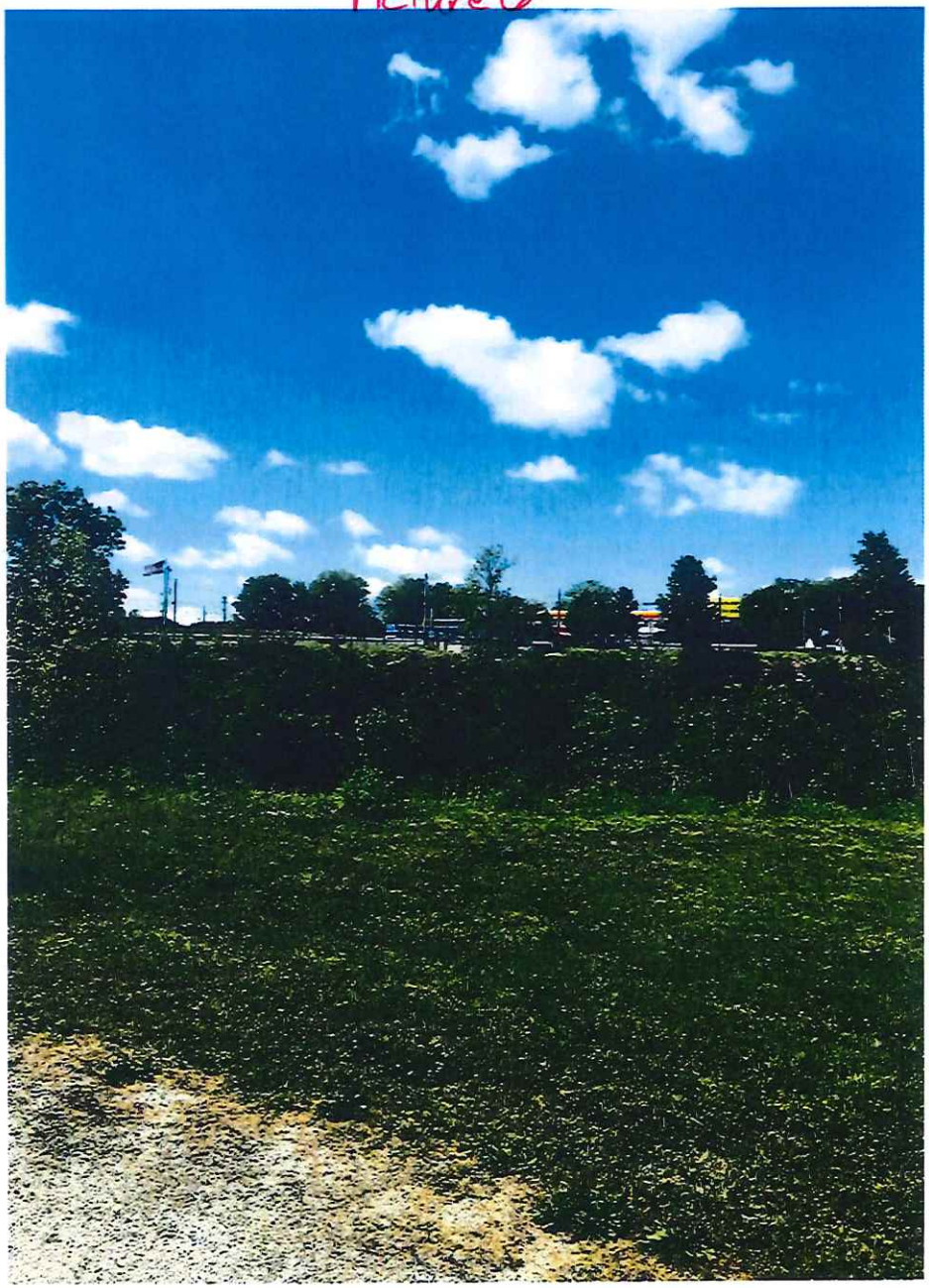


Picture 3

Picture 4

Picture 5

Picture 6



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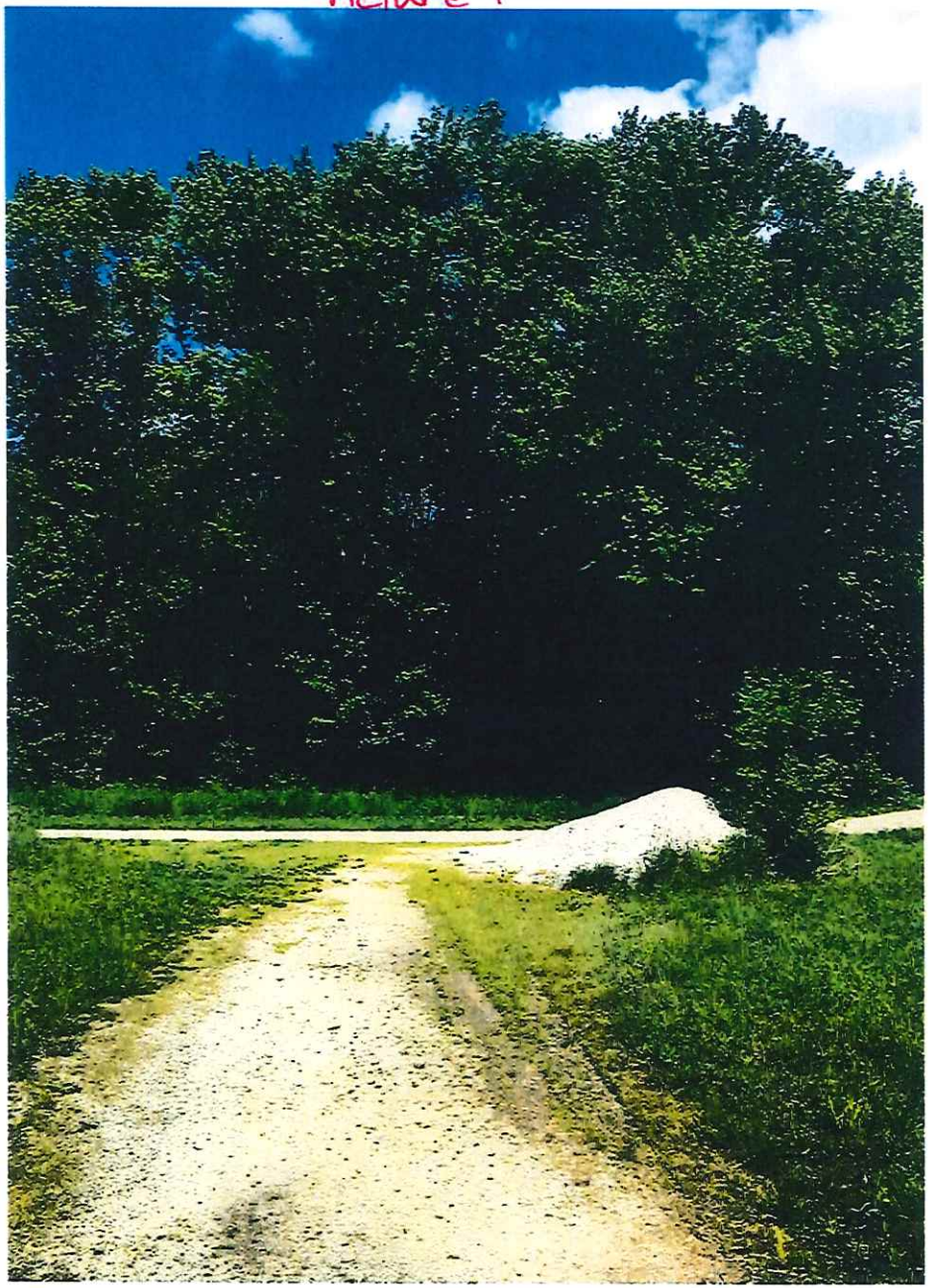

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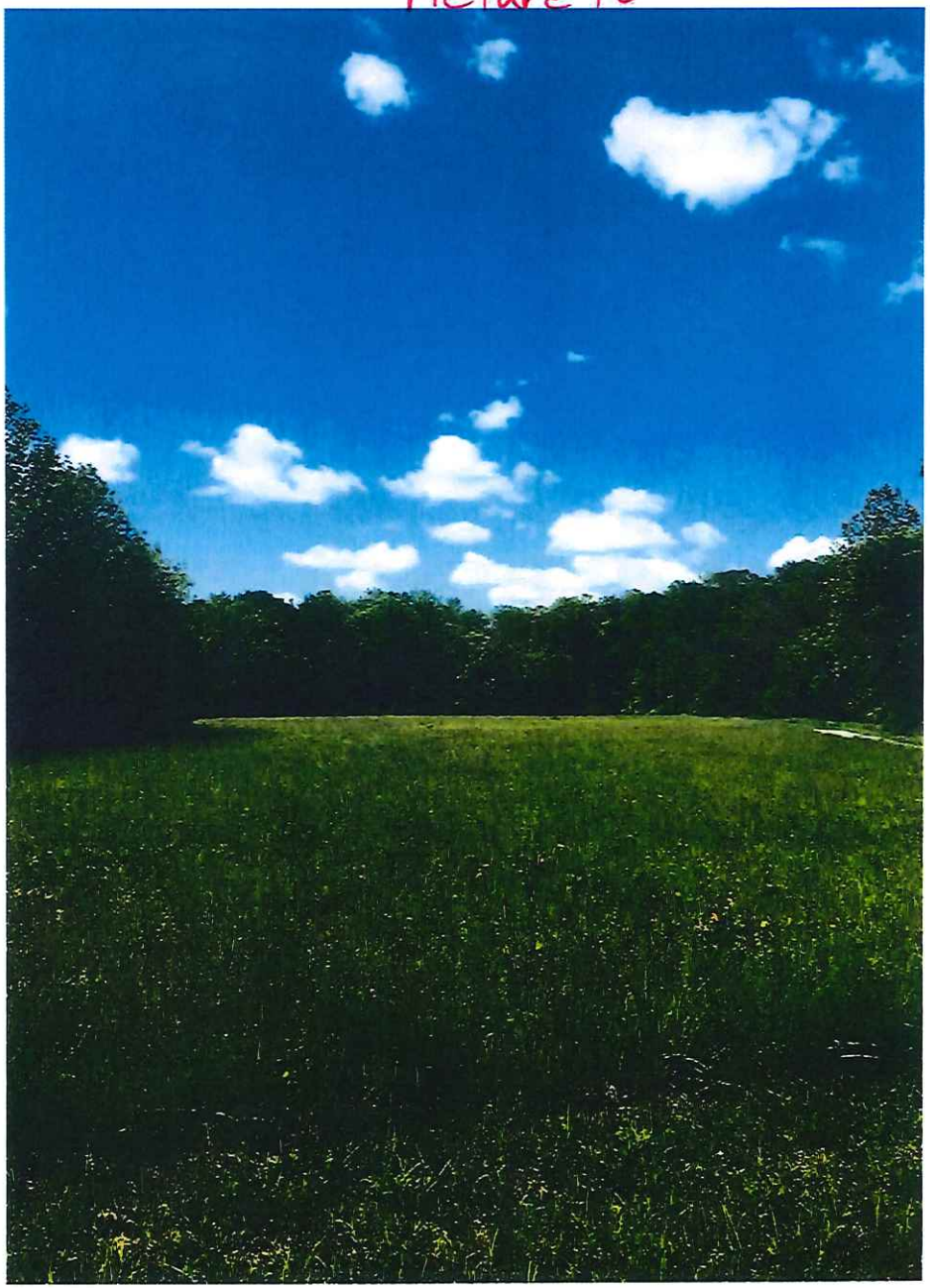

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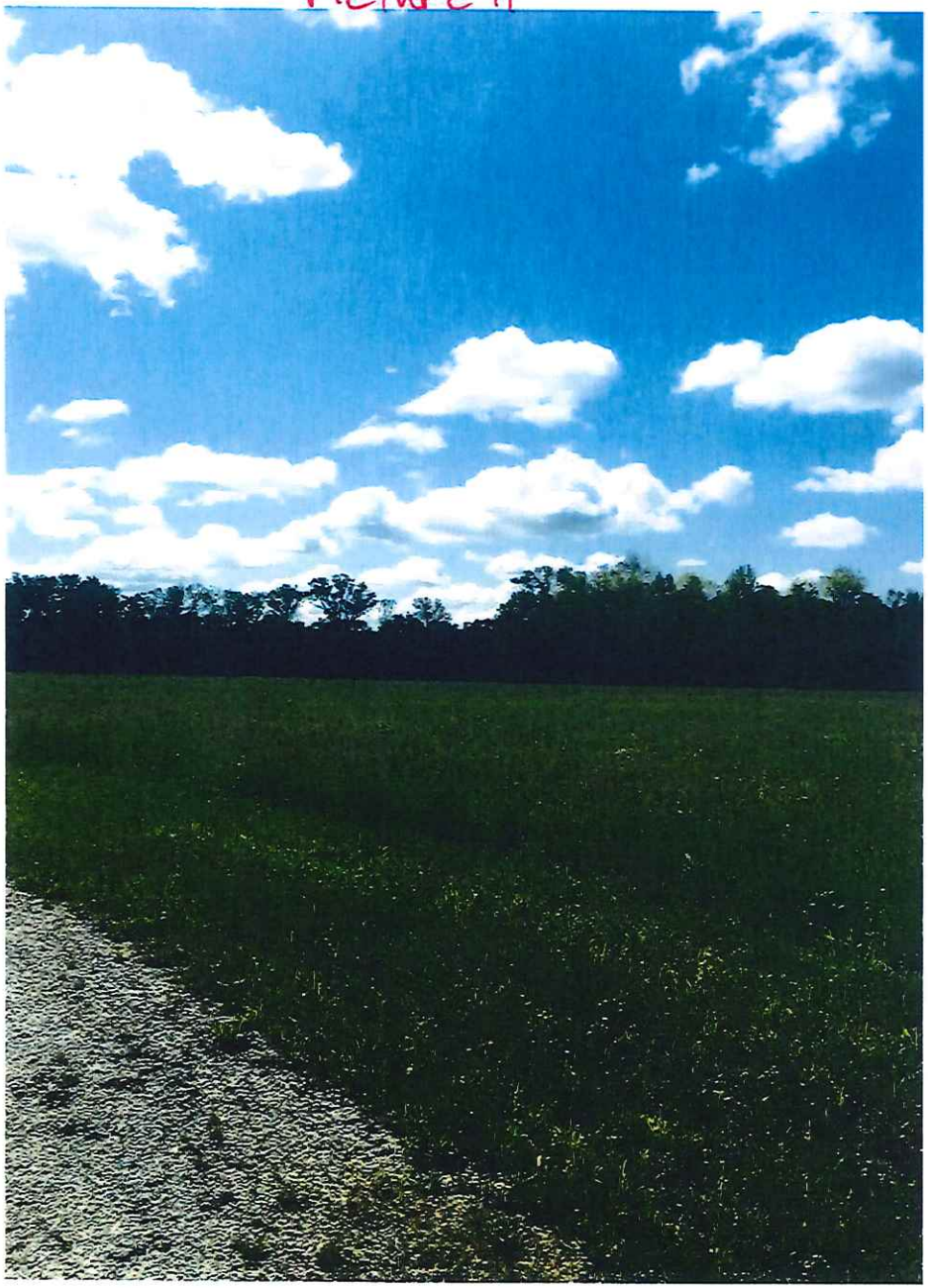

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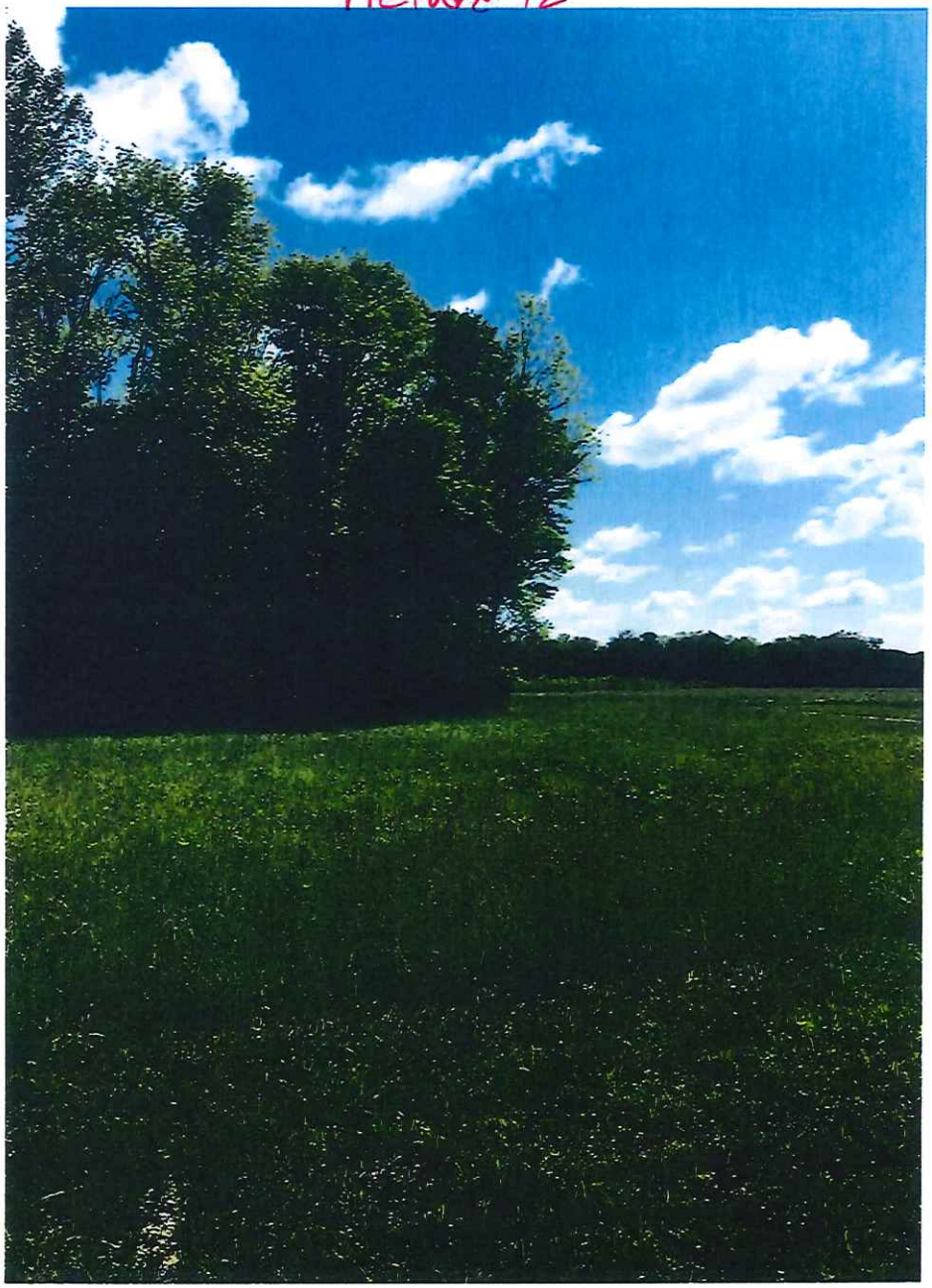

Picture 13

Picture 14

Picture 15

Picture 16

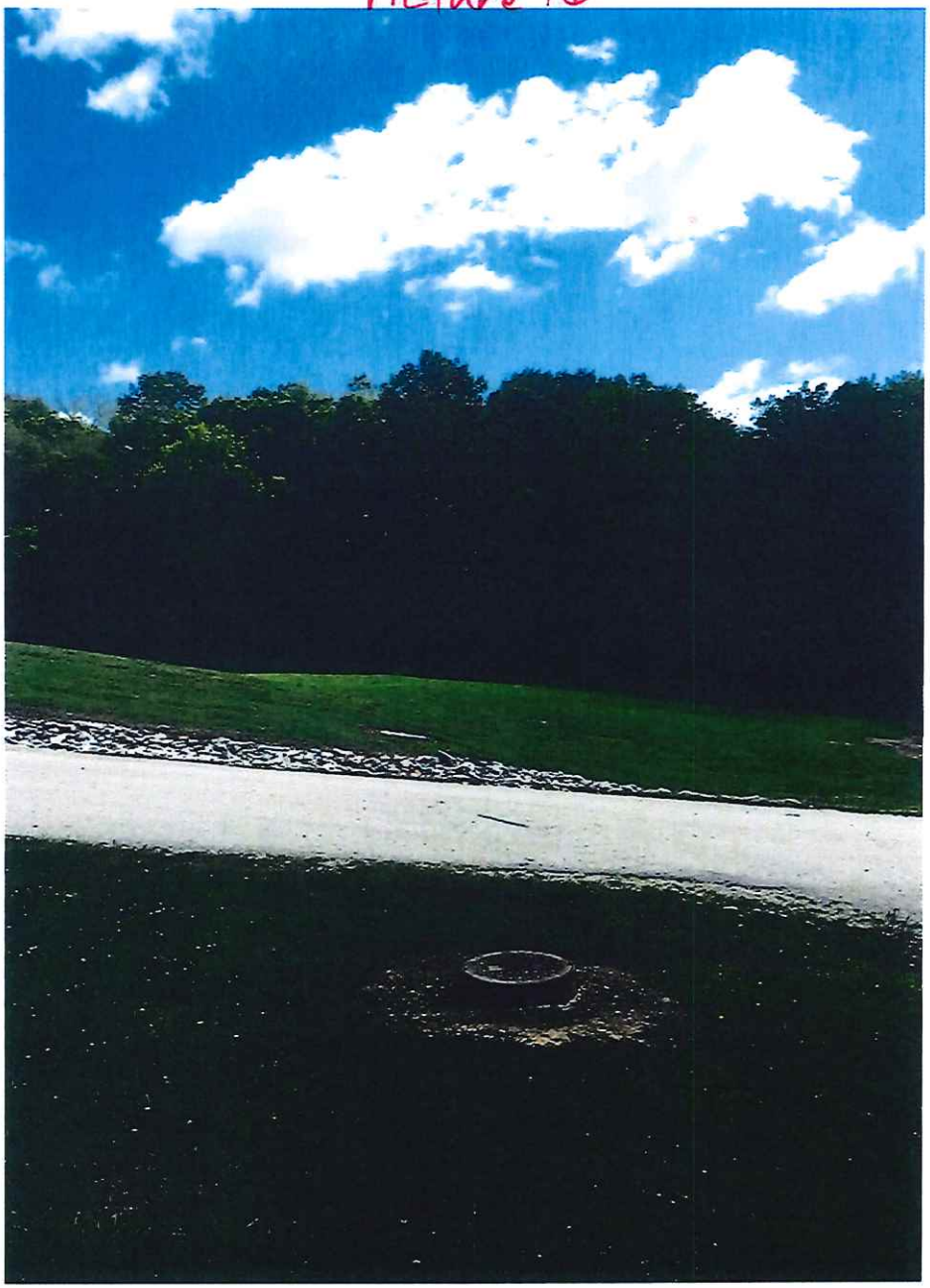

Exhibit 2

U.S. Fish & Wildlife Consultation

Nick Cook
Grants Coordinator
Telephone: 270.393.3659
Fax: 270.393.3168
Nick Cook@bgky.org

707 E. Main Ave
PO Box 430
Bowling Green, Kentucky 42102
www.bgky.org

Neighborhood & Community Services Department

April 27, 2020

Mr. Lee Andrews
US Department of the Interior
Fish & Wildlife Service Frankfort Field Office
330 W. Broadway, Room 266
Frankfort, KY 40601

RE: City of Bowling Green Riverfront Development Project

Dear Mr. Andrews,

Based on additional information provided on October 15, 2020:

Significant impacts to federally-listed species are not likely to result from this project as currently proposed. Project re-coordination is needed if the project changes or if new species or critical habitats are listed that could be impacted by the project.

JENNIFER GARLAND Digitally signed by JENNIFER GARLAND Date: 2020.10.22 15:20:12 -04'00'

for Kentucky Field Supervisor
U.S. Fish and Wildlife Service

Date

The National Park Service selected a preliminary application for the above referenced project under the 2017-2018 Land and Water Conservation Fund, Outdoor Recreation Legacy Partnership Program. The City must now submit a final application which includes consultation with the U.S. Fish and Wildlife Service.

The project will revitalize park areas along Bowling Green's downtown riverfront. Improvements include a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities (i.e. trash receptacles, signage, benches, etc.). The improvements will provide access to new recreational opportunities while addressing recreational deficiencies in the community.

The Riverfront Development Project will breathe life into distressed park areas significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. The project's boat ramp will improve search and rescue efforts within the Barren River while increasing safety of first responders. Furthermore, the project compliments the revitalization of the River Street corridor led by a grass roots effort poised to remove blight, attract new private investment, and increase jobs in a distressed area.

I am requesting a review of the project by your office concerning the following Federal regulations or Executive Order and applicable State legislation or regulations:

1. Wetlands Protection – Executive order 11990;
2. Endangered Species Act of 1973 as amended;
3. Wild and Scenic River Act of 1968 as amended;
4. Fish and Wildlife Coordination Act (16 USC 661 666c).

Please find enclosed maps and drawing of the project. Any comments from your agency would be greatly appreciated in the next thirty (30) days. Thank you for your assistance on this matter. If you have any questions, please contact me at 270-393-3659 or nick.cook@bgky.org.

Sincerely,

Nick Cook

Enclosure

Nick Cook

From: Nick Cook
Sent: Thursday, October 15, 2020 1:56 PM
To: 'Allison, Carrie'
Cc: Matt Powell
Subject: RE: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Hello Ms. Allison,

It was a pleasure to discuss our project with you yesterday. As you've requested we'd like to clarify a few items about our project.

At this point we have not completed the full engineering and design for any component of the proposed improvements. However, we can speak to some of the current conditions of the site and potential construction practices and methods that will affirm we currently anticipate no impact for any of the species on our list.

First, the entire area has been previously disturbed in one fashion or another. The area to the North of River Street is a closed construction demolition and debris landfill and was once a state highway right-of-way. To the south of River St is various areas of old cut and fill for highway construction and once was cropland. Currently it has mountain bike trails and an asphalt walking trail.

With regard to bats in the project area, there are no caves on the properties at all, further the projects that we propose to undertake on the property will most likely not result in us removing any trees greater than 3" DBH. In the event we do need to remove any trees that may provide habitat we will coordinate well in advance with the appropriate agencies to ensure compliance. We currently anticipate no impact to bat habitat with our project.

The majority of our remaining species are mussels. Our project potentially has two aspects that may impact the river directly. A boat ramp and fishing access platforms. While we are still awaiting final design for both of these items, at this time we do not anticipate the platforms having any structure below the Ordinary High Water Mark at all. The boat ramp will be directly beneath a disused state highway bridge that is now a city owned pedestrian bridge. The stream bank and bed there is silty and muddy rather than cobbled/rocky. We currently anticipate no impact to any of these species through either of these potential projects. We will be seeking jurisdictional determination/approval from the US Army Corps of Engineers and any other appropriate agency for both of these aspects of the plan.

With regard to cave shrimp, we do not believe there is any habitat associated with our project. Similarly we understand from our conversation with you yesterday that the potato bean appearing on our list prefers shallow soils and exposed limestone, a barren plains style of habitat, and we are not working with anything similar to that. We are in river deposited deep soils in the floodplain.

Please contact us with any additional questions you may have.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659

Fax: 270-393-3168
nick.cook@bgky.org

From: Allison, Carrie [mailto:Carrie_Allison@fws.gov]
Sent: Tuesday, October 13, 2020 8:59 AM
To: Nick Cook <Nick.Cook@bgky.org>
Subject: Re: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Hi, Nick-

Thank you for sending the species list. This list is for your reference to use when making species determinations. After reviewing the list, you should let our office know if any individuals or habitats used by those species are likely to occur within your project area and whether or not impacts are anticipated. I will be in the office tomorrow if you want to give me a call to discuss further.

Sincerely,

Carrie L. Allison
U.S. Fish and Wildlife Service
330 W. Broadway, Rm. 265
Frankfort, KY 40601
502-382-5965 (cell)
502-695-0468 ext. 46103 (office)
502.695.1024 (fax)
"You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make." ~Jane Goodall

---

From: Nick Cook <Nick.Cook@bgky.org>
Sent: Tuesday, October 13, 2020 9:51 AM
To: Allison, Carrie <Carrie_Allison@fws.gov>
Subject: RE: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Ms. Allison,

Please find attached the outstanding species information associated with the subject referenced project. I apologize for the delay on this. Please let me know if you require any additional documentation.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

From: Allison, Carrie [mailto:Carrie_Allison@fws.gov]
Sent: Thursday, September 10, 2020 8:09 AM
To: Nick Cook <Nick.Cook@bgky.org>
Subject: Re: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Hi, Nick-

The last correspondence I have is the 7/23 email from you that says Matt Powell was planning to reach out to me. We haven't received anything further. The previous submittal was missing the species information.

Carrie L. Allison
U.S. Fish and Wildlife Service
330 W. Broadway, Rm. 265
Frankfort, KY 40601
502-382-5965 (cell)
502-695-0468 ext. 46103 (office)
502.695.1024 (fax)

"You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make." ~Jane Goodall

---

From: Nick Cook <Nick.Cook@bgky.org>
Sent: Thursday, September 10, 2020 8:53 AM
To: Allison, Carrie <Carrie_Allison@fws.gov>
Cc: Matt Powell <Matt.Powell@bgky.org>; Brent Childers <Brent.Childers@bgky.org>
Subject: RE: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Ms. Allison,

Has your agency received all of the required information yet from the City of Bowling Green regarding the subject referenced project?

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

From: Nick Cook
Sent: Thursday, July 23, 2020 8:16 AM
To: 'Allison, Carrie' <Carrie_Allison@fws.gov>

Cc: Matt Powell <Matt.Powell@bgky.org>; Brent Childers <Brent.Childers@bgky.org>
Subject: RE: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Hey Carrie,

My colleague, Matt Powell, plans to reach out to you on this. I've copied Matt on this email.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

From: Allison, Carrie [mailto:Carrie_Allison@fws.gov]
Sent: Tuesday, July 21, 2020 10:09 AM
To: Nick Cook <Nick.Cook@bgky.org>
Subject: Re: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Hi, Nick-

I'm trying to figure out if I'm missing something from the email attachment...the cover letter is there, the original letter from April, and some maps. Should there have been species information included? Our new email system is being a little weird so I wanted to make sure all of the attachments came through. Thanks!

Carrie L. Allison
U.S. Fish and Wildlife Service
330 W. Broadway, Rm. 265
Frankfort, KY 40601
502-382-5965 (cell)
502-695-0468 ext. 46103 (office)
502.695.1024 (fax)

"You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make." ~Jane Goodall

---

From: Nick Cook <Nick.Cook@bgky.org>
Sent: Friday, July 17, 2020 3:11 PM
To: Allison, Carrie <Carrie_Allison@fws.gov>
Subject: [EXTERNAL] RE: 20-0343_Riverfront Park Development Project, Bowling Green

Ms. Allison,

In response to the below request from your office, the City of Bowling Green submitted a packet of information with the attached cover letter. Could you please respond with the status of your agency's review of the project?

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

From: Allison, Carrie [mailto:Carrie_Allison@fws.gov]
Sent: Thursday, May 07, 2020 7:24 AM
To: Nick Cook <Nick.Cook@bgky.org>
Subject: 20-0343_Riverfront Park Development Project, Bowling Green

Hi, Nick-

Thank you for requesting coordination for the above-referenced project. The Kentucky Field Office recommends using the Information Planning and Consultation website (https://ecos.fws.gov/ipac/) to obtain a list of federally listed species that are known or have the potential to occur in the area (instructions attached). Upon receiving that list, please let our office know if any individuals or habitats used by those species are reasonably certain to occur within your project area and whether or not impacts are anticipated. Follow-up coordination can be sent to kentuckyES@fws.gov and please cc me on it, as well. If you have any questions, please don't hesitate to call or email.

Sincerely,

Carrie L. Allison
U.S. Fish and Wildlife Service
330 W. Broadway, Rm. 265
Frankfort, KY 40601
502-695-0468 ext. 46103 (office)
502.695.1024 (fax)

"You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make." ~Jane Goodall

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024
http://www.fws.gov/frankfort/

In Reply Refer To:
Consultation Code: 04EK1000-2020-SLI-1287
Event Code: 04EK1000-2020-E-05077
Project Name: City of Bowling Green Park Improvements

September 14, 2020

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Your concern for the protection of endangered and threatened species is greatly appreciated. The purpose of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA) is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. The species list attached to this letter fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the ESA to provide information as to whether any proposed or listed species may be present in the area of a proposed action. This is not a concurrence letter; additional consultation with the Service may be required.

The Information in Your Species List:

The enclosed species list identifies federal trust species and critical habitat that may occur within the boundary that you entered into IPaC. For your species list to most accurately represent the species that may potentially be affected by the proposed project, the boundary that you input into IPaC should represent the entire "action area" of the proposed project by considering all the potential "effects of the action," including potential direct, indirect, and cumulative effects, to federally-listed species or their critical habitat as defined in 50 CFR 402.02. This includes effects of any "interrelated actions" that are part of a larger action and depend on the larger action for their justification and "interdependent actions" that have no independent utility apart from the action under consideration (e.g.; utilities, access roads, etc.) and future actions that are reasonably certain to occur as a result of the proposed project (e.g.; development in response to a new road). If your project is likely to have significant indirect effects that extend well beyond the project footprint (e.g., long-term impacts to water quality), we highly recommend that you

coordinate with the Service early to appropriately define your action area and ensure that you are evaluating all the species that could potentially be affected.

We must advise you that our database is a compilation of collection records made available by various individuals and resource agencies available to the Service and may not be all-inclusive. This information is seldom based on comprehensive surveys of all potential habitats and, thus, does not necessarily provide conclusive evidence that species are present or absent at a specific locality. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please note that "critical habitat" refers to specific areas identified as essential for the conservation of a species that have been designated by regulation. Critical habitat usually does not include all the habitat that the species is known to occupy or all the habitat that may be important to the species. Thus, even if your project area does not include critical habitat, the species on the list may still be present.

Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and associated information. To re-access your project in IPaC, go to the IPaC web site (https://ecos.fws.gov/ipac/), select "Need an updated species list?", and enter the consultation code on this letter.

ESA Obligations for Federal Projects:

Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

If a Federal project (a project authorized, funded, or carried out by a federal agency) may affect federally-listed species or critical habitat, the Federal agency is required to consult with the Service under section 7 of the ESA, pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). Recommended contents of a Biological Assessment are described at 50 CFR 402.12. For projects other than major construction activities, the Service suggests that a biological evaluation

similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat.

ESA Obligations for Non-federal Projects:

Proposed projects that do not have a federal nexus (non-federal projects) are not subject to the obligation to consult under section 7 of the ESA. However, section 9 of the ESA prohibits certain activities that directly or indirectly affect federally-listed species. These prohibitions apply to all individuals subject to the jurisdiction of the United States. Non-federal project proponents can request technical assistance from the Service regarding recommendations on how to avoid and/or minimize impacts to listed species. The project proponent can choose to implement avoidance, minimization, and mitigation measures in a proposed project design to avoid ESA violations.

Additional Species-specific Information:

In addition to the species list, IPaC also provides general species-specific technical assistance that may be helpful when designing a project and evaluating potential impacts to species. To access this information from the IPaC site (https://ecos.fws.gov/ipac/), click on the text "My Projects" on the left of the black bar at the top of the screen (you will need to be logged into your account to do this). Click on the project name in the list of projects; then, click on the "Project Home" button that appears. Next, click on the "See Resources" button under the "Resources" heading. A list of species will appear on the screen. Directly above this list, on the right side, is a link that will take you to pdfs of the "Species Guidelines" available for species in your list. Alternatively, these documents and a link to the "ECOS species profile" can be accessed by clicking on an individual species in the online resource list.

Next Steps:

Requests for additional technical assistance or consultation from the Kentucky Field Office should be submitted following guidance on the following page http://www.fws.gov/frankfort/PreDevelopment.html and the document retrieved by clicking the "outline" link at that page. When submitting correspondence about your project to our office, please include the Consultation Tracking Number in the header of this letter. (There is no need to provide us with a copy of the IPaC-generated letter and species list.)

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
(502) 695-0468

Project Summary

Consultation Code: 04EK1000-2020-SLI-1287

Event Code: 04EK1000-2020-E-05077

Project Name: City of Bowling Green Park Improvements

Project Type: RECREATION CONSTRUCTION / MAINTENANCE

Project Description: Various improvements to park facilities. Potential items for construction between 2020 & 2024 are fishing access piers, boat ramps, restroom facilities, lighting improvements, bike trails.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.00153631444371N86.42483842551883W

Counties: Warren, KY

Endangered Species Act Species

There is a total of 15 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 3 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens*	Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The project area includes potential gray bat habitat.

Species profile: https://ecos.fws.gov/ecp/species/6329
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/21/office/42431.pdf

Indiana Bat *Myotis sodalis*	Endangered

There is **final** critical habitat for this species. Your location overlaps the critical habitat.
This species only needs to be considered under the following conditions:

- The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species.

Species profile: https://ecos.fws.gov/ecp/species/5949
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/1/office/42431.pdf

Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species.

Species profile: https://ecos.fws.gov/ecp/species/9045
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/10043/office/42431.pdf

Clams

NAME	STATUS
Clubshell *Pleurobema clava*	Endangered
Population: Wherever found; Except where listed as Experimental Populations No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3789 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/352/office/42431.pdf	
Fanshell *Cyprogenia stegaria*	Endangered
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4822 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/368/office/42431.pdf	
Pink Mucket (pearlymussel) *Lampsilis abrupta*	Endangered
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7829 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/331/office/42431.pdf	
Purple Cat's Paw (=purple Cat's Paw Pearlymussel) *Epioblasma obliquata obliquata*	Endangered
Population: Wherever found; Except where listed as Experimental Populations No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5602 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/323/office/42431.pdf	
Rabbitsfoot *Quadrula cylindrica cylindrica*	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5165 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/3645/office/42431.pdf	
Ring Pink (mussel) *Obovaria retusa*	Endangered
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4128 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/341/office/42431.pdf	
Rough Pigtoe *Pleurobema plenum*	Endangered
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6894 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/338/office/42431.pdf	
Sheepnose Mussel *Plethobasus cyphyus*	Endangered
No critical habitat has been designated for this species.	

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/6903 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/7816/office/42431.pdf	
Snuffbox Mussel *Epioblasma triquetra* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4135	Endangered
Spectaclecase (mussel) *Cumberlandia monodonta* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7867 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/4490/office/42431.pdf	Endangered

Crustaceans

NAME	STATUS
Kentucky Cave Shrimp *Palaemonias ganteri* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5008	Endangered

Flowering Plants

NAME	STATUS
Prices Potato-bean *Apios priceana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7422	Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Indiana Bat *Myotis sodalis* https://ecos.fws.gov/ecp/species/5949#crithab	Final

City of Bowling Green

Department of Public Works

1011 College Street ■ P.O Box 430 ■ Bowling Green, KY 42102-0430

Phone: 270-393-3628 ■ Fax: 270-393-3050 ■ TDD: 1-800-618-6056 ■ Web Address: www.bgky.org

JUN 2020

Mr. Lee Andrews
Field Supervisor U.S. Fish & Wildlife Service
Kentucky Ecological Services
330 West Broadway, Rm 265
Frankfort, Kentucky 40601

RE: City of Bowling Green Riverfront Development Project
IPaC Consultation Number: 04EK1000-2020-SLI-1287

Mr. Andrews,

This cover letter is an addendum to the enclosed request for Pre-Development Consultation and is included so that the above Consultation Tracking Number is available for your use. The remaining required information follows with the information prepared by Mr. Nick Cook.

Regards,

Matt Powell
Environmental Manager
City of Bowling Green

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024
http://www.fws.gov/frankfort/

In Reply Refer To:
Consultation Code: 04EK1000-2020-TA-1287
Event Code: 04EK1000-2020-E-03348
Project Name: City of Bowling Green Park Improvements

June 08, 2020

Subject: Verification letter for the 'City of Bowling Green Park Improvements' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Matt Powell:

The U.S. Fish and Wildlife Service (Service) received on June 08, 2020 your effects determination for the 'City of Bowling Green Park Improvements' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Clubshell, *Pleurobema clava* (Endangered)
- Fanshell, *Cyprogenia stegaria* (Endangered)
- Gray Bat, *Myotis grisescens* (Endangered)
- Indiana Bat, *Myotis sodalis* (Endangered)
- Kentucky Cave Shrimp, *Palaemonias ganteri* (Endangered)
- Pink Mucket (pearlymussel), *Lampsilis abrupta* (Endangered)
- Price"s Potato-bean, *Apios priceana* (Threatened)
- Rabbitsfoot, *Quadrula cylindrica cylindrica* (Threatened)
- Ring Pink (mussel), *Obovaria retusa* (Endangered)
- Rough Pigtoe, *Pleurobema plenum* (Endangered)
- Sheepnose Mussel, *Plethobasus cyphyus* (Endangered)
- Snuffbox Mussel, *Epioblasma triquetra* (Endangered)
- Spectaclecase (mussel), *Cumberlandia monodonta* (Endangered)

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

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[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

City of Bowling Green Park Improvements

2. Description

The following description was provided for the project 'City of Bowling Green Park Improvements':

> Various improvements to park facilities. Potential items for construction between 2020 & 2024 are fishing access piers, boat ramps, restroom facilities, lighting improvements, bike trails.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.00153631444371N86.42483842551883W

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered

   No

5. [Semantic] Is the project action area located within 0.25 miles of a known northern long-eared bat hibernaculum?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency

   Automatically answered

   No

6. [Semantic] Is the project action area located within 150 feet of a known occupied northern long-eared bat maternity roost tree?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency

   Automatically answered

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

Exhibit 3

USDA NRCS Consultation

United States Department of Agriculture

Natural Resources Conservation Service
Owensboro USDA Service Center
3100 Alvey Park Drive W
Owensboro, KY 42303

May 18, 2020

Nick Cook
Grants Coordinator
City of Bowling Green
707 E. Main Ave
PO Box 430
Bowling Green, KY 42102

RE: CITY OF BOWLING GREEN RIVERFRONT DEVELOPMENT PROJECT

Dear Mr. Cook:

In response to your request from 4/29/2020 regarding the Riverfront Development Project in Bowling Green, Kentucky, the Natural Resources Conservation Service (NRCS) is mandated to provide information on the soils and/or impact to farmland according to the Farmland Protection Policy Act (P.L. 97-98) for projects that will be utilizing federal funding.

Based on the information contained in your request and accompanying maps, no conversion of agricultural lands (*Prime or Statewide Important Farmland*) will occur or be negatively impacted by the proposed undertaking. Although you will find in the attached soils report, created with Web Soil Survey, that there are *Prime Farmland* soils (Nolin, Newark, and Lindside) present within your project area, these areas are now considered *previously developed urban areas* that appear to already be 'converted'. With the areas having previously been manipulated with sidewalk infrastructure and thus removed from potential agricultural production, conversion has already taken place. In addition to this, the proposed projects within these areas will be impacting such minimal acreage that there will be no negative impact on agricultural lands. An AD-1006 form will not be required, and this office has no additional concerns at this time.

If I may be of additional assistance, please do not hesitate to contact me.

Sincerely,

Perri Pedley
Soil Scientist
Perri. Pedley@usda.gov

Enclosures

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Warren County, Kentucky

Riverfront Park-Bowling Green, KY

May 18, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

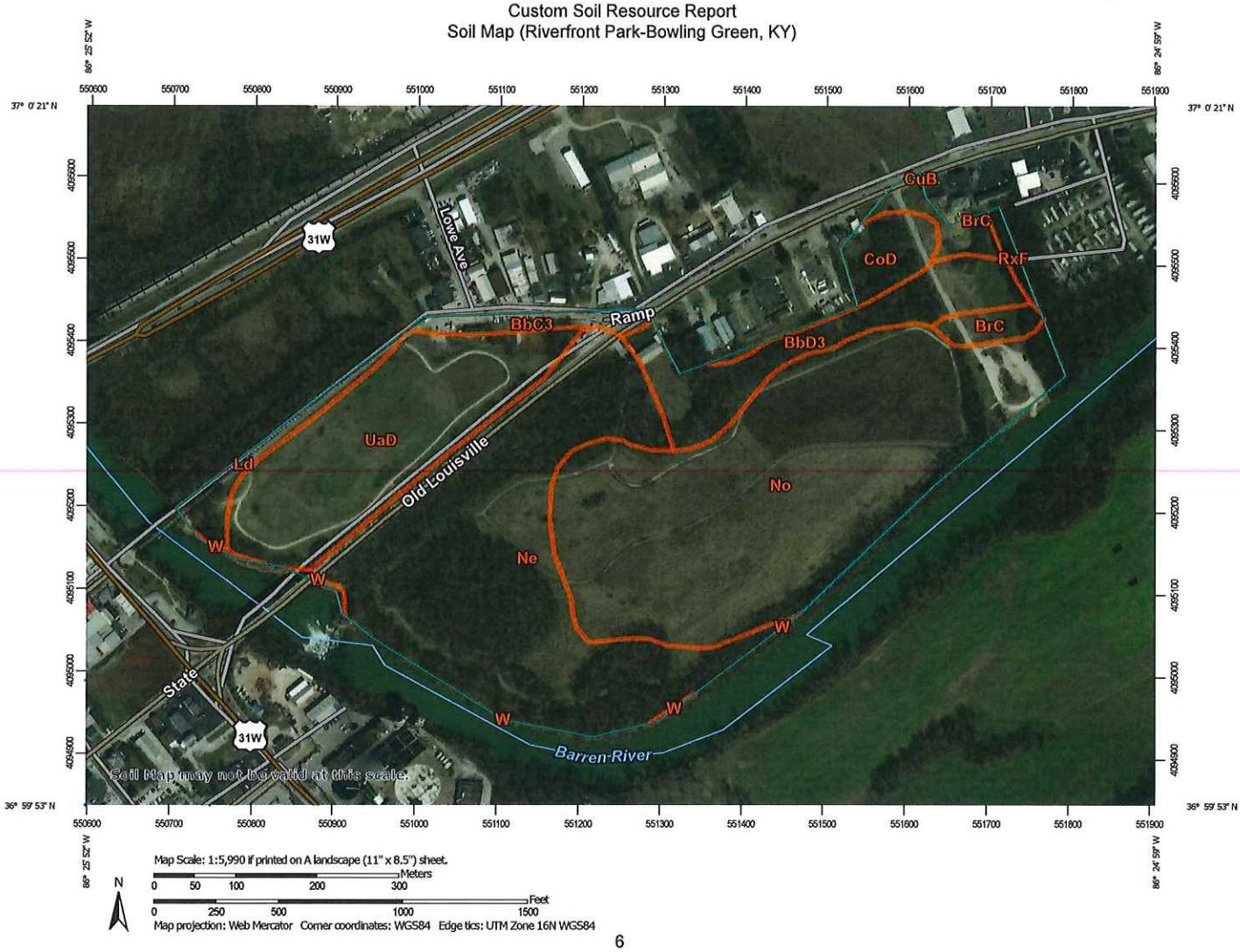
alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Riverfront Park-Bowling Green, KY)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Warren County, Kentucky
Survey Area Data: Version 19, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 27, 2015—Mar 1, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Riverfront Park-Bowling Green, KY)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BbC3	Baxter gravelly silty clay loam, 6 to 12 percent slopes, severely eroded	1.6	1.7%
BbD3	Baxter gravelly silty clay loam, 12 to 20 percent slopes, severely eroded	7.0	7.7%
BrC	Baxter-Urban land complex, 6 to 12 percent slopes	2.6	2.8%
CoD	Caneyville-Urban land-Rock outcrop complex, 6 to 20 percent slopes	2.4	2.6%
CuB	Crider-Urban land complex, 2 to 6 percent slopes	0.0	0.0%
Ld	Lindside silt loam, frequently flooded	1.8	2.0%
Ne	Newark silt loam, frequently flooded	27.4	30.0%
No	Nolin silt loam, frequently flooded	33.5	36.8%
RxF	Rock outcrop-Caneyville complex, 20 to 60 percent slopes	0.5	0.5%
UaD	Udorthents, refuse substratum, 0 to 25 percent slopes	14.0	15.4%
W	Water	0.3	0.3%
Totals for Area of Interest		**91.2**	**100.0%**

Map Unit Descriptions (Riverfront Park-Bowling Green, KY)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without

including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Warren County, Kentucky

BbC3—Baxter gravelly silty clay loam, 6 to 12 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: IIb0
Elevation: 420 to 660 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition

Baxter, severely eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Baxter, Severely Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from cherty limestone

Typical profile

H1 - 0 to 3 inches: gravelly silty clay loam
H2 - 3 to 61 inches: gravelly silty clay
H3 - 61 to 81 inches: very gravelly clay

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Crider

Percent of map unit: 4 percent
Hydric soil rating: No

Fredonia
Percent of map unit: 4 percent
Hydric soil rating: No

Hammack
Percent of map unit: 4 percent
Hydric soil rating: No

Nicholson
Percent of map unit: 2 percent
Hydric soil rating: No

Caneyville
Percent of map unit: 1 percent
Hydric soil rating: No

BbD3—Baxter gravelly silty clay loam, 12 to 20 percent slopes, severely eroded

Map Unit Setting
National map unit symbol: IIb1
Elevation: 420 to 660 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition
Baxter, severely eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Baxter, Severely Eroded

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from cherty limestone

Typical profile
H1 - 0 to 3 inches: gravelly silty clay loam
H2 - 3 to 61 inches: gravelly silty clay
H3 - 61 to 81 inches: very gravelly clay

Properties and qualities
Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Fredonia

Percent of map unit: 11 percent
Hydric soil rating: No

Caneyville

Percent of map unit: 4 percent
Hydric soil rating: No

BrC—Baxter-Urban land complex, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: ll8z
Elevation: 440 to 660 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition

Baxter and similar soils: 55 percent
Urban land: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Baxter

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from cherty limestone

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 15 inches: gravelly silty clay loam
H3 - 15 to 61 inches: gravelly clay
H4 - 61 to 81 inches: very gravelly clay

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.8 inches)

Description of Urban Land

Setting

Landform: Ridges

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Fredonia

Percent of map unit: 3 percent
Hydric soil rating: No

Crider

Percent of map unit: 2 percent
Hydric soil rating: No

Nicholson

Percent of map unit: 2 percent
Hydric soil rating: No

Nolin

Percent of map unit: 1 percent
Landform: Closed depressions
Hydric soil rating: No

Newark

Percent of map unit: 1 percent
Landform: Closed depressions
Hydric soil rating: No

Caneyville

Percent of map unit: 1 percent
Hydric soil rating: No

CoD—Caneyville-Urban land-Rock outcrop complex, 6 to 20 percent slopes

Map Unit Setting

National map unit symbol: ll90
Elevation: 430 to 750 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition

Caneyville and similar soils: 40 percent
Urban land: 25 percent
Rock outcrop: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Caneyville

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from cherty limestone

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 11 inches: silty clay
H3 - 11 to 27 inches: clay
R - 27 to 37 inches: bedrock

Properties and qualities

Slope: 6 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Description of Urban Land

Setting
Landform: Hills

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Rock Outcrop

Setting
Landform: Hills
Landform position (three-dimensional): Free face
Parent material: Cherty limestone

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Baxter
Percent of map unit: 9 percent
Hydric soil rating: No

Vertrees
Percent of map unit: 6 percent
Hydric soil rating: No

CuB—Crider-Urban land complex, 2 to 6 percent slopes

Map Unit Setting
National map unit symbol: ll92
Elevation: 430 to 690 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition
Crider and similar soils: 55 percent
Urban land: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crider

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over clayey residuum weathered from cherty limestone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 28 inches: silty clay loam
H3 - 28 to 50 inches: silty clay loam
H4 - 50 to 80 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.7 inches)

Description of Urban Land

Setting

Landform: Ridges

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Newark

Percent of map unit: 2 percent
Landform: Closed depressions, flood plains
Hydric soil rating: No

Nicholson

Percent of map unit: 2 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 2 percent
Hydric soil rating: No

Nolin

Percent of map unit: 1 percent
Landform: Closed depressions, flood plains
Hydric soil rating: No

Caneyville
Percent of map unit: 1 percent
Hydric soil rating: No

Fredonia
Percent of map unit: 1 percent
Hydric soil rating: No

Vertrees
Percent of map unit: 1 percent
Hydric soil rating: No

Ld—Lindside silt loam, frequently flooded

Map Unit Setting
National map unit symbol: IIbl
Elevation: 400 to 700 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition
Lindside, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lindside, Frequently Flooded

Setting
Landform: Flood plains, closed depressions
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile
H1 - 0 to 10 inches: silt loam
H2 - 10 to 42 inches: silty clay loam
H3 - 42 to 65 inches: silt loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: Frequent

Frequency of ponding: None
Available water storage in profile: Very high (about 12.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Nolin

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: No

Newark

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: No

Ne—Newark silt loam, frequently flooded

Map Unit Setting

National map unit symbol: llbn
Elevation: 390 to 690 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Newark, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newark, Frequently Flooded

Setting

Landform: Closed depressions, flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Very high (about 12.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Nolin

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: No

Lindside

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: No

Melvin, frequently flooded

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Grigsby

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: No

Lawrence

Percent of map unit: 2 percent
Landform: Stream terraces
Hydric soil rating: No

No—Nolin silt loam, frequently flooded

Map Unit Setting

National map unit symbol: IIbr
Elevation: 390 to 660 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days

Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Nolin, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nolin, Frequently Flooded

Setting

Landform: Flood plains, closed depressions
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed fine-silty alluvium

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Lindside

Percent of map unit: 4 percent
Landform: Flood plains
Hydric soil rating: No

Newark

Percent of map unit: 4 percent
Landform: Flood plains
Hydric soil rating: No

Elk

Percent of map unit: 1 percent
Landform: Stream terraces
Hydric soil rating: No

Grigsby

Percent of map unit: 1 percent
Landform: Flood plains

Hydric soil rating: No

RxF—Rock outcrop-Caneyville complex, 20 to 60 percent slopes

Map Unit Setting

National map unit symbol: IIc2
Elevation: 390 to 960 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 55 percent
Caneyville and similar soils: 33 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (three-dimensional): Free face
Parent material: Limestone

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Caneyville

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 11 inches: silty clay
H3 - 11 to 27 inches: clay
R - 27 to 37 inches: bedrock

Properties and qualities

Slope: 20 to 60 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Fredonia

Percent of map unit: 9 percent
Landform: Hillsides
Hydric soil rating: No

Vertrees

Percent of map unit: 3 percent
Hydric soil rating: No

UaD—Udorthents, refuse substratum, 0 to 25 percent slopes

Map Unit Setting

National map unit symbol: ll9m
Elevation: 420 to 730 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, refuse substratuum, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Refuse Substratuum

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Minor Components

Crider

Percent of map unit: 3 percent
Hydric soil rating: No

Pembroke

Percent of map unit: 1 percent
Hydric soil rating: No

Vertrees

Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: IIc5
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 46 to 67 degrees F
Frost-free period: 177 to 211 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

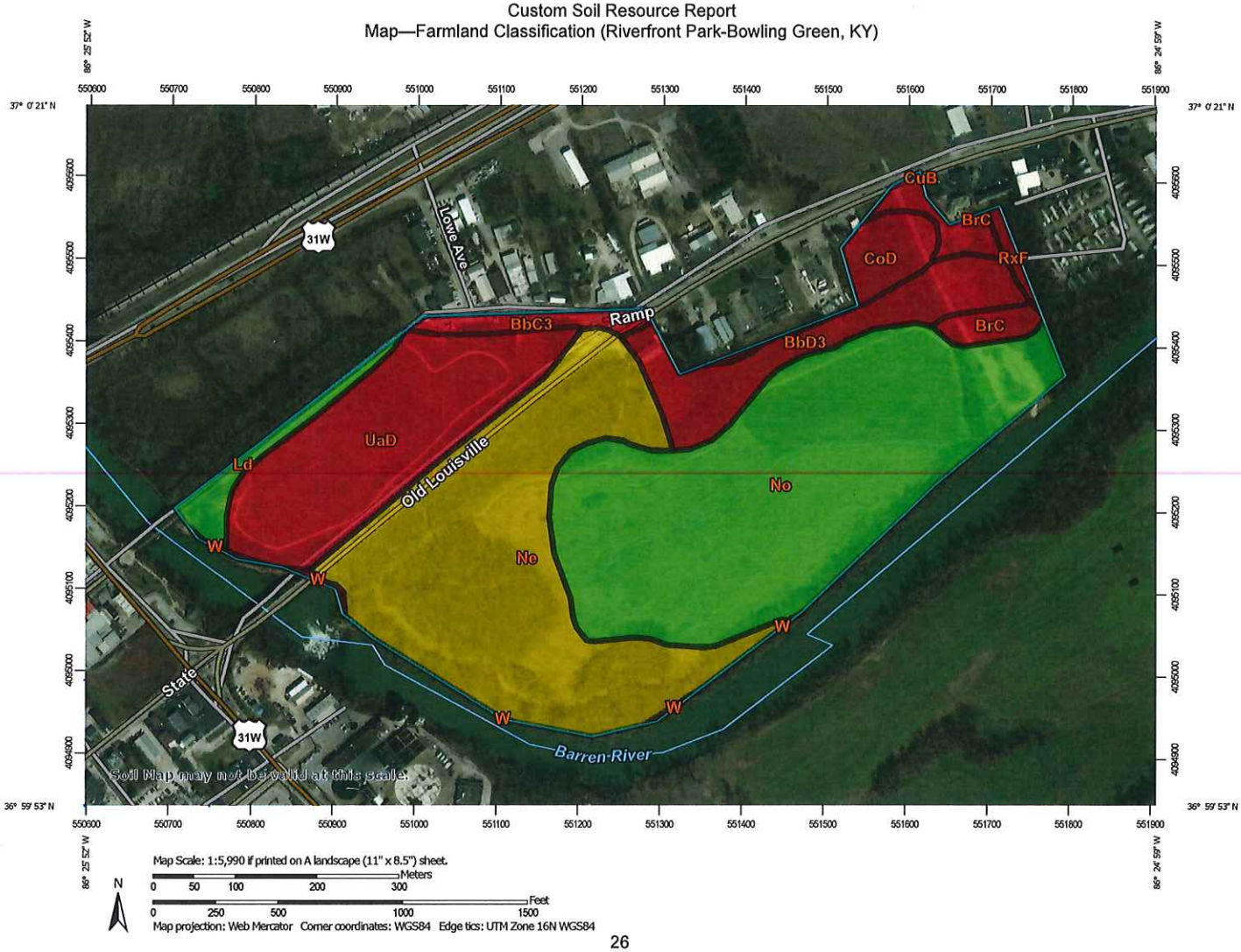
Land Classifications

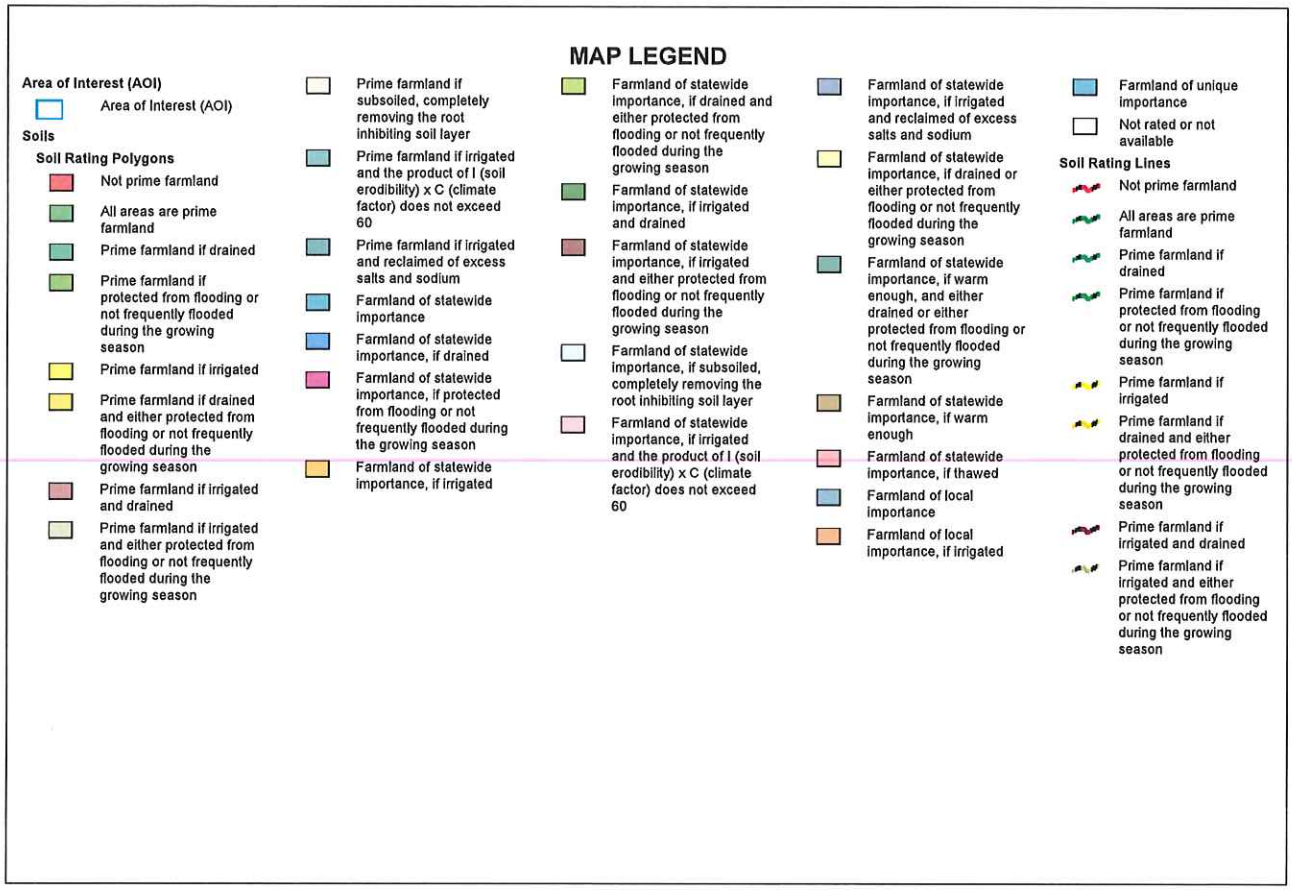
Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification (Riverfront Park-Bowling Green, KY)

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report
Map—Farmland Classification (Riverfront Park-Bowling Green, KY)




MAP LEGEND
Area of Interest (AOI)
Area of Interest (AOI)
Soils
Soil Rating Polygons
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Lines
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Warren County, Kentucky
Survey Area Data: Version 19, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 27, 2015—Mar 1, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification (Riverfront Park-Bowling Green, KY)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BbC3	Baxter gravelly silty clay loam, 6 to 12 percent slopes, severely eroded	Not prime farmland	1.6	1.7%
BbD3	Baxter gravelly silty clay loam, 12 to 20 percent slopes, severely eroded	Not prime farmland	7.0	7.7%
BrC	Baxter-Urban land complex, 6 to 12 percent slopes	Not prime farmland	2.6	2.8%
CoD	Caneyville-Urban land-Rock outcrop complex, 6 to 20 percent slopes	Not prime farmland	2.4	2.6%
CuB	Crider-Urban land complex, 2 to 6 percent slopes	Not prime farmland	0.0	0.0%
Ld	Lindside silt loam, frequently flooded	Prime farmland if protected from flooding or not frequently flooded during the growing season	1.8	2.0%
Ne	Newark silt loam, frequently flooded	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	27.4	30.0%
No	Nolin silt loam, frequently flooded	Prime farmland if protected from flooding or not frequently flooded during the growing season	33.5	36.8%
RxF	Rock outcrop-Caneyville complex, 20 to 60 percent slopes	Not prime farmland	0.5	0.5%
UaD	Udorthents, refuse substratum, 0 to 25 percent slopes	Not prime farmland	14.0	15.4%
W	Water	Not prime farmland	0.3	0.3%
Totals for Area of Interest			**91.2**	**100.0%**

Rating Options—Farmland Classification (Riverfront Park-Bowling Green, KY)

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

References

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Nick Cook

From: Nick Cook
Sent: Wednesday, April 29, 2020 1:46 PM
To: 'justin.t.smith@usda.gov'
Subject: City of Bowling Green
Attachments: USDA N.R.C.S. Letter 4-29-20.pdf

Please find attached letter and let me know if an original should be mailed.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

Nick Cook
Grants Coordinator
Telephone: 270.393.3659
Fax: 270.393.3168
Nick Cook@bgky.org

707 E. Main Ave
PO Box 430
Bowling Green, Kentucky 42102
www.bgky.org

Neighborhood & Community Services Department

April 29, 2020

Justin Smith
USDA National Resources Conservation Services
Bowling Green Service Center
925 Lovers Lane
Bowling Green, KY 42103

RE: City of Bowling Green Riverfront Development Project

Dear Mr. Smith,

The National Park Service selected a preliminary application for the above referenced project under the 2017-2018 Land and Water Conservation Fund, Outdoor Recreation Legacy Partnership Program. The City must now submit a final application which includes consultation with the USDA National Resource Conservation Services.

The project will revitalize park areas along Bowling Green's downtown riverfront. Improvements include a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities (i.e. trash receptacles, signage, benches, etc.). The improvements will provide access to new recreational opportunities while addressing recreational deficiencies in the community.

The Riverfront Development Project will breathe life into distressed park areas significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. The project's boat ramp will improve search and rescue efforts within the Barren River while increasing safety of first responders. Furthermore, the project compliments the revitalization of the River Street corridor led by a grass roots effort poised to remove blight, attract new private investment, and increase jobs in a distressed area.

I would welcome any comments you may have relative to the following Federal regulations or Executive Order and applicable State legislation or regulations.

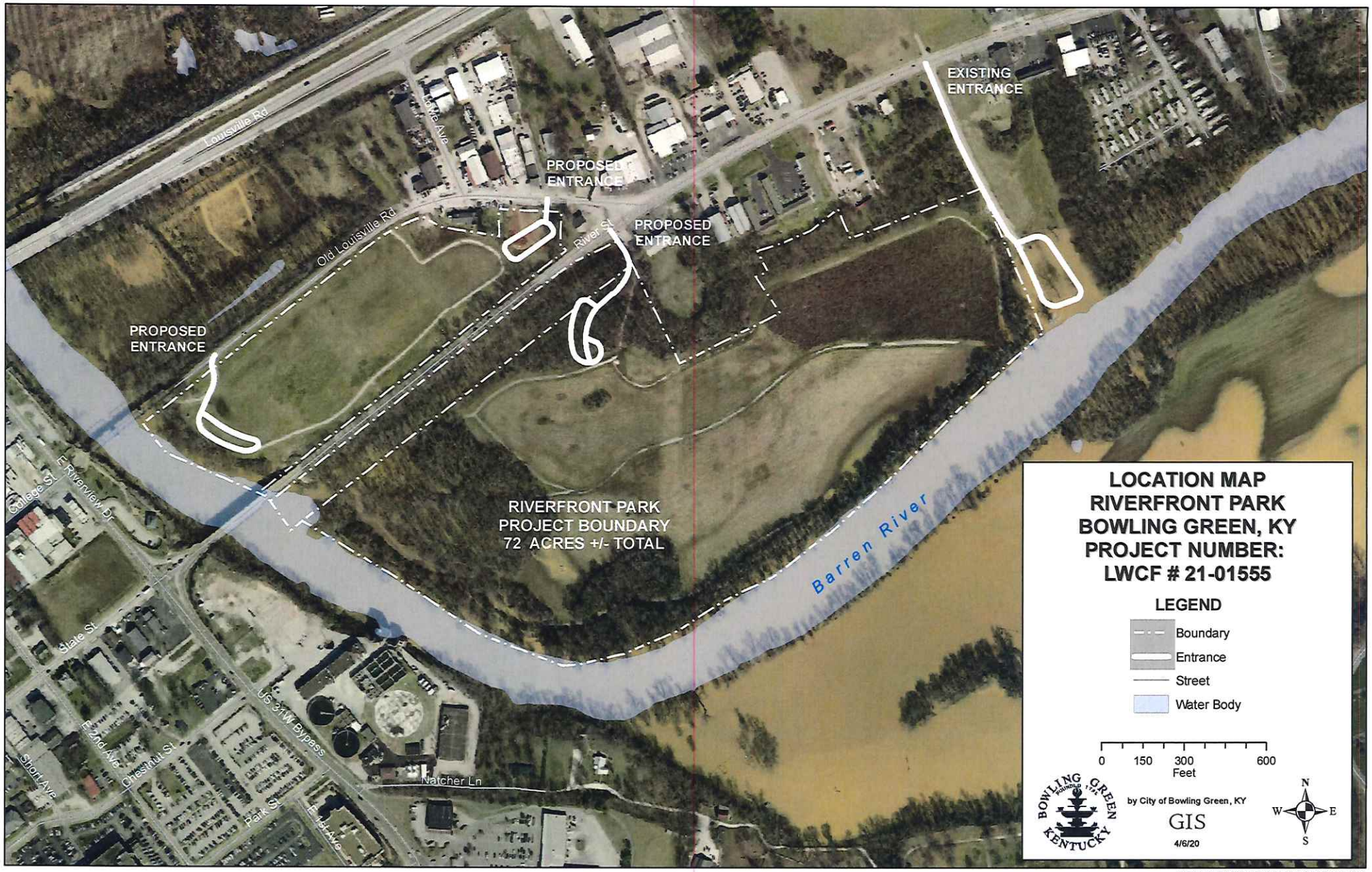
1. Farmland Protection Policy Act of 1981
2. Soil Stability and Slope Erosion

Please find enclosed maps and drawing of the project. Any comments from your agency would be greatly appreciated in the next thirty (30) days. Thank you for your assistance on this matter. If you have any questions, please contact me at 270-393-3659 or nick.cook@bgky.org.

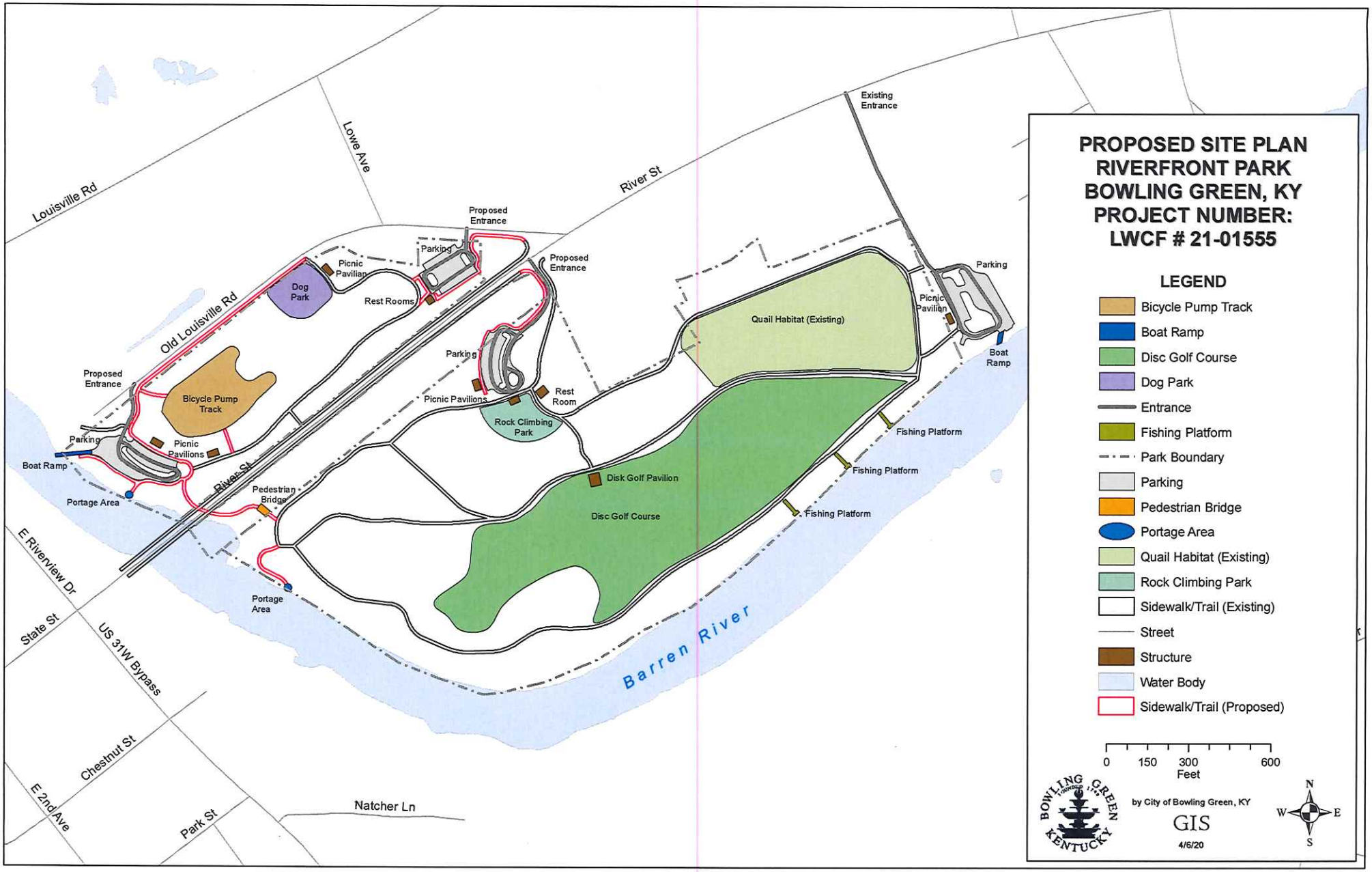
Sincerely,

Nick Cook

Enclosure



Bearden - L:/2020 Maps/NCS/Riverfront Grant/BoundaryMap



PROPOSED SITE PLAN
RIVERFRONT PARK
BOWLING GREEN, KY
PROJECT NUMBER:
LWCF # 21-01555

LEGEND

- Bicycle Pump Track
- Boat Ramp
- Disc Golf Course
- Dog Park
- Entrance
- Fishing Platform
- Park Boundary
- Parking
- Pedestrian Bridge
- Portage Area
- Quail Habitat (Existing)
- Rock Climbing Park
- Sidewalk/Trail (Existing)
- Street
- Structure
- Water Body
- Sidewalk/Trail (Proposed)

0 150 300 600
Feet

by City of Bowling Green, KY
GIS
4/6/20

N
W E
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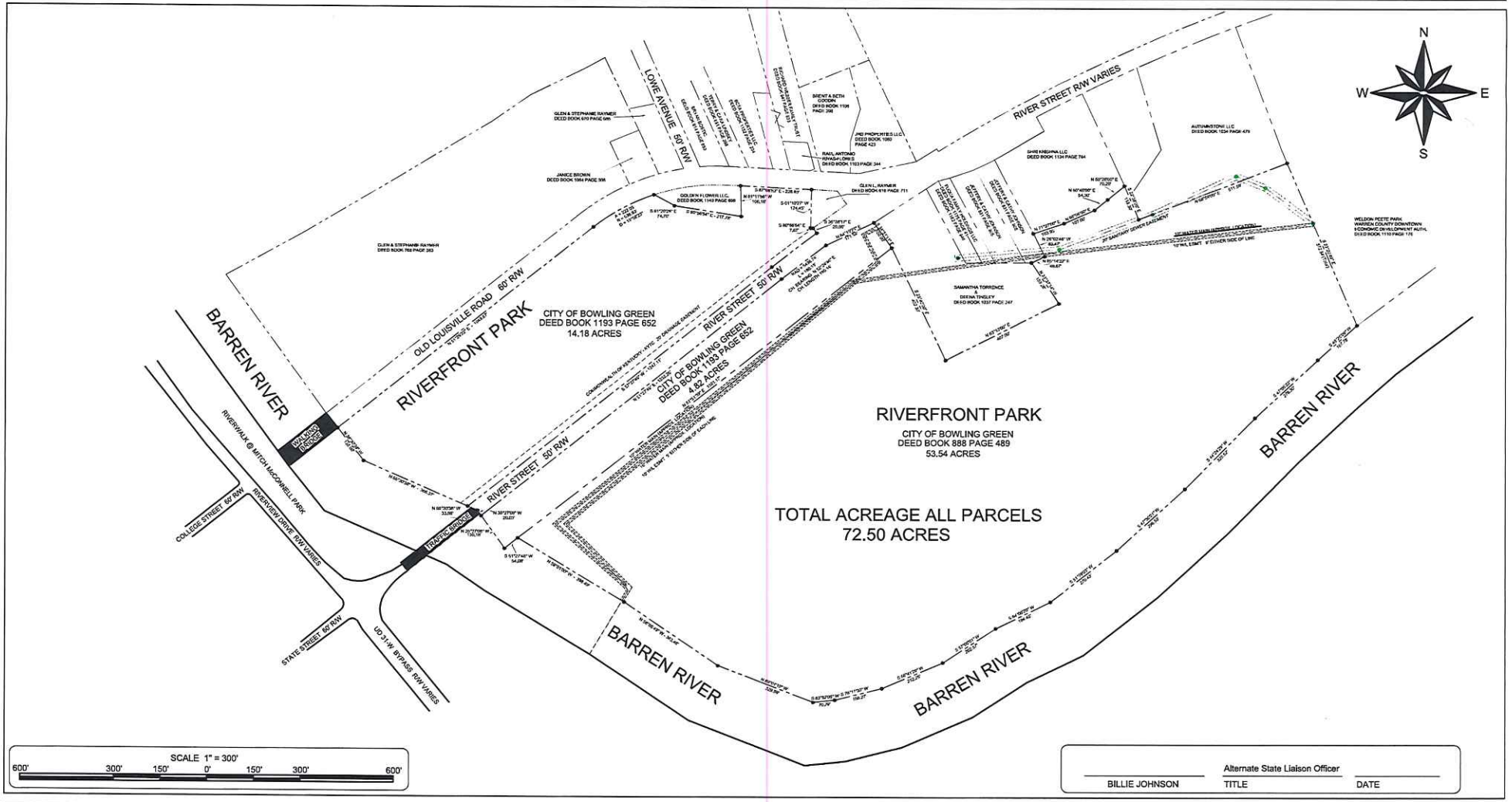
Bearden - L:/2020 Maps/NCS/Riverfront Grant/SitePlan



Alternate State Liaison Officer

BILLIE JOHNSON	TITLE	DATE

CITY OF BOWLING GREEN	LWCF-ORLP 6 (f) MAP	RIVERFRONT PARK BOWLING GREEN, KENTUCKY PROJECT # 21-01555	SHEET OF JOB NO. 20024 SCALE 1" = 300' DATE 04/09/2020

Exhibit 4

SHPO Consultation/ KHC Preliminary Site Check

ANDY BESHEAR
GOVERNOR

JACQUELINE COLEMAN
LT. GOVERNOR

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL
THE STATE HISTORIC PRESERVATION OFFICE
410 HIGH STREET
FRANKFORT, KENTUCKY 40601
(502) 564-7005
www.heritage.ky.gov

MICHAEL E. BERRY
SECRETARY

CRAIG A. POTTS
EXECUTIVE DIRECTOR &
STATE HISTORIC
PRESERVATION OFFICER

November 6, 2020

Mr. Nick Cook
City of Bowling Green
PO Box 430
Bowling Green, KY 42102

Re: **Archaeological Investigation of Riverwalk Park, Bowling Green, Warren County, Kentucky** prepared by Justin Carlson et al. of Kentucky Archaeological Survey. Report dated October 2020.

Dear Mr. Cook:

We received a copy of the above-mentioned report directly from your archaeological consultant on October 7, 2020. We understand that the City of Bowling Green proposes to use National Park Service Land and Water Conservation Funds to make improvements to the Riverwalk Park in Bowling Green, Warren County, Kentucky.

The archaeological report describes the intensive pedestrian reconnaissance, supplemented by screened shovel tests, of the proposed project area. During the survey, the investigators revisited one previously reported site – 15Wa166. Previous work at the site reported an intact buried A horizon at the site containing pre-Contact Native American artifacts. During the current investigation at the site, the investigators confirmed the presence of this intact deposit at the site and collected a moderate assemblage of artifacts. No other archaeological sites were identified during the survey. Based on these result, the investigators recommended that the site is potentially eligible for the National Register of Historic Places.

After review of the report, we agree with its findings and recommendations. We accept this report as final. ***We reviewed a digital draft of the revised report. Please ensure that we receive three printed and bound archival copies of the archaeological report.***

We understand that the City of Bowling Green proposes to construct a disc-golf course on this site. Based on our discussions, we understand that the City has committed to relocating a proposed pavilion to avoid the site, and that gravel or bark mulch tee pads will be used instead of concrete. Limited disturbance would result from the excavation of post-holes to install signposts at the 18 tee locations and to install the 18-19 disc golf baskets to complete the course. Based on the limited amount to disturbance, we do not feel that the proposed activities would significantly diminish the integrity of the site. We would therefore recommend that the proposed project would result in No Adverse Effect to Historic Properties.

In the event of the unanticipated discovery of an archaeological site or object of antiquity, the discovery should be reported to the Kentucky Heritage Council and to the Kentucky Office of State Archaeology in the Anthropology Department at the University of Kentucky in accordance with KRS 164.730. In the event that human remains are encountered during project activities, all work should be immediately stopped in the area and the area cordoned off, and in accordance with KRS 72.020 the county coroner and local law enforcement must be contacted immediately. Upon confirmation that the human remains are not of forensic interest, the unanticipated discovery must be reported to the Kentucky Heritage Council.

(Continued on next page.)

Should you have any questions concerning archaeological resources, feel free to contact Chris Gunn of my staff at (502) 892-3615 or chris.gunn@ky.gov. Questions concerning above-ground resources can be directed to Jennifer Ryall at (502) 892-3619 or jennifer.ryall@ky.gov.

Sincerely,

Craig A. Potts,
Executive Director and
State Historic Preservation Officer

CP:cmg, jr KHC # 58181, 59874
cc: George Crothers (OSA), Charles Niquette (CRAI)

ANDY BESHEAR
GOVERNOR

MIKE BERRY
SECRETARY

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL
THE STATE HISTORIC PRESERVATION OFFICE
410 HIGH STREET
FRANKFORT, KENTUCKY 40601
PHONE (502) 564-7005
FAX (502) 564-5820
www.heritage.ky.gov

CRAIG A. POTTS
EXECUTIVE DIRECTOR
& STATE HISTORIC
PRESERVATION OFFICER

July 14, 2020

Nick Cook, Grants Coordinator
City of Bowling Green
707 E. Main Ave.
P.O. Box 430
Bowling Green, KY 42102

RE: Additional Info: Bowling Green Riverfront Development Project – 1360 Old Louisville Road Bowling Green, KY

Dear Nick:

Thank you for your original submission as well as the additional information you provided (Nick Cook to Jennifer Ryall via e-mail, 6-24-2020). We understood from your original submission that your project involves the revitalization of park areas along Bowling Green's downtown riverfront. We understand that improvements would include a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities (trash receptacles, signage, benches, etc). We understand that a portion of the project will be located at the site of a closed C&D landfill. Based on your response from June 24, we understand that construction plans are not yet available and that only a conceptual design is available at this point since the project has not yet been designed. We also understand from your description and attached labeled location map that the C&D landfill is located in the vicinity of the bicycle pump track and dog park. We understand that there are no buildings/structures greater than 50 years of age in the project area although there are buildings along River Street and around US-31 W Bypass (but the latter should be screened by trees from visibility of the project area). We understand that there are no planned activities for the US-68 pedestrian bridge over the Barren River. We understand that KYTC is currently designing an erosion mitigation project for River Street Bridge and that the multi-use path beneath that bridge is dependent upon the mitigation project as the project location requires the multi-use path to be completed simultaneously with the mitigation project. We understand that the City anticipates a Corps permit will be needed and has initiated consultation with the Louisville Corps. We understand that the need for tree removal is not currently known.

One archaeological site – 15Wa166 – has been previously identified in the park. The Office of State Archaeology does not have a record of the survey that resulted in its identification. We contacted the archaeological firm that identified the site, but unfortunately they do not recall performing a survey in this park. The site form lists the site as potentially eligible for the National Register of Historic Places. Even though plans for the proposed project are only at the conceptual stage and we cannot discuss effects to 15Wa166 definitively at this point, we would recommend that the City consider conducting an archaeological survey of the park now. The survey would provide additional information about 15Wa166 which may be affected by the proposed project. During the review of the current project we would need to take into consideration effects to this site. The survey would also help the City manage any other sites at the park in the future. Any sites that are in the park would need to be taken into consideration in any future federally-sponsored projects. Additionally, sites in the Park are protected by Kentucky's Antiquity Act. So, non-federally funded projects, or even maintenance practices in the park, would still need to be conducted to ensure that sites are protected. We would also advise that if the proposed Riverfront Development project needs a permit from the Corps of Engineers, then site 15Wa166 will likely fall within their jurisdictional boundary as it is adjacent to the river. The site would therefore need to be considered in their Section 106 compliance process as well. For these reasons, we believe that it would be a good idea for the City to have the park surveyed to gather additional information to establish the NRHP eligibility of 15Wa166 and to identify any other archaeological resources that may be present in the park. We are happy to answer any questions that the City may have about the scope of this survey.

(Continued on Next Page)

Section 106 Review
RE: Additional Information: Bowling Green Riverfront Development Project

July 14, 2020

Since plans are not yet available for review, and since the lead federal agency may be one of several (NPS via DLG, Corps, KYTC), we look forward to receiving the determination of the lead federal agency for this project once it is known and to receiving final plans once they are available. At that point, our office will be able to make its formal comment.

Should you have any questions concerning archaeological resources, feel free to contact Chris Gunn of my staff at (502) 892-3615 or chris.gunn@ky.gov. Questions concerning above-ground resources can be directed to Jennifer Ryall at (502) 892-3619 or jennifer.ryall@ky.gov.

Sincerely,

Craig A. Potts,
Executive Director and State Historic Preservation Officer

CP: cmg, jr KHC # 58442

Nick Cook

From: Nick Cook
Sent: Wednesday, June 24, 2020 8:14 AM
To: 'Ryall, Jennifer (Heritage Council)'; Gunn, Chris (Heritage Council)
Subject: RE: Request for Additional Info: Bowling Green Riverfront Development Project
Attachments: 20200624081404948.pdf

Hey Jenn,

Please see below answers.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

From: Ryall, Jennifer (Heritage Council) [mailto:Jennifer.Ryall@ky.gov]
Sent: Thursday, June 18, 2020 2:49 PM
To: Nick Cook <Nick.Cook@bgky.org>; Gunn, Chris (Heritage Council) <Chris.Gunn@ky.gov>
Subject: Request for Additional Info: Bowling Green Riverfront Development Project
Importance: High

Hi Nick,

Hope you're doing well during the pandemic and that everyone is safe on that end. Chris Gunn and I have reviewed your submission for the proposed Bowling Green Riverfront Development Project along Bowling Green's downtown riverfront and have some questions we hope you might be able to answer:

- Do you have construction plans for the project that you'd be able to provide at this point? The City does not have construction plans. The project hasn't been designed yet either, only a conceptual design utilized for the grant application.
- If not, could you better describe the location of the former C&D landfill and which portion of the project area it would cover? The former C&D landfill is located in the vicinity of the bicycle pump track and dog park. Please see attached map showing the landfill location.
- Chris is working on getting information for you on archaeology site 15Wa166 which has been previously identified within the APE. He'll follow up regarding what else he might need as it relates to that site once he's located that information from the Office of State Archaeology. Understood.
- For the aboveground part of the project, could you describe whether there are any buildings/structures/landscape elements 50 years of age or older either within the project area *or its viewshed*? Our GIS shows points for buildings within the project area, but they appear to be mis-mapped and I just want to confirm there are none. It looks like there may be a few buildings 50 years of age along River St. and across the river which are currently screened by trees from visibility of the project area. There are no buildings or structures greater than 50 years of age or older in the project area. While there are buildings along River St. and around US-31 W Bypass that are over 50 years of age, they are currently screened by trees from visibility of the project area.

- Could you provide more information on whether the project has any planned activities involving either the River Street Bridge over the Barren River or the US-68 pedestrian bridge over the Barren River? There are no planned activities for the pedestrian bridge. The project includes connecting existing trails from each side of the River St. Bridge to a future multi-use path beneath the River St. Bridge. KYTC is currently designing an erosion mitigation project for the River St. Bridge and the multi-use path beneath the bridge is dependent upon the mitigation project as the project location requires the multi-use path to be completed simultaneously with the mitigation project.
- Would a Corps permit be needed for either the boat ramp and/or portage areas? The City anticipates a Corps permit is needed and consultation has been initiated with the Louisville Corps field office. To date a response has not been received by the City.
- Would the project require tree removal and, if so, where and how much? The need for and degree of tree removal is not known at this time.

Thanks in advance for your help,
~Jenn

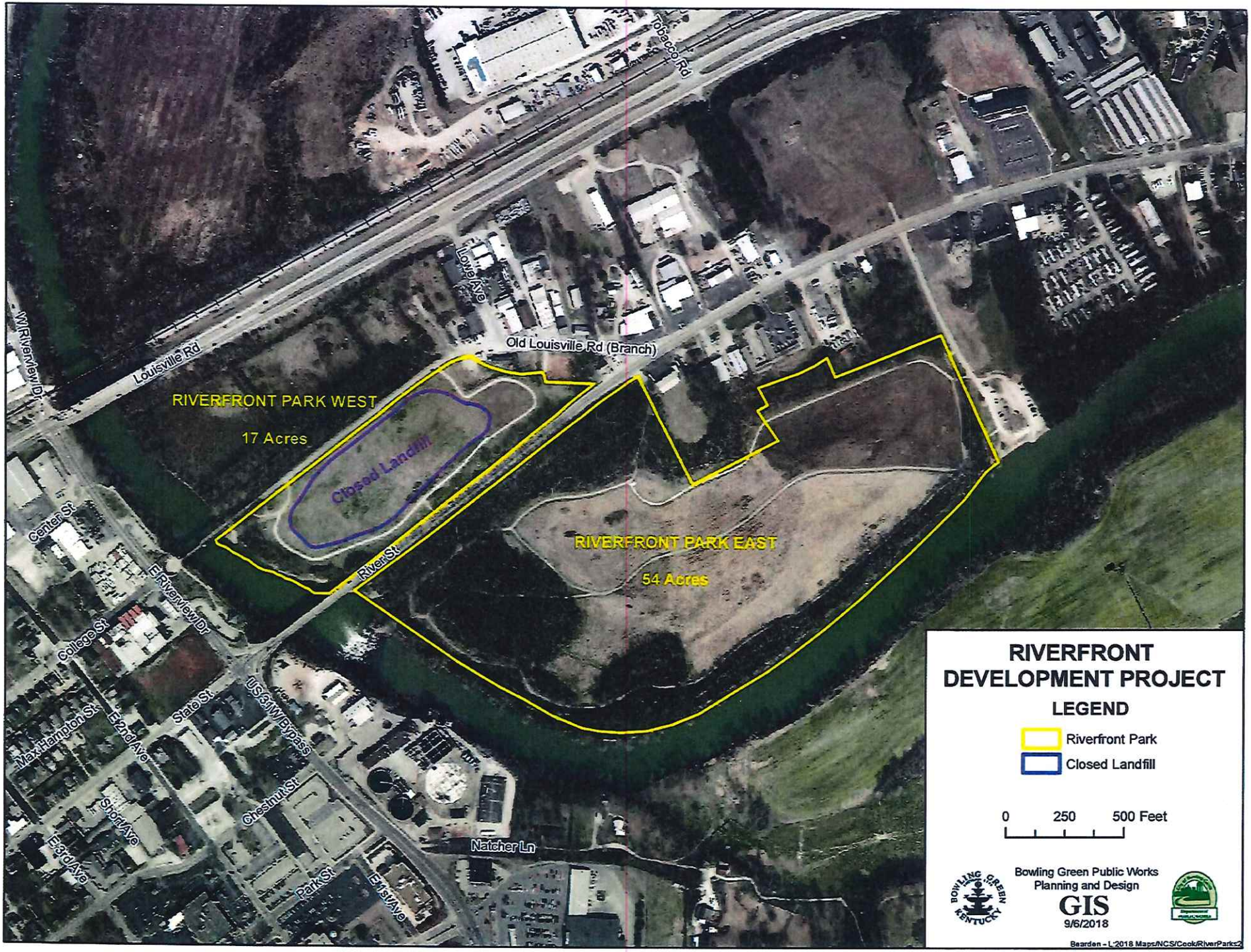
Jennifer Ryall
Environmental Review Coordinator
Kentucky Heritage Council
410 High Street
Frankfort, Kentucky 40601
Phone: (502) 892-3619

TEAM KENTUCKY

To our constituents, please be advised the KHC Historic Resource Library is now open for consultants wishing to conduct background research and site checks. Consultants can make appointments to visit our office in two time slots a day on Mondays, Wednesdays, and Fridays: 9 a.m. to 12 p.m. and 1 :30 p.m. to 4:30 p.m. We ask that you please refer to this memo for information and follow all protocols outlined there and posted at our facility. Consultants who require this service may also continue to utilize the electronic records review portal at https://secure.kentucky.gov/formservices/Heritage/SiteID. The rest of the office remains open on a limited basis. Staff continue to telecommute or alternate days in the office and are not available for face-to-face meetings or site visits. We continue to recommend that when possible, *environmental review reports, tax credit applications and supporting materials, National Register correspondence, or other documents that require hard-copy submissions* ***be mailed or sent by delivery service*** to the Kentucky Heritage Council, 410 High Street, Frankfort, KY 40601, so that staff may follow up with you by phone.

Note for Applicants Submitting Projects for Section 106 Review: Our office commits to flexibility for Applicants unable to submit in hard copy due to telework requirements and, per the ACHP's most recent guidance, we appreciate Applicants being flexible with our office's response time frames during a declared national emergency.

If you have an emergency action that requires Section 106 consultation, please include our Site Protection Manager Nick Laracuente nicolas.laracuente@ky.gov on your emails to the review staff.


Tobacco Rd
Lowe Ave
W Riverview Dr
Louisville Rd
Old Louisville Rd (Branch)
RIVERFRONT PARK WEST
17 Acres
Closed Landfill
Center St
River St
RIVERFRONT PARK EAST
54 Acres
E Riverview Dr
College St
State St
US 31W Bypass
Max Hampton St
E 2nd Ave
Short Ave
E 3rd Ave
Chestnut St
Natcher Ln
Park St
E 1st Ave
RIVERFRONT DEVELOPMENT PROJECT
LEGEND
Riverfront Park
Closed Landfill
0 250 500 Feet
Bowling Green Public Works
Planning and Design
GIS
9/6/2018
Bearden - L:\2018 Maps\NCS\Cook\RiverParks2

Nick Cook
Grants Coordinator
Telephone: 270.393.3659
Fax: 270.393.3168
Nick Cook@bgky.org

707 E. Main Ave
PO Box 430
Bowling Green, Kentucky 42102
www.bgky.org

Neighborhood & Community Services Department

May 12, 2020

Craig Potts
SHPO/Executive Director
Kentucky Heritage Council
410 High Street
Frankfort, KY 40601

RE: City of Bowling Green Riverfront Development Project

Dear Mr. Potts:

The National Park Service selected a preliminary application for the above referenced project under the 2017-2018 Land and Water Conservation Fund, Outdoor Recreation Legacy Partnership Program. The City must now submit a final application which includes consultation regarding the project's impacts to historic/cultural resources.

The project will revitalize park areas along Bowling Green's downtown riverfront. Improvements include a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities (i.e. trash receptacles, signage, benches, etc.). The improvements will provide access to new recreational opportunities while addressing recreational deficiencies in the community.

The Riverfront Development Project will breathe life into distressed park areas significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. The project's boat ramp will improve search and rescue efforts within the Barren River while increasing safety of first responders. Furthermore, the project compliments the revitalization of the River Street corridor led by a grass roots effort poised to remove blight, attract new private investment, and increase jobs in a distressed area. A portion of the project will be located at the site of a closed C & D landfill.

Please find enclosed aerial maps and photographs showing the locations of the proposed sidewalks and current conditions of the project sites. The pictures are labeled as 'Picture 1', 'Picture 2', etc. The pictures are represented on an aerial map with callouts showing where the picture was taken and direction arrows indicating the direction each picture was taken.

Please find additionally enclosed a Kentucky Heritage Council Cover Sheet for Section 106 Review and Compliance, and a preliminary site check payment receipt. Please note that this project was submitted through the Kentucky State Clearinghouse as **SAI# KY202005070634.**

Please provide comments related to Section 106 Review for this project within 30 days of receipt of this letter. Thank you for your assistance on this matter. If you have any questions, please contact me at 270-393-3659 or nick.cook@bgky.org.

Sincerely,

Nick Cook
Grants Coordinator

KENTUCKY HERITAGE COUNCIL COVER SHEET FOR SECTION 106 REVIEW AND COMPLIANCE

When federal (and some state) funds, permits or approvals are needed for a project, regulations such as 36 CFR Part 800 require these agencies or their delegates to consult with the Kentucky Heritage Council/State Historic Preservation Office regarding the project's potential effects on historic properties. To facilitate our review, please provide the following information and applicable attachments. Our office will generate a response within 30 days of receipt. Incomplete submissions may be returned for more information.

SECTION 1: APPLICANT INFORMATION

Project Sponsor or Applicant: City of Bowling Green

Contact Person (name & position): Nick Cook

Return Address: P.O. Box 430, Bowling Green, KY 42102-0430

Telephone: 270-393-3659 | **Fax:** 270-393-3168

Project Title: Riverfront Development Project

SECTION 2: AGENCY INFORMATION

Funding/Permitting Agency: National Park Service/Department for Local Government

Agency Contact Person (name & position): Billy Johnson, Acting Executive Director

Telephone: 1-502-892-3449 | **E-mail:** BillieR.Johnson@ky.gov

SECTION 3: PROJECT LOCATION

E911 Street Address (or other description): 1360 Old Louisville Road

City/Township: Bowling Green | **County:** Warren

Latitude: 37°00'12.0"N | **Longitude:** 86°25'31.1"W

SECTION 4: PROJECT TYPE (please check all that apply)

Proposed Activity: ☐ Demolition ☐ Rehabilitation ☐ Structural Relocation ☐ Trails

■ New Construction ☐ Land and/or Building Acquisition ☐ Sewer/Water Lines ☐ Roads/Bridges

☐ Non-Construction Planning/Refinancing ☐ Other (describe):

SECTION 5: IDENTIFICATION OF KNOWN HISTORIC PROPERTIES

KHC Preliminary Site Check #: P261840 | **OSA Preliminary Site Check #:**

If your project involves ground disturbance, has the site been previously disturbed?

■ Yes (describe in detail below) ☐ No

A portion of the project is located a closed C&D Landfill.

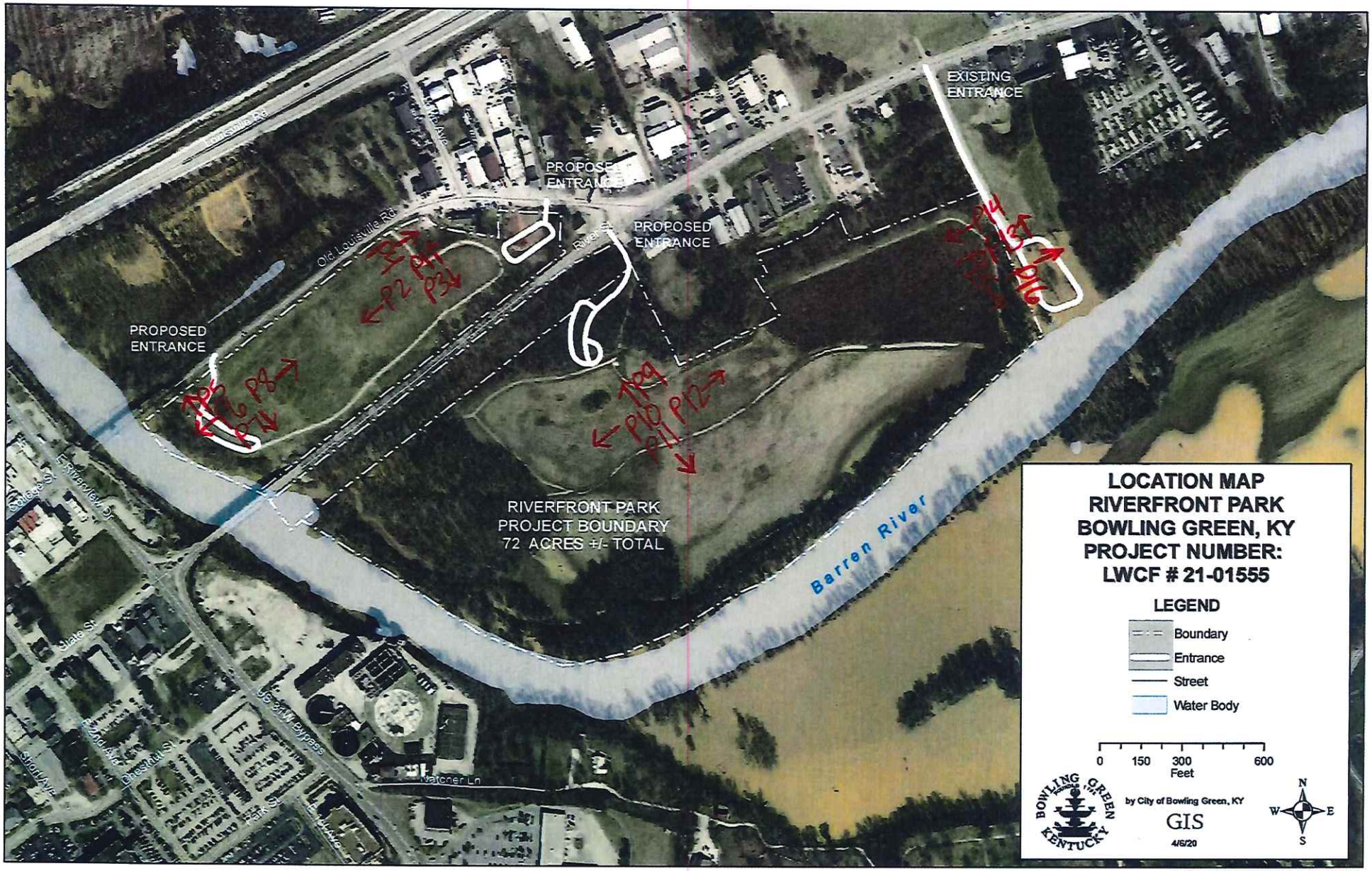
Is there anything over 50 years of age in or visible from the project location? ■ **Yes** ☐ **No**

SECTION 6: ATTACHMENTS - Attach all as applicable

All documentation should be labeled with the project name or site address.

- ■ Clear, current photographs of the project site and anything over 50 years of age in or visible from it.
- ■ Site map/plan indicating the exact location and boundaries of the project area.
- ■ Detailed description of the project (may include plans, scope of work, and other available information.)
- ☐ Documentation of prior ground disturbance (e.g. maps, photographs, underground utility plans, etc.)
- ☐ Any known information about the history/use of the property and local significance.

Submit all information to **Craig Potts, Executive Director/SHPO, Kentucky Heritage Council, 410 High Street, Frankfort, KY 40601.**



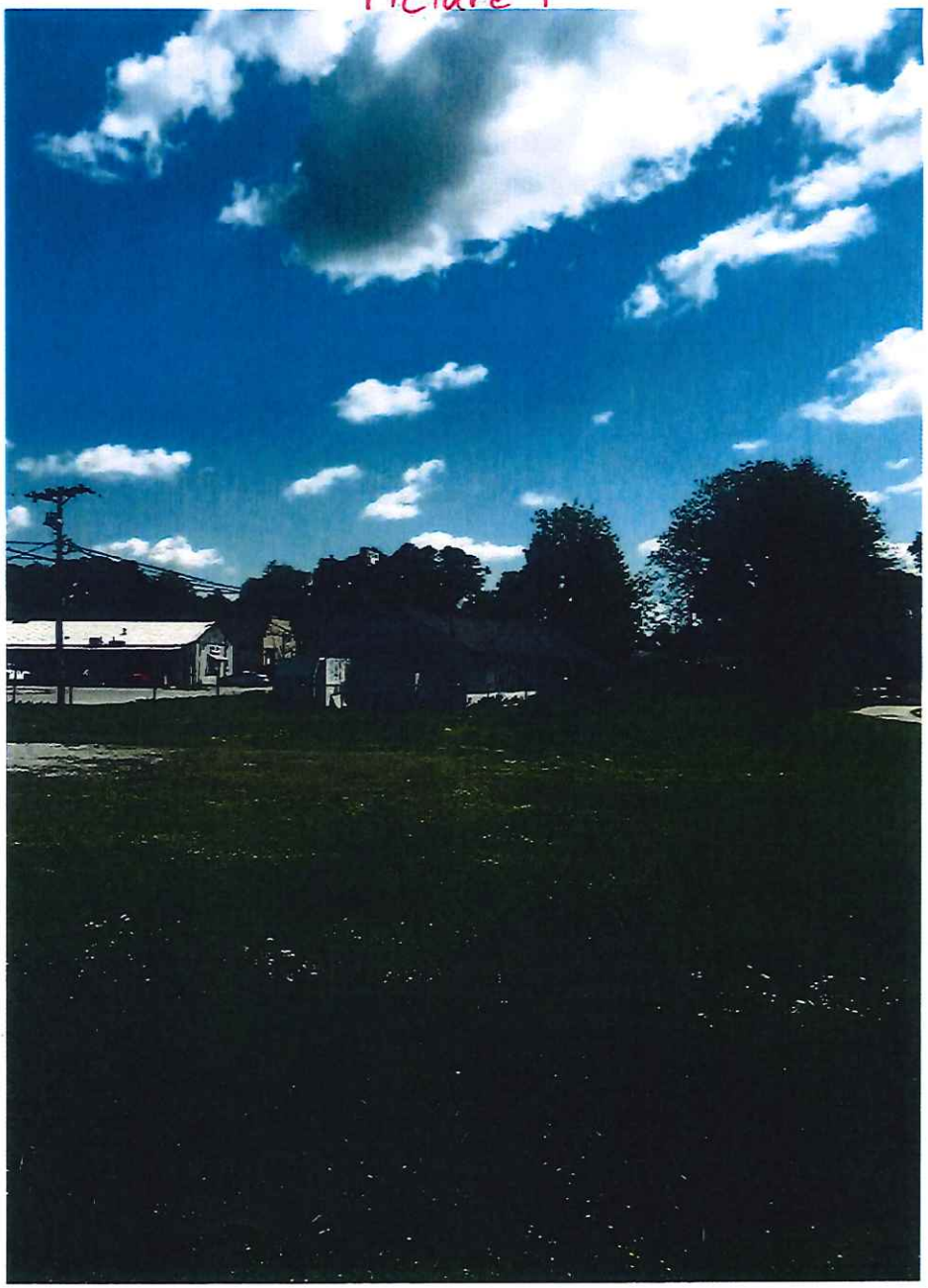
Bearden - L:/2020 Maps/NCS/Riverfront Grant/BoundaryMap

Picture 1

Picture 2

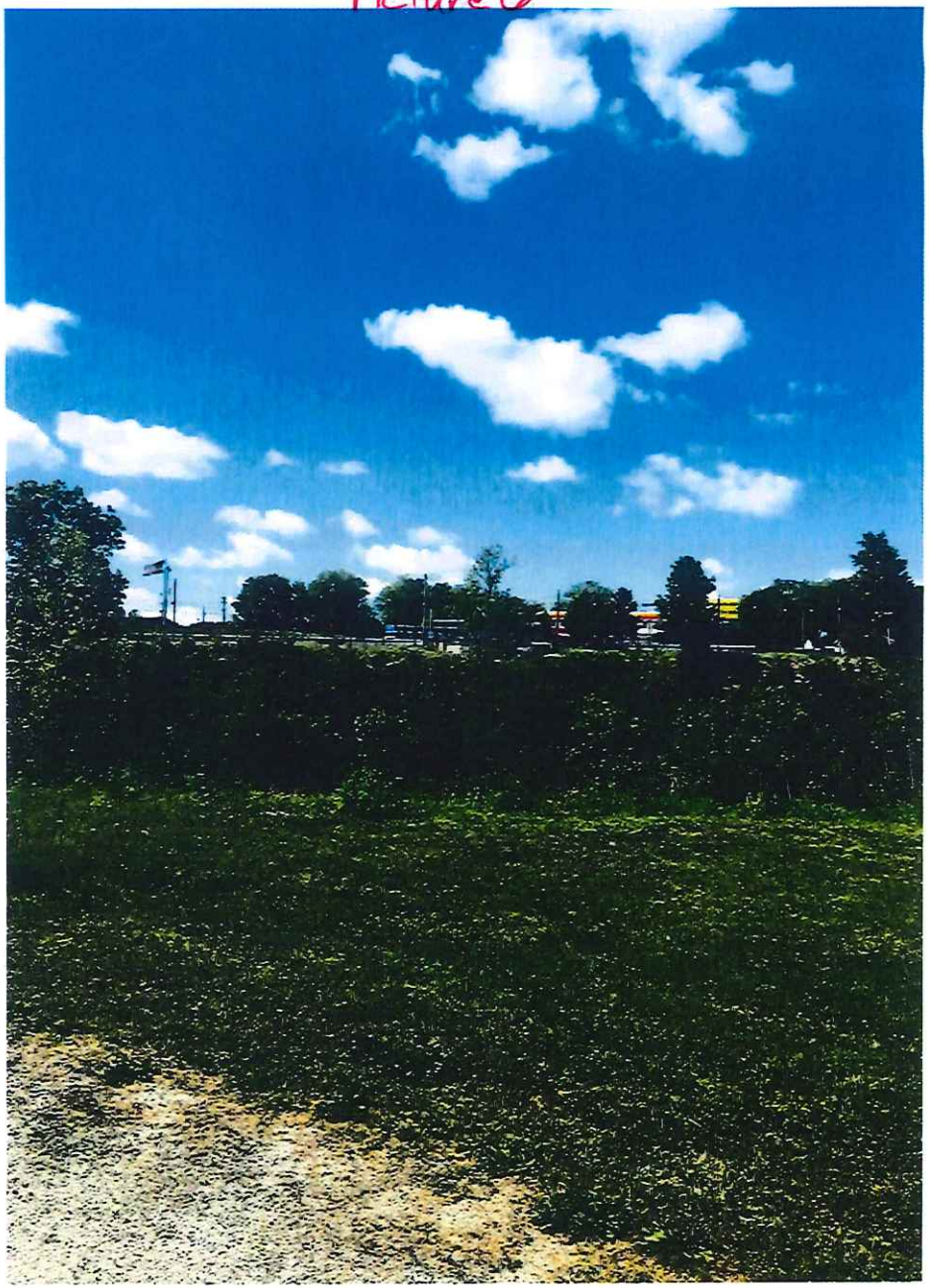
Picture 3

Picture 4



Picture 5

Picture 6

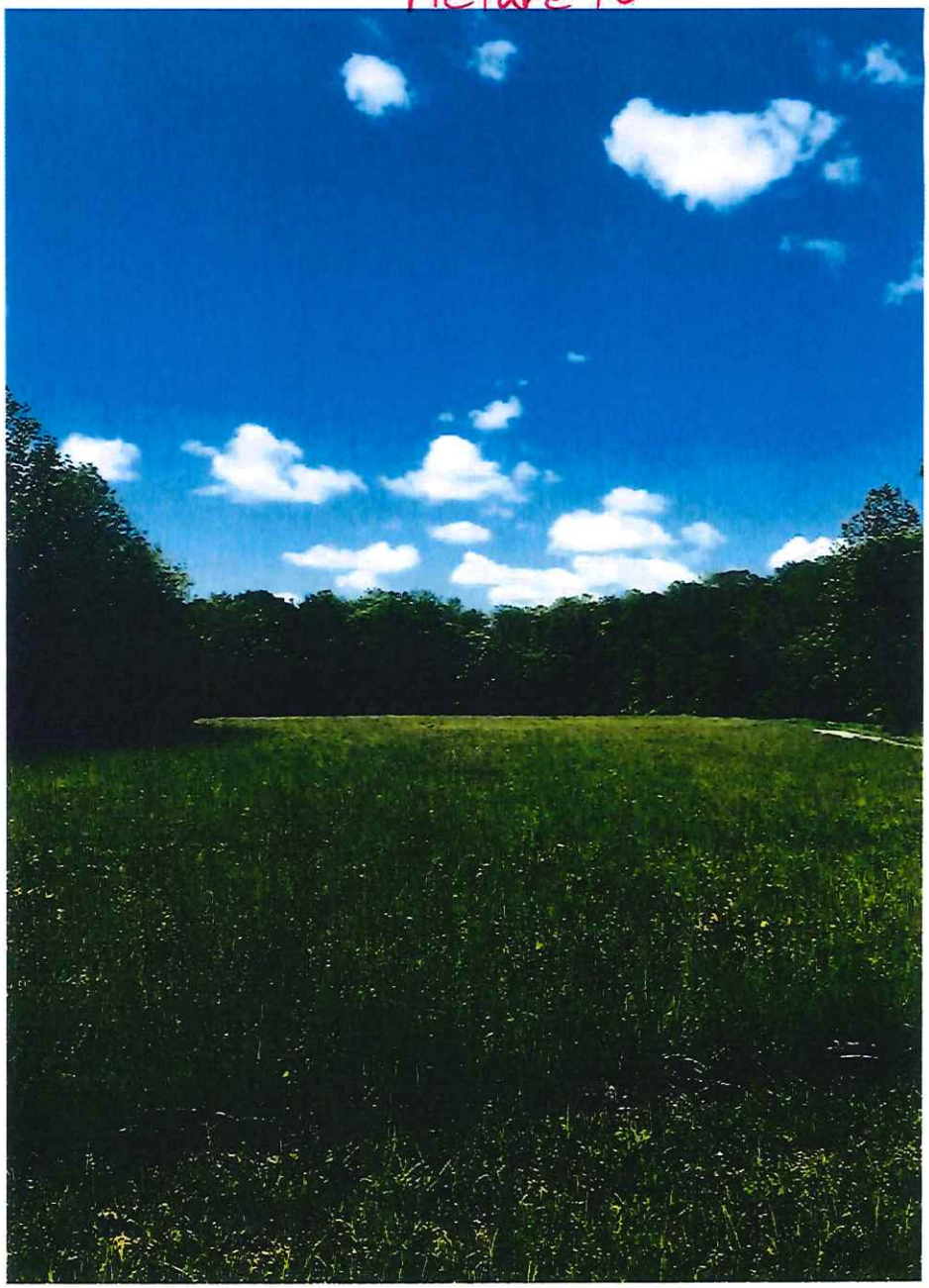


Picture 7

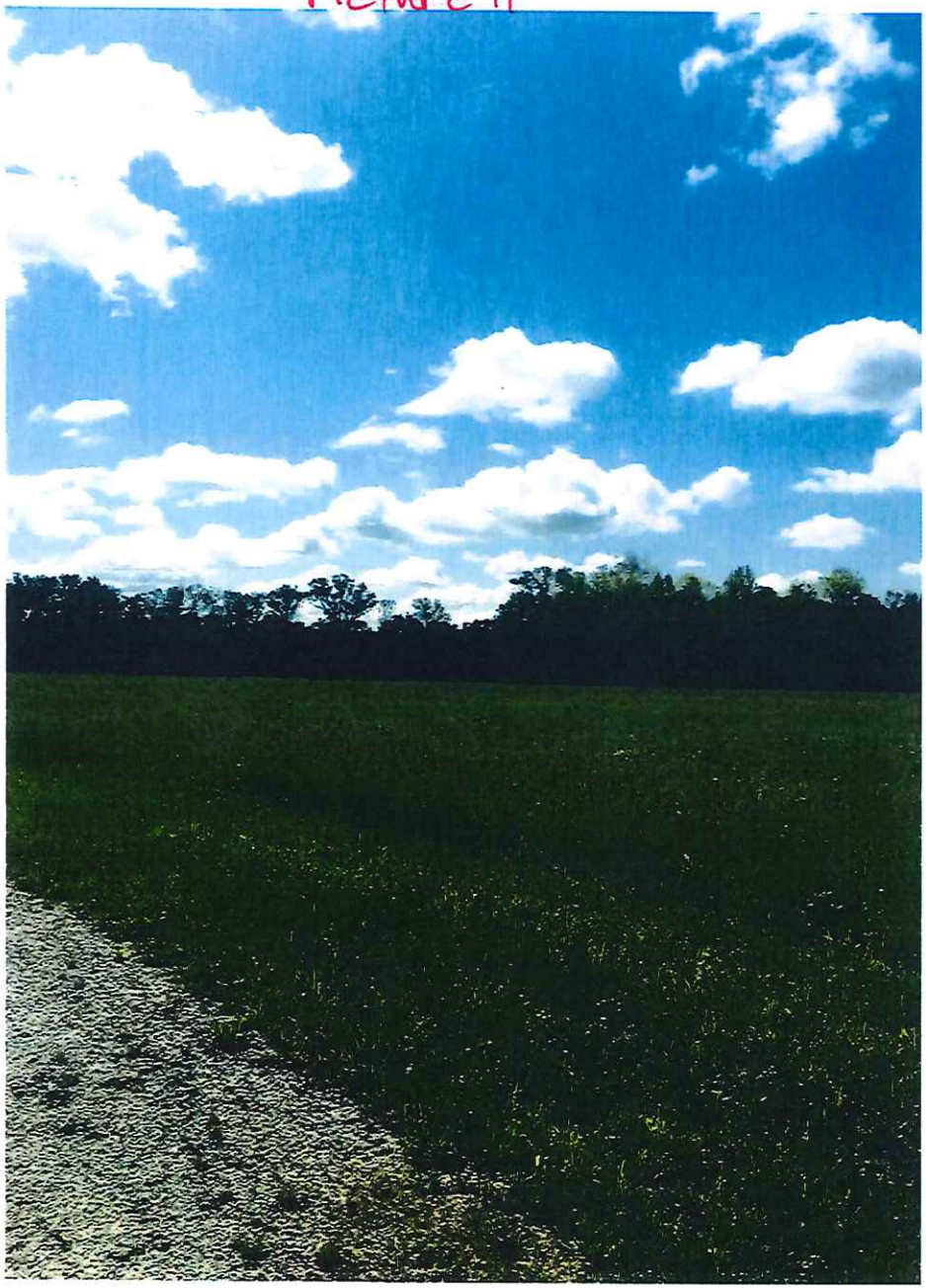
Picture 8

Picture 9

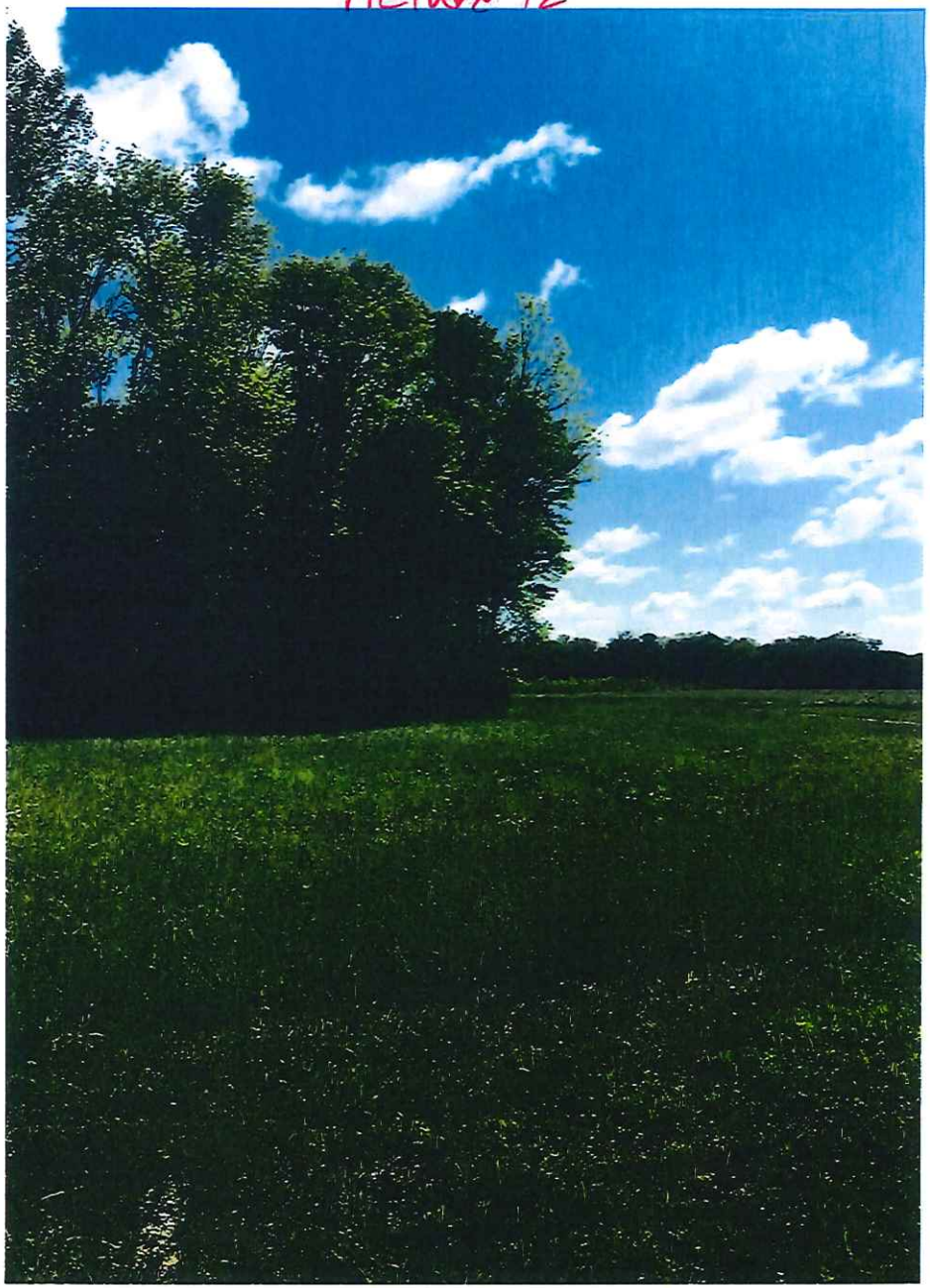
Picture 10



Picture 11



Picture 12

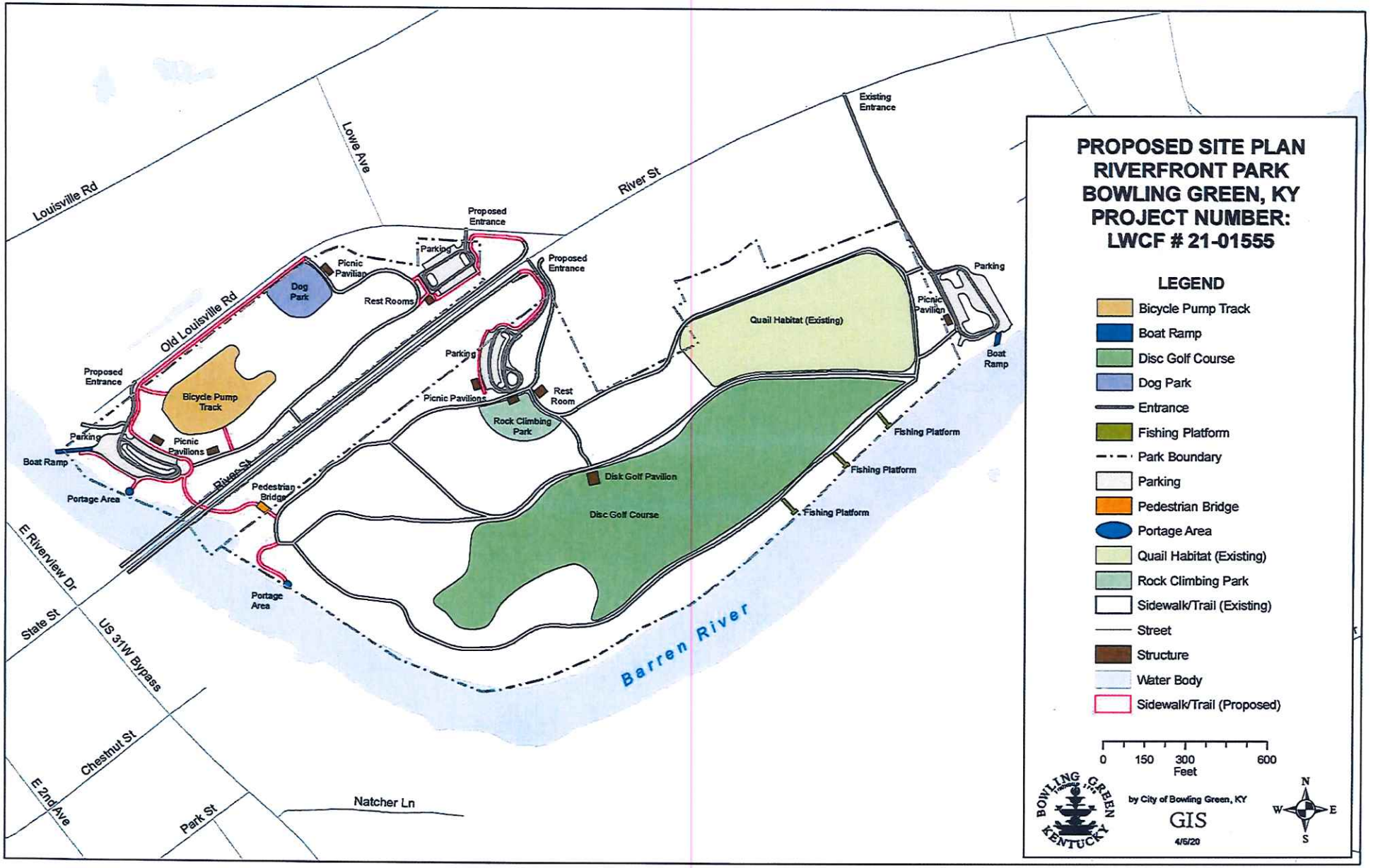


Picture 13

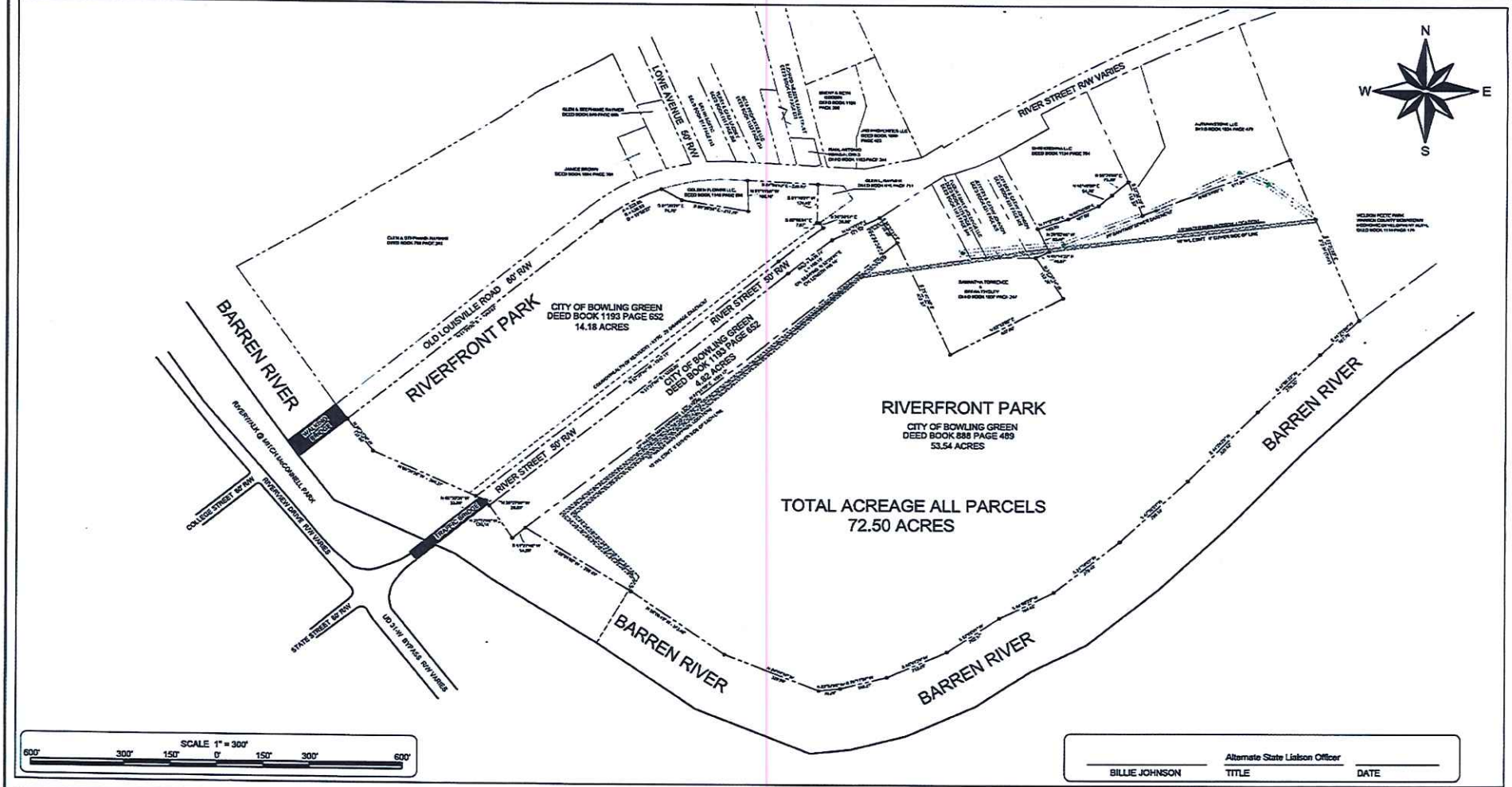
Picture 14

Picture 15

Picture 16



Beenden - L:\2020 Maps\NCS\Riverfront Grant\SitePlan



CITY OF BOWLING GREEN	LWCF-ORLP 6 (f) MAP	RIVERFRONT PARK BOWLING GREEN, KENTUCKY PROJECT # 21-01555	SHEET OF JOB NO. 20024 SCALE 1" = 300' DATE 04/09/2020

Kentucky Office of State Archaeology
University of Kentucky, 1020A Export Street, Lexington, KY 40506
Phone:859-257-1944 Fax:859-323-9866 email:ky-osa@uky.edu
Confidential Information
Not for Public Release

Preliminary Records Review Coversheet

Date Request Processed: 5/11/2020

Preliminary Review Number: P261840

Paid via: ☐ Check (Check No.:)

☒ Credit Card (Transaction ID: 1485721500)

If you have any questions, please contact KyOSA at (859)257-1944 or ky-osa@uky.edu.

Kentucky Office of State Archaeology

University of Kentucky, 1020a Export Street, Lexington, KY 40506

Phone: (859)257-1944 Fax: (859)323-9866 email: ky-osa@uky.edu

Confidential Information; Not for Public Release

P261840: Bowling Green Riverfront Development Project

This report includes only previously recorded archaeological resources within your project area and its immediate vicinity and may not be exhaustive of all archaeological resources actually present. This information does not constitute Section 106 consultation or 'clearance' from the KHC/SHPO.

Date Request Filled: 05/11/20

Site Type	National Register Status
open habitation w/o mounds	Inventory site (does not presently meet NR criteria)
open habitation w/o mounds	Inventory site (does not presently meet NR criteria)
other	Inventory site (does not presently meet NR criteria)
open habitation w/o mounds	Inventory site (does not presently meet NR criteria)

Kentucky Office of State Archaeology

University of Kentucky, 1020A Export Street, Lexington, KY 40506

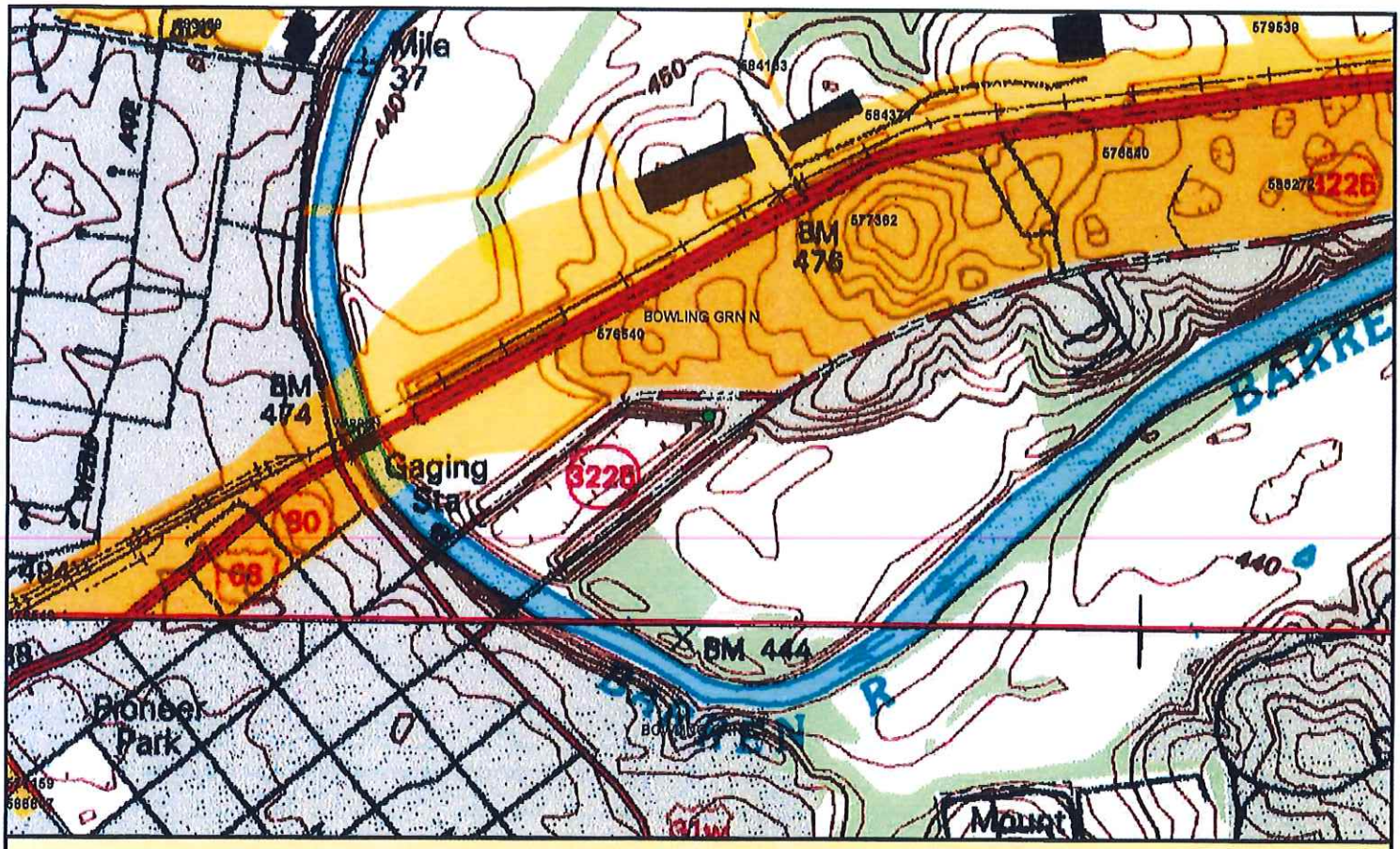
Phone:(859)257-1944 Fax: (859)323-9866 Email: ky-osa@uky.edu

P261840: Bowling Green Riverfront Development Project

Site Check Performed On: 05/11/20

114-010	576540	1976	Schock, Jack M. and Gary S. Foster

An Archaeological Survey of the Proposed Relocation of US 31-W and 68, Warren County, Kentucky



Project Coordinates Submitted to OSA

Previous Archaeological Survey Boundaries

Phase 2 & 3 Archaeological Surveys

Note: Archaeological Site Locations NOT Shown

0 0.1 0.2 0.4 0.6 0.8 Kilometers

N

P261840
Bowling Green Riverfront Development Project

Kentucky Office of State Archaeology
University of Kentucky, 1020A Export Street, Lexington, KY 40506
phone: 859-257-8207 email: ky-osa@uky.edu

Confidential Information: Not for Public Release

Bowling Green Downtown Riverfront Development Project

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

BOWLING GREEN NORTH QUADRANGLE
KENTUCKY - WARREN COUNTY
7.5-MINUTE SERIES

Project Location

Produced by the United States Geological Survey

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

ROAD CLASSIFICATION

BOWLING GREEN NORTH, KY
2019

Exhibit 5

THPO Consultation

Nick Cook

From: Nick Cook
Sent: Thursday, May 07, 2020 9:29 AM
To: 'richsnee@nc-cherokee.com'; russtown@nc-cherokee.com
Subject: Downtown Riverfront Redevelopment Project, Bowling Green, KY
Attachments: Tribal Consultation Letters 5-7-20.pdf

Please find attached letters regarding the subject referenced project.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

Nick Cook
Grants Coordinator
Telephone: 270.393.3659
Fax: 270.393.3168
Nick Cook@bgky.org

707 E. Main Ave
PO Box 430
Bowling Green, Kentucky 42102
www.bgky.org

Neighborhood & Community Services Department

May 7, 2020

Eastern Band of Cherokee Indians
Richard Sneed
Principal Chief
Qualla Boundary Reservation
P.O. Box 455
Cherokee, NC 28719

Re: City of Bowling Green Downtown Redevelopment Project

Dear Chief Sneed:

The National Park Service selected a preliminary application for the above referenced project under the 2017-2018 Land and Water Conservation Fund, Outdoor Recreation Legacy Partnership Program. The City must now submit a final application which includes consultation regarding the projects impacts to historic/cultural resources.

The City of Bowling Green will conduct a review of this project to comply with Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800. We would like to invite you to be a consulting party in this review to help identify historic properties in the project area that may have religious and cultural significance to your tribe, and if such properties exist, to help assess how the project might affect them. If the project might have an adverse effect, we would like to discuss possible ways to avoid, minimize or mitigate potential adverse effects.

To meet project timeframes, if you would like to be a consulting party on this project, can you please let us know of your interest within 30 days? If you have any initial concerns with impacts of the project on religious or cultural properties, can you please note them in your response?

The project will revitalize park areas along Bowling Green's downtown riverfront. Improvements include a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities (i.e. trash receptacles, signage, benches, etc.). The improvements will provide access to new recreational opportunities while addressing recreational deficiencies in the community.

The Riverfront Development Project will breathe life into distressed park areas significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. The project's boat ramp will improve

search and rescue efforts within the Barren River while increasing safety of first responders. Furthermore, the project compliments the revitalization of the River Street corridor led by a grass roots effort poised to remove blight, attract new private investment, and increase jobs in a distressed area.

The longitude and latitude center points for the proposed project are: 37°00'12.0"N and 86°25'31.1"W.

Please find enclosed maps and drawing of the project. Any comments from your agency would be greatly appreciated in the next thirty (30) days. Thank you for your assistance on this matter. If you have any questions, please contact me at 270-393-3659 or nick.cook@bgky.org.

If you do not wish to consult on this project, can you please inform us? If you do wish to consult, can you please include in your reply the name and contact information for the tribe's principal representative in the consultation? Thank you very much. We value your assistance and look forward to consulting further if there are historic properties of religious and cultural significance to your tribe that may be affected by this project.

Sincerely,

Nick Cook
Grants Coordinator
Phone: 270-393-3659
Email: nick.cook@bgky.org
Fax: 270-393-3168

Nick Cook
Grants Coordinator
Telephone: 270.393.3659
Fax: 270.393.3168
Nick Cook@bgky.org

707 E. Main Ave
PO Box 430
Bowling Green, Kentucky 42102
www.bgky.org

Neighborhood & Community Services Department

May 7, 2020

Eastern Band of Cherokee Indians
Russell Townsend
Tribal Historic Preservation Specialist
Qualla Boundary Reservation
P.O. Box 455
Cherokee, NC 28719

Re: City of Bowling Green Downtown Redevelopment Project

Dear Mr. Townsend:

The National Park Service selected a preliminary application for the above referenced project under the 2017-2018 Land and Water Conservation Fund, Outdoor Recreation Legacy Partnership Program. The City must now submit a final application which includes consultation regarding the projects impacts to historic/cultural resources.

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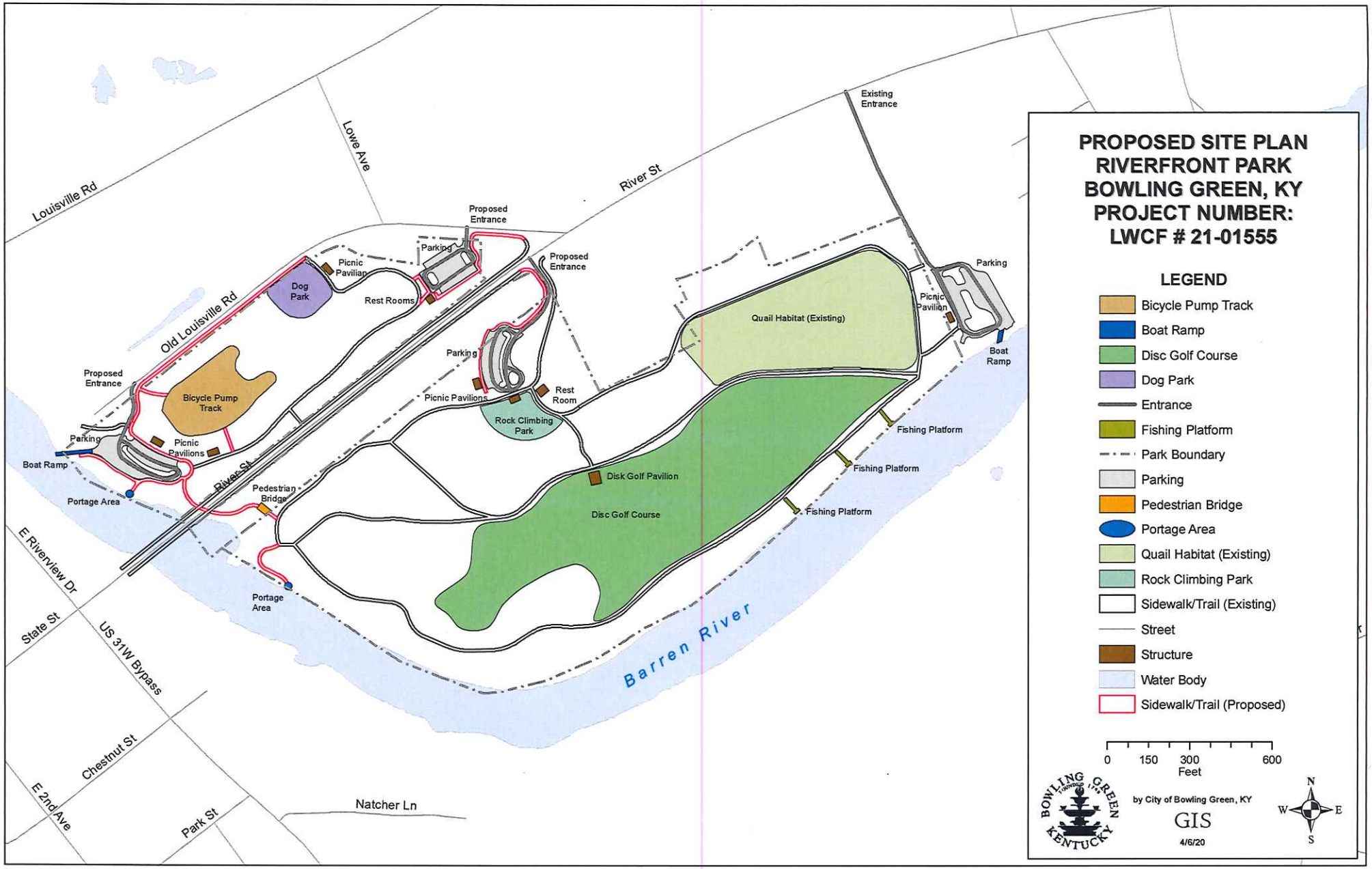
Sincerely,

Nick Cook
Grants Coordinator
Phone: 270-393-3659
Email: nick.cook@bgky.org
Fax: 270-393-3168



PROPOSED SITE PLAN
RIVERFRONT PARK
BOWLING GREEN, KY
PROJECT NUMBER:
LWCF # 21-01555

LEGEND

- Bicycle Pump Track
- Boat Ramp
- Disc Golf Course
- Dog Park
- Entrance
- Fishing Platform
- Park Boundary
- Parking
- Pedestrian Bridge
- Portage Area
- Quail Habitat (Existing)
- Rock Climbing Park
- Sidewalk/Trail (Existing)
- Street
- Structure
- Water Body
- Sidewalk/Trail (Proposed)

0 150 300 600
Feet

BOWLING GREEN KENTUCKY

by City of Bowling Green, KY
GIS
4/6/20

N
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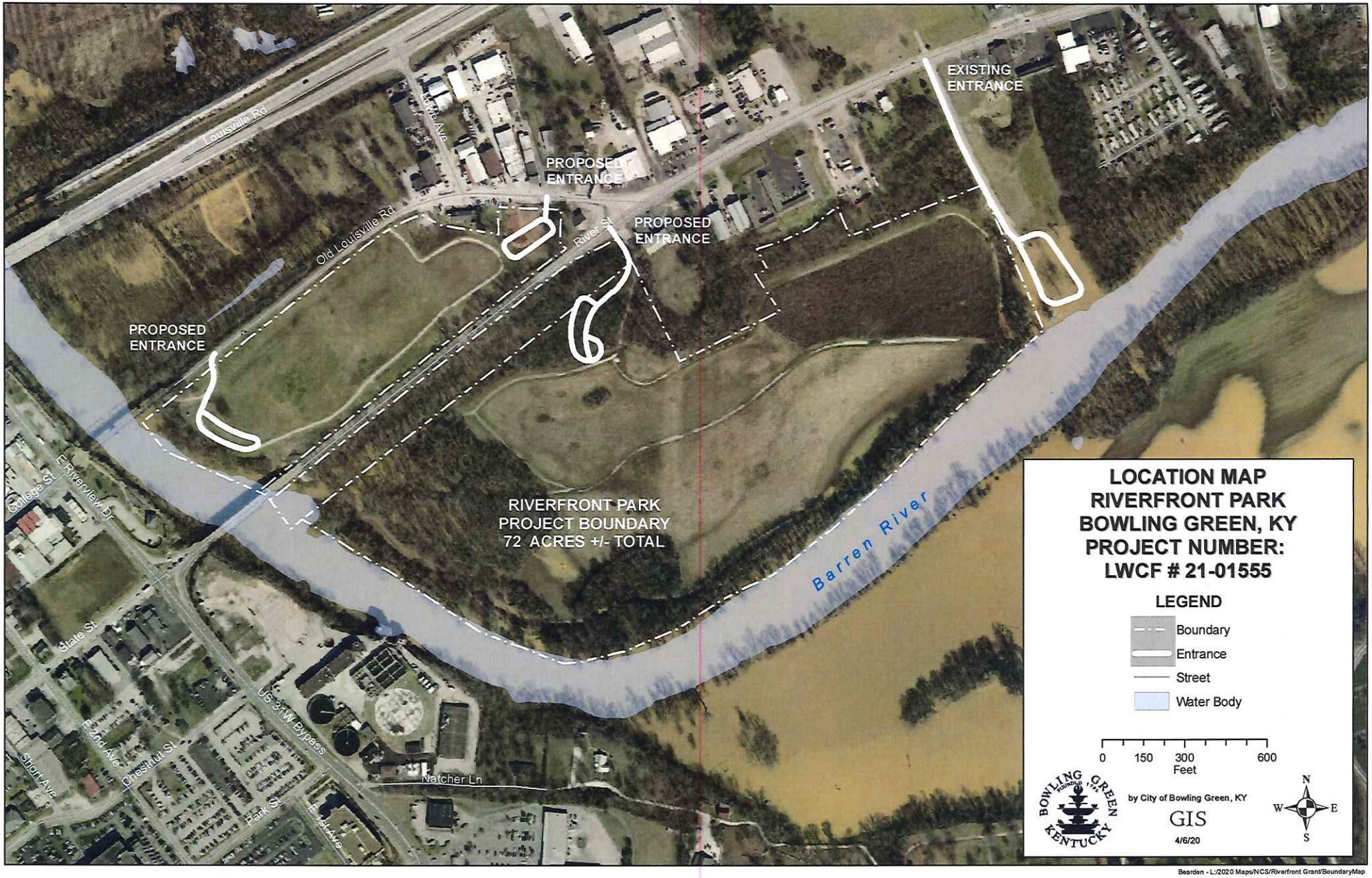
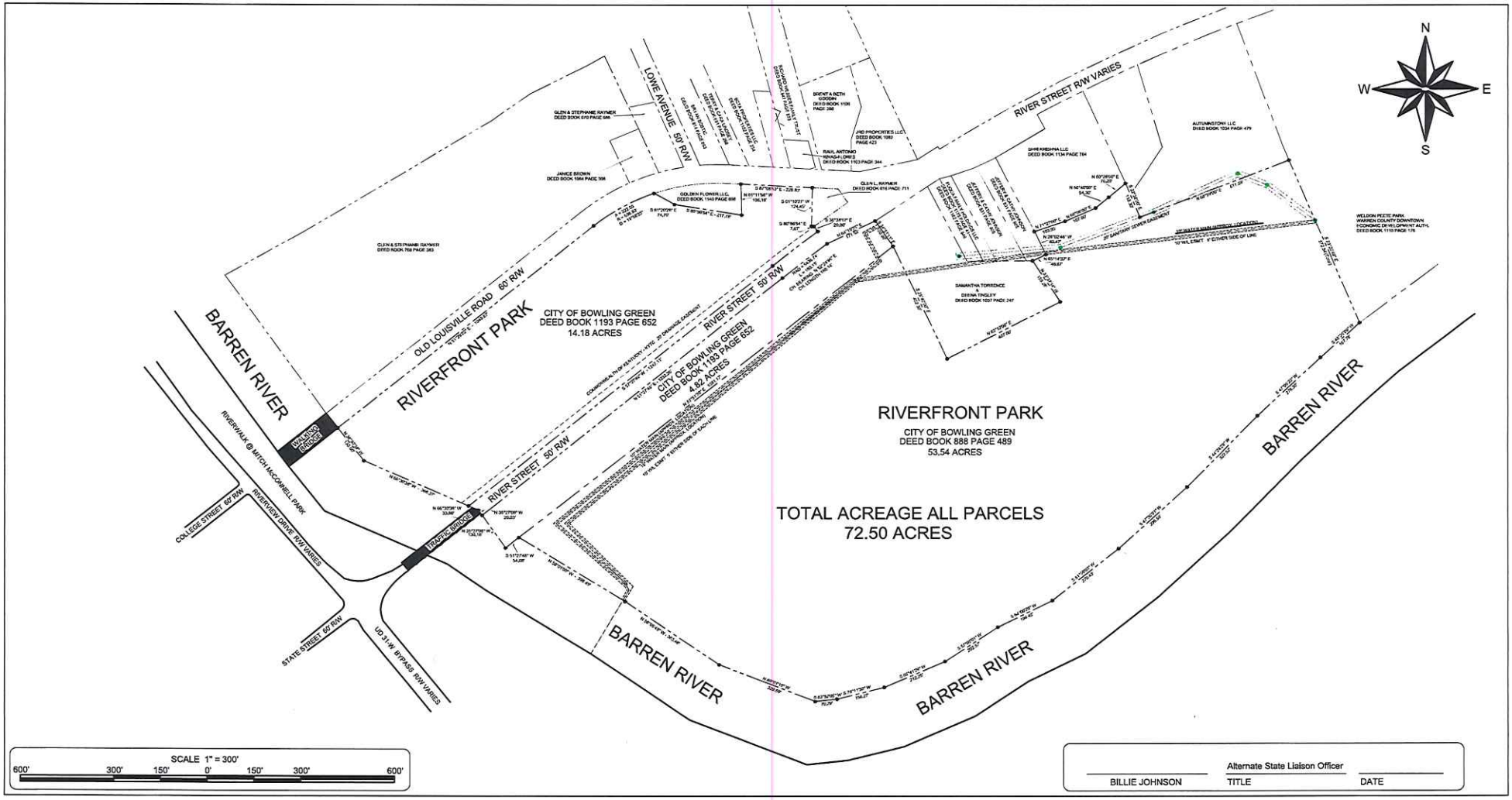
Bearden - L:/2020 Maps/NCS/Riverfront Grant/SitePlan



Bearden - L:/2020 Maps/NCS/Riverfront Grant/BoundaryMap



CITY OF BOWLING GREEN	LWCF-ORLP 6 (f) MAP	RIVERFRONT PARK BOWLING GREEN, KENTUCKY PROJECT # 21-01555	SHEET OF JOB NO. 20024 SCALE 1" = 300' DATE 04/09/2020

Exhibit 6

Archaeological Survey

ARCHAEOLOGICAL INVESTIGATION OF RIVERWALK PARK, BOWLING GREEN, WARREN COUNTY, KENTUCKY

By

Justin N. Carlson, Deborah Parrish, Heather Byerly, and Joshua Keown

Kentucky Archaeological Survey
Western Kentucky University
KAS Report No. 305

ARCHAEOLOGICAL INVESTIGATION OF RIVERWALK PARK, BOWLING GREEN, WARREN COUNTY, KENTUCKY

By
Justin N. Carlson, Deborah Parrish, Heather Byerly, and Joshua Keown

Kentucky Office of State Archaeology
Permit Number 2020-32
Project Registration No. Fy21-10994

KAS Report No. 305

Report Prepared For:
City of Bowling Green

Contact:
Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102

Report Submitted By:

Kentucky Archaeological Survey
Western Kentucky University
1906 College Heights Blvd #61029
Bowling Green, Kentucky 42101-1029
270-745-2217

October
2020

David Pollack

David Pollack
Principal Investigator

Lead Agency:
National Park Service

ABSTRACT

At the request of the city of Bowling Green, the Kentucky Archaeological Survey (KAS) conducted an archaeological survey of 20.1 ha (51 acres) of the Riverwalk Park in Bowling Green, Warren County, Kentucky. Based on the results of this study, the southwestern edge of Site 15Wa166 was extended an additional thirty meters into an area that could not be shovel probed in 2009 due to standing water. The results of the systematic shovel probing of the remainder of the project area suggest that the low-lying areas surrounding Site 15Wa166 were not conducive to Native American or Historic occupation. No other archaeological sites were documented in the project area.

Limited test excavations undertaken at Site 15Wa166 confirmed the presence of a 10 to 22 cm thick buried A horizon (Zone II) that contained a small amount of debitage, and wood and nut charcoal. A small feature, a possible roasting or cooking pit was documented within the buried A horizon. In general, Site 15Wa166 appears to have been repeatedly used for short durations, perhaps on a seasonal basis. But additional work is needed to determine when these visited occurred.

Based on the work conducted to date, we concur with Wetzel et al.s' assessment that Site 15Wa166 is potentially eligible for listing in the National Register of Historic Places. The site should be preserved and protected. Prior to undertaking any ground disturbing activities within the boundaries of the site, the City of Bowling Green should consult with the Kentucky Heritage Council (State Historic Preservation Office) to determine the nature and extent of additional archaeological investigations that may be needed. Given the limited amount of ground that will be disturbed during placement of the posts for a disc golf course within the boundaries of Site 15Wa166, we do not recommend additional work in advance of this aspect of the project. Nor is additional work recommend in advance of the construction of the golf pavilion as its proposed location is located along the edge of the site in an area that has a low potential for containing intact deposits. None of the other proposed activities have the potential to impact significant archaeological resources.

ACKNOWLEDMENTS

The authors would like to thank Eric Schlarb for providing his knowledge and help with the debitage analysis and Jay Stottman for contributing knowledge and help with the historic materials. Thanks also to David Applegate for assisting with the excavation of the track-hoe trenches and the Bowling Green Parks Department who put up temporary fencing, and back filled the trenches and excavation units.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1
INTRODUCTION

At the request of the city of Bowling Green, the Kentucky Archaeological Survey (KAS) conducted an archaeological survey of 20.1 ha (51 acres) of Riverfront Park in Bowling Green, Warren County, Kentucky (Figure 1.1). This work was undertaken in advance of park improvements that include a disc golf course and a rock climbing park to the south of River Street (Area A), and a dog park and bicycle pump track to the north of River Street (Area B) (Figures 1.2 and 1.3).

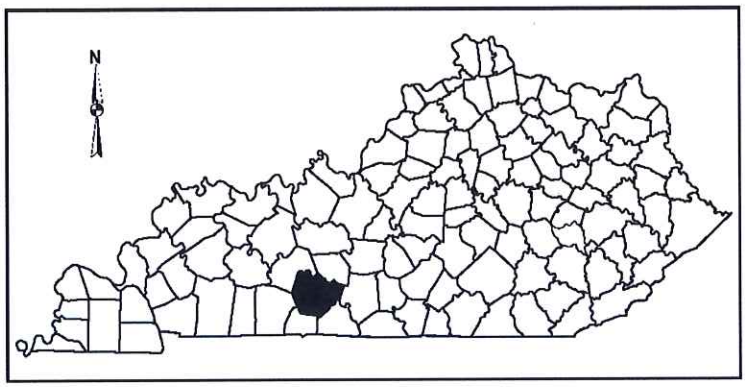


Figure 1.1. Location of Warren County, Kentucky.

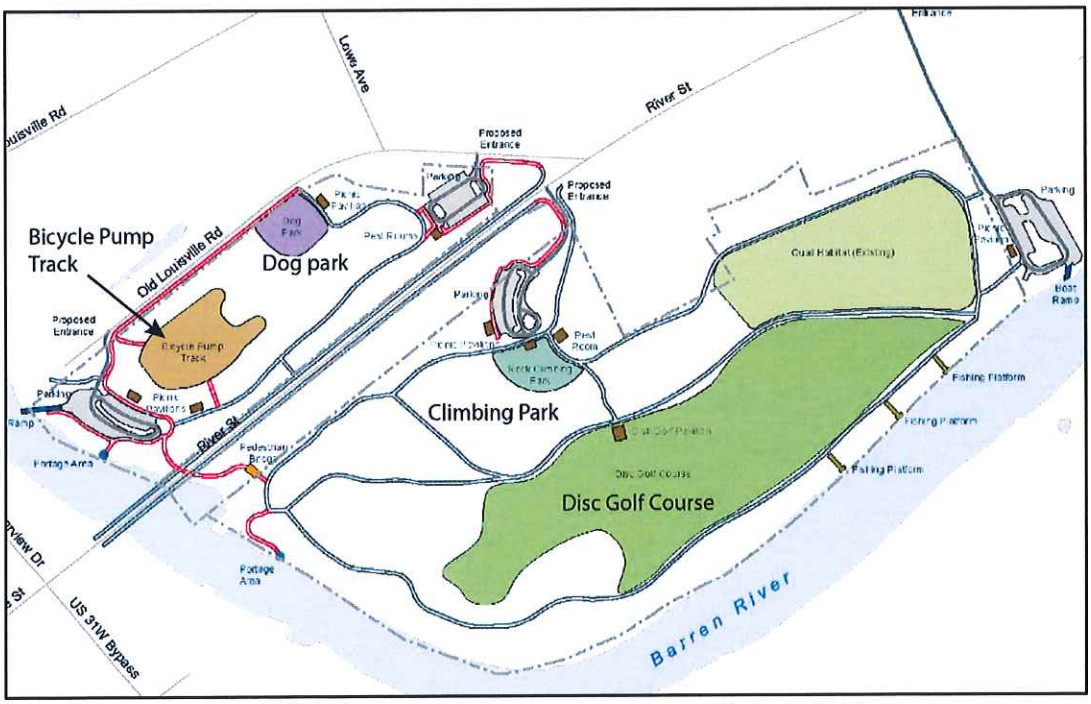


Figure 1.2. Proposed improvements to Riverwalk Park.

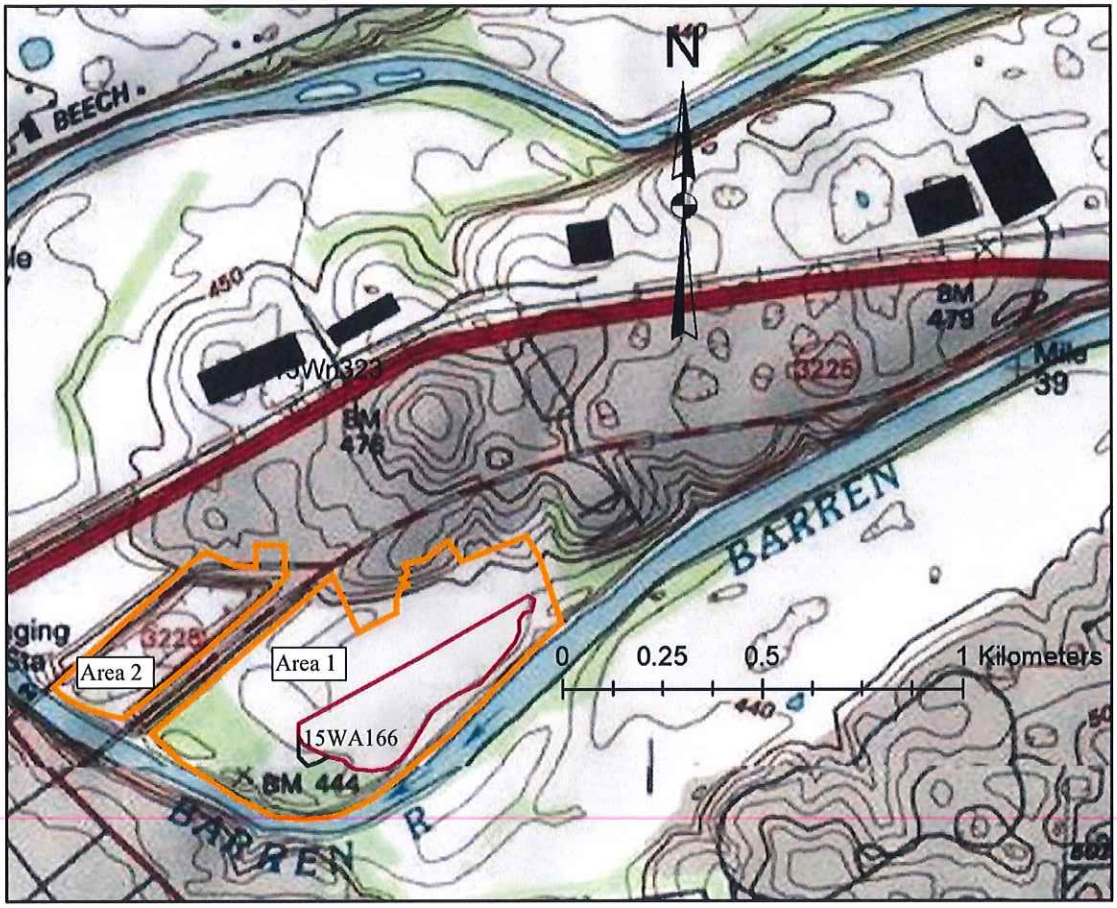


Figure 1.3. Project area (orange) and Site 15Wa166 original boundaries (red) and extension (black) on Bowling Green North (1993) and Bowling Green South (1968, photorevised 1982) 7.5 minute USGS topographic quadrangle maps.

The project area, which is bisected by River Street, consisted of two large areas (Area 1 and Area 2) (Figures 1.3 and 1.4). The Barren River flows along the southern boundary of both areas. Area 1 is located south of River Road. It is composed of a large field and wooded areas to the north and southwest. A gravel parking lot for Wheldon Peete Park is situated on the northeastern boundary of Area A. A paved path runs through the project area, as do gravel roads and dirt mountain biking trails, which are primarily associated with the wooded areas that border the open field. A quail habitat consisting of dense low trees and shrubs is located in the northeast part of the project area. Within Area A, shovel probes were excavated every 20 m on northeast-southwest transects spaced 20 m apart. These shove probes were placed within the portion of the project area that had not been previously surveyed by Corn Island (Wetzel et al. 2009). Shovel probes were not placed in the northern wooded portions of the project area because of slope, erosion, a streambed, and underground waterlines.

Area 2 consisted of the remains of an old land fill. On the topographic map the landfill shows as a large depression, but today it consists of a large earthen mound surrounded by a paved trail. Upon visual inspection, it was observed that the entire area

had been previously disturbed. Due to this disturbance, no shovel probes were placed in Area 2 (Figure 1.3).

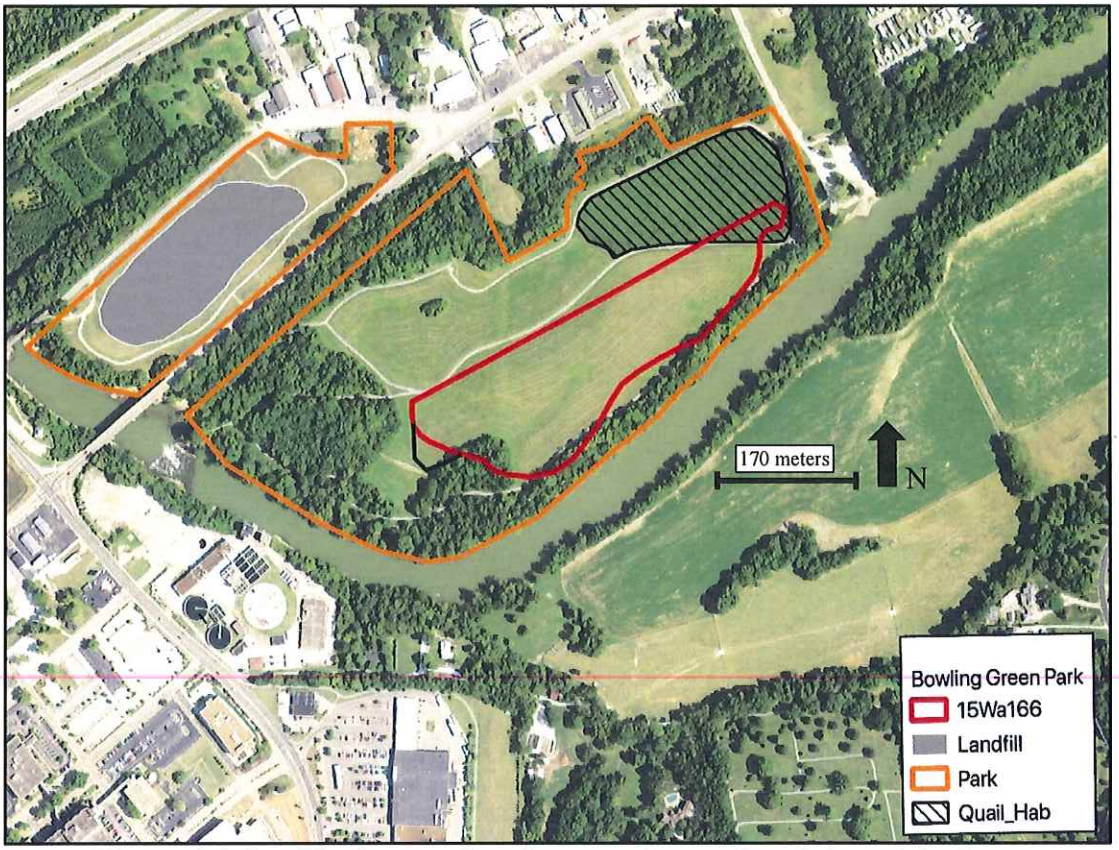


Figure 1.4. Satellite image of project area (orange) and the original boundaries of Site 15Wa166 in red and addition in black (modified from Wetzel et al. 2009).

In 2009, an archaeological survey was conducted by Corn Island of a 8 ha area in advance of greenway development in Riverfront Park (Wetzel et al. 2009). Systematic shovel probing of the project area resulted in the documentation of Site 15Wa166. Wetzel et al. noted that they were not confident of the site's boundaries as some areas could not be shovel probed because of standing water. Though no temporally diagnostic artifacts were recovered, Wetzel et al. noted the presence of a possible buried A horizon just beneath the plowzone. Based on the presence of the possible buried A horizon and the association of Native American artifacts with these deposits, Wetzel et al. (2009) concluded that Site 15Wa166 was potentially eligible for listing in the National Register of Historic Places. Additional work was recommended if the site could not be avoided and preserved in place.

The goals of this study were 1) to determine the spatial extent of Site 15Wa166, 2) to ascertain if other archaeological sites were present in the project area, and 3) to gain a better understanding of the nature of the buried A horizon documented at Site 15Wa166. The first two goals were accomplished through the excavation of shovel probes on a 20 m

grid adjacent to the known boundaries of Site 15Wa166 and other areas within the park that had the potential to contain archaeological sites. To gain a better understanding of Site 15Wa166's location on the landscape and to assess the nature of the previously identified buried A horizon three approximately four-meter-long track-hoe trenches and three 1x1 m units were excavated. Each unit was placed adjacent to the northeast wall of one of the trenches, which were spaced 40 m apart.

Fieldwork was conducted in compliance with provisions of the National Historic Preservation Act of 1966 (as amended), the National Environmental Policy Act of 1969, Procedures of the Advisory Council on Historic Preservation, Executive Order 11593 (Protection and Enhancement of the Cultural Environment), and the Kentucky Heritage Council's (KHC) Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports (Sanders 2006). This study also was conducted pursuant to Office of State Archaeology Permit Number 2020-32.

FINDINGS

Shovel probes placed in the field north of the paved trail running through the middle of the open field did not yield any cultural material associated with the Native American occupation of Site 15Wa166. Nor were additional archaeological sites documented. The northwestern edge of the site is thus demarcated by the walking path as identified by Corn Island's 2009 survey. Shovel probes did extend the southwestern edge of the site about thirty meters into an area that could not be shovel probed in 2009 due to standing water. The results of systematic shovel probing of the remainder of Area A determined that in general soils within the project area are saturated with water, suggesting poor drainage in many areas. Crawdad burrows were evident throughout the project area. This work also confirmed that Site 15Wa166 is located on the highest portion of the floodplain. The low-lying areas surrounding Site 15Wa166 do not appear to have been conducive to Native American or Historic occupation.

The only cultural materials recovered from shovel probes excavated in the open field and the wooded areas beyond the boundaries of Site 15Wa166 were mid- to late twentieth century clear and green bottle glass, light bulb fragments, cinder/slag, and unidentified metal. Given that no structures are indicated on historic maps of the area coupled with the minimal presence of architecture related objects, our findings concur with the interpretation offered by Wetzel et al. (2009) that the objects found likely originated from modern trash disposal associated with farming and park activities. Therefore, these materials do not represent an archaeological site.

The limited test excavations undertaken at Site 15Wa166 confirmed the presence of a buried A horizon (Zone II) that contained debitage, and wood and nut charcoal. A small feature, a possible roasting or cooking pit was documented within the buried A horizon. Though the study extended the boundaries of Site 15Wa166 and confirmed the presence of a buried A horizon, no diagnostic materials were recovered. In general, Site 15Wa166 appears to have been repeatedly used for short durations, perhaps on a seasonal basis. But additional work is needed to determine when these visited occurred.

Based on the work conducted to date, we concur with Wetzel et al.s' assessment that Site 15Wa166 is potentially eligible for listing in the National Register of Historic Places. The site should be preserved and protected. Prior to undertaking any ground disturbing activities within the boundaries of the site, the City of Bowling Green should consult with the Kentucky Heritage Council (State Historic Preservation Office) to determine the nature and extent of additional archaeological investigations that may be needed. Given the limited amount of ground that will be disturbed during placement of the posts for a disc golf course within the boundaries of Site 15Wa166, we do not recommend additional work in advance of this aspect of the project. Nor is additional work recommend in advance of the construction of the golf pavilion as its proposed location is located along the edge of the site in an area that has a low potential for containing intact deposits. None of the other proposed activities have the potential to impact significant archaeological resources.

CHAPTER 2
ENVIRONMENTAL BACKGROUND

SETTING

This chapter contains background information for the project area that includes the physiography, geology, soils, climate, and flora and fauna endemic to the region.

Physiography

The portion of Warren County that contains the project area lies in the Western Pennyroyal Physiographic Region. The region is known for its upland sandstone ridges, rolling hills, and underlying karst. Ephemeral streams and karst drain locally into the Barren River, a tributary of the Green River, which runs along the northern border of the county.

Geology

The project area lies on Upper Mississippian St. Louis and Ste. Genevieve Limestones and Quaternary Alluvium deposited by the Barren River. The St. Louis and Ste. Genevieve Limestones contain chert that weathers out into the surrounding soil (KGS 2020).

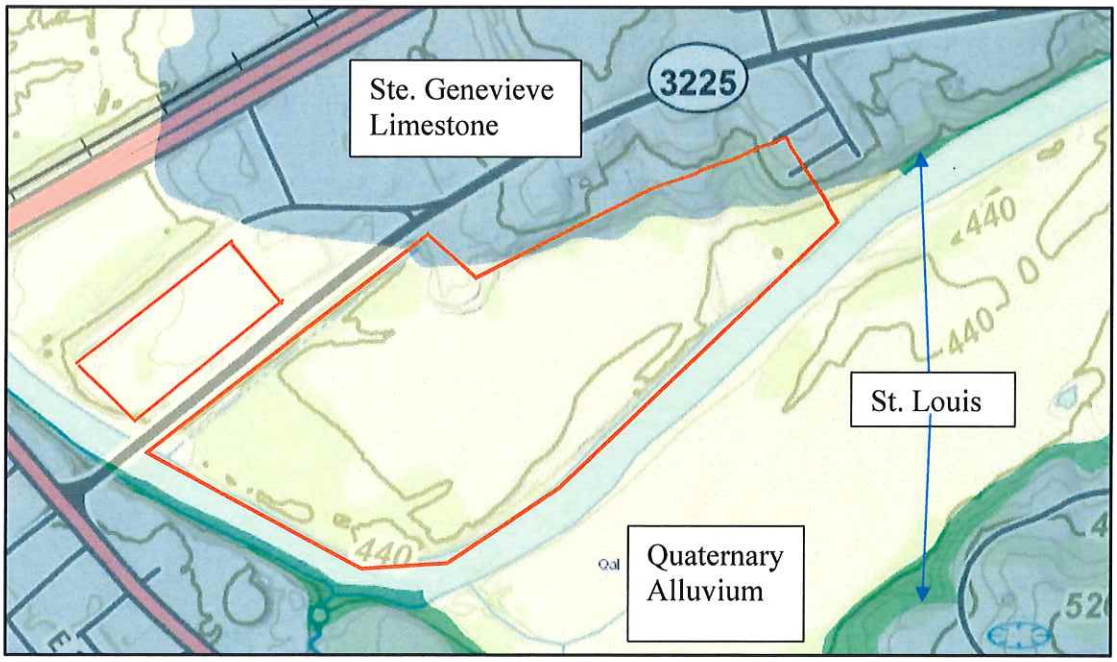


Figure 2.1 Underlying Geology of the Project area, outlined in red (KGS 2020).

Soils

Soils in the project area are primarily Nolin silt loam and Newark silt loam, while upslope from the river is Baxter gravelly silty clay loam (Table 2.1). The Nolin and Newark soils are both alluvial soils and the main limitation for use is frequent flooding (Barton 1981) . The Baxter soil is a clayey residuum weathered from cherty limestone, and is likely responsible for the recovered downslope in the shovel probes and units.

Table 2.1. Project Area Soils (USDA NRCS 2020)

Parent Material	Soil Series with Map Symbol	Landform	Characteristics	Percent In Project Area
mixed fine silty alluvium	Newark silt loam (Ne)	floodplains, closed depressions	somewhat poorly drained; frequently flooded	37.5
mixed fine silty alluvium	Nolin silt loam (No)	floodplains, closed depressions	well drained; frequently flooded	60.2
clayey residuum weathered from cherty limestone	Baxter Gravelly silty coal loam (BBD3)	Hills 12-20% slopes, severely eroded	well drained	2.3

Climate

The weather in Warren County varies seasonally, with the warmest daily average temperatures occurring in the summer at 77.1 degrees Fahrenheit and the coldest in the winter averaging 38 degrees. Precipitation ranges from 3.3 to 5.6 inches monthly with winter and spring averaging one to three inches more than summer and fall precipitation. The average date of the last spring freeze in Bowling Green occurs in early April, while the first fall freeze occurs in late October, allowing for a long growing season (NOAA 2020).

Flora and Fauna

Kentucky biota has changed over time with the influence of humans and the end of the Wisconsin Glaciation about 11,000 years ago. As the climate warmed the megafauna including mastodon and giant sloths died out and were replaced by bison and elk. Likewise, the coniferous forests were replaced with the current oak-hickory forests (Abernathy et al. 2010). In addition to open grassland, the project area, which is situated adjacent to the Barren River, contains flood tolerant tree species, such as sycamore, elm, cottonwood, ash, and native pecan.

Wildlife communities have changed over time with increased development driving out once endemic species such as the black bear and mountain lion. Fox, bobcat, coyote, white tail deer, raccoon, rabbit, groundhog, quail, raptors, wood duck, box turtle and many other species still remain within Warren County. As a tributary of the Green River with 73 known mussel species, the Barren likely provides access to similar diversity for exploitation. The Barren and Green River watershed contains 133 species of fish, several species of amphibians and reptiles, as well as 20 species of crayfish (Abernathy et al. 2010).

Herbaceous plants utilized by native populations were numerous and some like marshelder (*Iva annua*), sunflower (*Helianthus annuus*), chenopod (*Chenopodium berlandieri*), and squash (Cucurbita pepo *ssp ovifera*) were domesticated in and around Kentucky (Riley et al. 1990, Smith 1989).

CHAPTER 3
CULTURE HISTORICAL BACKGROUND

PALEOINDIAN PERIOD (9,500-8,000 B.C.)

The Paleoindian period (ca. 9,500 to 8,000 B.C.) represents the initial documented colonization of all the major physiographic regions within Kentucky (Maggard and Stackelbeck 2008:113). Until the late 1990s, the view of Late Pleistocene hunter-gatherers in the Americas was largely dominated by the "Clovis-first" paradigm (Maggard and Stackelbeck 2008:109). However, new discoveries have resulted in a rather surprising amount of data that cannot be explained under the Clovis-first hypothesis. The discovery of the well-dated occupation of the Monte Verde site, located in southern Chile has made it clear that humans were in the Americas by at least 11,000 B.C. (Dillehay 1997; Maggard and Stackelbeck 2008). In addition, as more sites are documented in North America that contain cultural assemblages in depositional contexts that are stratigraphically below Clovis layers it is becoming increasingly clear that there are sites in North America that predate Clovis (Maggard and Stackelbeck 2008). Several of these pre-Clovis sites are located in regions close to Kentucky, such as Cactus Hill in Virginia, Topper in South Carolina, Big Eddy in Missouri, and Meadowcroft Rockshelter in Pennsylvania (Adovasio et al. 1999; Goodyear 1999; Lopinot et al. 2000; McAvoy and McAvoy 1997). Although people may have lived in what is now Kentucky before 9,500 B.C., the archaeological evidence of such utilization and occupation of this region has yet to be found. With the exception of a radiocarbon date (9,010±240 B.C.) and a retouched blade recovered below Late Paleoindian deposits from the Enoch Fork Shelter in Perry County, Archaeologists currently know very little about the timing of pre-Clovis occupations in Kentucky (Maggard and Stackelbeck 2008).

Based on projectile point styles, it is now relatively common across much of North America, including Kentucky, to refer to Paleoindian occupation in three distinct subperiods: Early, Middle, and Late Paleoindian. Kentucky's climate at 9,500 B.C. was much cooler and moister than today; however, a warming trend began around 8,500 B.C. This warming caused drastic changes in Kentucky's vegetation, and the composition of terrestrial resources (Tankersley 1996:21). The Early Paleoindian subperiod in Kentucky ranges from 9,500 to 9,000 B.C. and is associated with Clovis projectile points. These early inhabitants of Kentucky had a distinctive toolkit adapted to hunting and processing big game. The primary tools used by Paleoindian groups included fluted and finely worked lanceolate projectile points (Maggard and Stackelbeck 2008). However, large bifaces, prismatic blades, chipped stone knives, side and end scrapers, gravers and bone, ivory or antler implements, such as awls and sewing needles also are well-known (Haynes 2002; Tankersley 1996:24).

Research across North America is revealing that Clovis peoples living in small, highly mobile hunter-gatherer groups, relied on subsistence strategies more closely resembling the broad-spectrum Early and Middle Archaic subsistence practices than that of big game hunting specialization (Maggard and Stackelbeck 2008). Although mastodon,

mammoth, bison, horse, tapir, camel, and peccary are just a few of the big game mammals that Paleoindian groups hunted, they did not depend solely on mega-fauna resources but instead employed a mixed foraging strategy, exploiting small game, marine, and plant food resources.

The Middle Paleoindian subperiod (9,000-8,500 B.C.) is similar in most respects to the preceding Early Paleoindian Clovis subdivision; however, it is marked by technological changes, greater stylistic diversity of projectile points, and increased economic regionalization (Maggard and Stackelbeck 2008; Ray 2003). During the Middle Paleoindian subperiod Gainey and Cumberland replace Clovis points and a core and blade technology is replaced by a technique called bipolar lithic reduction. These technological changes most likely occurred in response to the use of a wider range of raw material resources, including some poorer quality materials. Changes in lithic technology also accompanied the increased use of locally available chert resources. The Middle Paleoindian subperiod witnessed noticeable climatic changes, including the retreat of the Pleistocene glaciers and the replacement of spruce and pine forest with hardwoods. These changes resulted in environmental instability and the apparent extinction of most species of Pleistocene mega-fauna (Maggard and Stackelbeck 2008). Environmental changes also appear to have resulted in a subsistence shift toward an increased reliance on regionally available plants and smaller game resources within a mixed foraging economy (Walker 2007).

The Late Paleoindian subperiod (8,500-8,000 B.C.) is once again marked by changes in Paleoindian toolkits. Like Early and Middle Paleoindian points, Late Paleoindian points are bifacially-flaked, lanceolate forms; however, they lack the characteristic flutes that are diagnostic of earlier projectile point types (Ray 2003; Tankersley 1996). The earlier point styles were replaced by unfluted point types, such as Lanceolate Plano points and Dalton Cluster points (Tankersley 1996:33). The toolkit became more diverse and included unifacial and bifacial tools, such as beveled and backed bifaces, unifacial and flake scrapers, adzes, retouched flakes, and drill/perforators (Goodyear 1999; Morse 1997; Tankersley 1996). As in earlier periods, a changing environment was the driving force behind the addition of new tool types. Ray (2003:46-50) suggests that four major changes in lithic technology occurred between the Late Paleoindian subperiod and their earlier predecessors: 1) a more intensive use of a wider range of locally available chert resources, as later points are often manufactured from lower quality materials; 2) channel fluting is replaced with basal thinning; 3) there is a marked reduction in the size of projectile points and; 4) more extensive resharpening of projectile point blade margins. Clovis, Cumberland and Gainey points are usually resharpened only along the distal end of the point blade. Late Paleoindian points; however, are frequently resharpened along the lateral edges of the blade indicating substantial reuse.

By Late Paleoindian time, large herbivores, such as mammoth, mastodon, horse, moose, and elk, had become or were going extinct and open areas were most likely limited to karst barrens and sandy terraces along major streams (Maggard and Stackelbeck 2008).

Game such as white-tail deer, bear, and turkey became important sources of food, and an extremely wide range of plants, including various nut species were collected.

ARCHAIC PERIOD (8,000–1,000 B.C.)

Retreating Pleistocene glaciers and the onset of the Hypsithermal climatic interval marked a shift in the climate of Kentucky and also in the lifeways of its inhabitants. The climatic changes that forced the northern migration/extinction of mega-fauna also changed the nature of Kentucky's forests. The once circum-glacial coniferous forests were replaced by mixed deciduous forests, thus allowing modern species of flora and fauna to expand. The Archaic period began around 8,000 B.C. with a slow shift from the exploitation of mega-fauna to a more varied subsistence strategy. Archaic groups began to exploit forest game like the white-tail deer as well as plant foods, especially nuts. Marine resources, such as freshwater mussels, also became important sources of food.

The Early Archaic subperiod (8,000-6,000 B.C.) is marked by numerous technological, social, and economic changes as hunting and gathering societies adapted to the climate change that occurred toward end of the last Pleistocene glaciation (Jefferies 2008:202). The appearance of corner and basal notched projectile points, such as the Kirk and LeCroy types, the relatively high percentage of projectile points made from high quality nonlocal cherts, and the lack of evidence for long-term occupation, suggested that mobile hunting groups continued to exploit relatively large territories much like their Paleoindian predecessors (Jefferies 2008:203). Early Archaic assemblages contain few tools related to collecting or processing plant food, and the paucity of these tool types indicates that these subsistence activities were of relatively minor importance compared with hunting activities (Jefferies 2008). The limited amount of Early Archaic material found at most sites, combined with a general absence of middens, features, and burials, suggests that most Early Archaic occupations were of short duration (Jefferies 2008:203).

The Hypsithermal climatic interval, which began around 7,000 B.C., caused the midcontinent to gradually become warmer and dryer than today (Jefferies 1996:47). This shift in climate affected the plants, animals, and people of Kentucky. The Middle Archaic subperiod (6,000-3,000 B.C.) was a time of increasing regionalization of cultures reflected by a variety of technological, settlement, subsistence, and social traits (Jefferies 2008:203). One of the most distinctive characteristics was the development of regional projectile point styles, such as Morrow Mountain, Matanzas, and Big Sandy II in eastern and central Kentucky (Jefferies 2008:203). Point types, such as Eva, Cypress Creek, and Big Sandy are found in western Kentucky (Jefferies 1996:47).

During the Middle Archaic subperiod a variety of specialized tools appear in the archaeological record. Additions to the Archaic toolkit, include formal and informal groundstone tools, such as axes, pitted anvils, grinding stones, and pestles, which were used to process plant foods (Jefferies 2008). Another important tool that appears during this period is the atlatl, which extended the range to which a spear could be thrown

(Jefferies 1996:48). In many parts of Kentucky, the ephemeral nature of most early Middle Archaic occupations suggests high group mobility, not unlike that found during the Early Archaic subperiod (Jefferies et al. 2005). In contrast with the early Middle Archaic, the presence of large late Middle Archaic sites containing deep middens, a high diversity of tool types, and burials indicates that some locations were intensively occupied on a long-term or year-round basis (Jefferies 2008:206).

The climate in the eastern United States began to become more moderate around 3,000 B.C. and Late Archaic (3,000-1,000 B.C.) groups remained largely mobile as represented by the numerous small sites dating to this subperiod. Differences in the size, number, and distribution of settlements are suggestive of changes in settlement systems and social organization from the Middle to Late Archaic (Jefferies 2008:209). In some parts of Kentucky, Late Archaic sites appear to be more dispersed and less intensively utilized than during the late Middle Archaic (Jefferies 2008:209).

Late Archaic subsistence focused on hunting white-tail deer and collecting hickory nuts. A wide variety of small animals, birds, and fish supplied dietary protein and fat and in certain areas, mussels obtained from streams were an important source of food. The presence of native and tropical cultigens at some Late Archaic sites suggests that groups were beginning to experiment with horticulture/gardening (Jefferies 1996:57). A wide range of flaked stone, groundstone, bone, and wood tools reflects this shift in subsistence (Jefferies 1996:55). Late Archaic projectile point types include an assortment of large straight, expanding, and contracting stem points, and smaller stemmed and side-notched types (Jefferies 2008:210). The presence of artifacts manufactured from nonlocal raw materials, such as copper and marine shell, at several sites along the Green River shows that some form of long distance exchange network existed during the Late Archaic (Jefferies 2008).

WOODLAND PERIOD (1,000 B.C. – A.D. 900 OR 1,000)

Pottery technology is the defining characteristic of the Early Woodland subperiod; however, it was adopted at different times across Kentucky. While chronometric determinations place pottery in some parts of Kentucky at or before 1,000 B.C., there are few dates prior to 600 B.C. and many more after 400 B.C. (Applegate 2008). The oldest pottery in central and eastern Kentucky is typically thick-walled cordmarked, plain, or fabric-impressed vessels tempered with coarse grit and rocks. This type of pottery is known as Fayette Thick (Griffin 1943). Fayette Thick vessels were barrel-shaped jars and large, deep, basin-shaped jars or cauldrons (Railey 1996:81). The most common pot was limestone or sandstone tempered jar of the type called Adena Plain (Haag 1940:75-79).

Early Woodland projectile point types mostly notched and stemmed forms, such as Wade, Gary, Turkeytail, and Camp Creek were used as knives, spears, or atlatl dart tips. Adena stemmed points became common after about 500 B.C. (Railey 1996). Pestles and

nutting stones were utilized in plant processing, hunting tools included atlatl weights. Hammerstones and abraders were used in tool manufacturing (Applegate 2008:343).

Another archaeological characteristic of the Early Woodland is the appearance of social or ritual sites that are spatially segregated from domestic habitations (Applegate 2008:345). Among these, are burial mounds, "sacred circles," ditched earthworks, and other enclosures. By about 500-400 B.C., groups in some parts of Kentucky began to construct burial mounds and irregularly shaped enclosures; these sites were typically associated with Adena (Applegate 2008:345). An early Adena site in central Kentucky is Peter Village. Peter Village is a large oval structure that was originally surveyed and mapped by Constantine Rafinesque in 1820 (Schlarb 2005). The first large oval enclosure built at Peter Village was a wooden stockade; it was later replaced by a 2 m deep exterior ditch (Clay 1985a; 1985b). Artifacts collected from the surface of the site, include stemmed and other projectile points, drills, gravers, reamers, scrapers, knives, celts, hammerstones, sandstone tubular pipe fragments, worked pipestone, slate pendant fragments and gorgets, and hematite cones/hemispheres (Applegate 2008). Items produced from barite or galena, such as boatstones or atlatl weights, beads, and cones/hemispheres, as well as Fayette Thick and Adena Plain ceramics also were recovered from the surface at Peter Village (Griffin 1943; Webb 1941). Despite its name, Peter Village did not function as a habitation site (Applegate 2008:461). According to Clay (1985b), the stockade and ditch-embankment features could have served defensive functions and/or defined "an area for secular or sacred purposes." Peter Village was a special activity site or "defensive resource exploitation center" where barite/galena was acquired from a nearby vein deposit and processed into rectangles and cones that commonly occur as grave goods at Adena mortuary sites (Clay 1985b:39). Food preparation and mortuary feasting, pottery manufacture, and chipped stone tool manufacture also occurred at the site (Applegate 2008:461).

Early Woodland (1,000-200 B.C.) subsistence patterns in Kentucky witnessed a slight change from Late Archaic times. Hunting and gathering continued as the main subsistence activities, with garden crops supplementing more of the diet (Applegate 2008). Animal protein was obtained from a variety of sources, including white-tail deer, box turtles, small mammals, birds, and in some areas, fish and mussels (Applegate 2008:344). Much like the Archaic period, nuts continued to be an important food source and they were gathered and stored for year-round consumption. However, an important development that occurred during Early Woodland times was the intensified utilization and cultivation of weedy plants and cucurbits (Applegate 2008). Indigenous plant cultigens of the Eastern Agricultural Complex (EAC) found at Early Woodland sites, include sunflower, sumpweed or marsh elder, goosefoot, erect knotweed, giant ragweed, and maygrass. Gourd and squash, some species of which were indigenous cultivars, also are found in Early Woodland plant assemblages (Applegate 2008:344; Watson 1985:101)

Subsistence practices were seasonal. Planting, tending gardens, and fishing were spring and summer activities; while harvesting wild and domesticated plant species, as well as gathering and storing mast products, were autumn activities (Railey 1996). Hunting deer and other game was a late autumn and winter activity.

The aboriginal use of subterranean caves became popular for a relatively short time during the Early and Middle Woodland subperiods. Caves across Kentucky, Tennessee, Indiana, and Alabama have been identified, through radiocarbon dating, as having been explored by prehistoric humans during both subperiods. These people exploited caves to mine minerals, such as gypsum and mirabilite; to quarry chert for tools; to bury their dead; and to reach dark zones deep within caves for ritualistic purposes (Crothers et al. 2002). Bundles of river cane and/or small sticks were used for lighting and often dabbed on the wall to keep the torch burning at an even rate for longer light usage; woven fiber slippers provided added foot protection; small rocks were used for battering gypsum off cave walls; and river cane and/or larger wooden digging sticks were used to prospect for and retrieve selenite crystals from the floor and wall sediments within caves. While it is not exactly clear why minerals, like gypsum (hydrous calcium sulfate) and mirabilite (hydrous sodium sulfate), were mined so intensively during this period of prehistory, modern archaeological experiments with these minerals have determined that, with the addition of water or grease, gypsum powder makes a crude white plaster base similar to plaster of paris. Gypsum crystals (satin spar and selenite) could have been used in ritual or ceremonial purposes, and mirabilite and epsomite are both laxatives and have the additional medicinal properties of Glauber's salts and Epsom salts (Crothers et al. 2002). Mirabilite also tastes somewhat salty, hinting at its possible use in cooking and meat preservation (Crothers et al. 2002:512).

The use of exotic raw materials, first documented at the end of the Early Woodland, peaked during the early Middle Woodland and continued into the Middle Woodland (200 B.C.-500 A.D.) subperiod in Kentucky (Applegate 2008). Items, such as copper bracelets, breastplates and gorgets, copper and mica head ornaments, marine shell beads, and Vanport (Flint Ridge of Ohio) chert bladelets are among the types of artifacts found almost exclusively in mortuary-ritual contexts (Applegate 2008:346). There is less information regarding Middle Woodland subsistence compared to earlier and later subperiods; however, faunal and floral assemblages indicate a generalized economy based on food collection and food production (Applegate 2008).

The Adena and Hopewell concepts, which emerged in the early part of the twentieth century, were based on research that focused on the burial practices of Woodland peoples. These two concepts are the synthesis of the excavation of several small burial mounds in Kentucky and southern Ohio (Railey 1996). Most Kentucky archaeologists concur that Adena spans the late Early Woodland to early Middle Woodland (Clay 1985b; Henderson et al. 1988; Pollack et al. 2005; Railey 1996; Richmond and Kerr 2005; Schlarb 2005). The vast majority of Adena earthwork sites in Kentucky are thought to date from 500 B.C. to A.D. 250 (Anderson and Mainfort 2002; Clay 1980, 1983; Fenton and Jefferies 1991; Seeman 1986). Adena burial mounds seldom represent a single event but instead contain several individual tombs, each tomb being covered with earth at the conclusion of the mortuary event (Railey 1996). Adena mortuary items include projectile points, stone gorgets, pipes, celts, simple and engraved tablets, galena, bone and shell tools, and beads (Railey 1996). Hopewell mounds differ from Adena mounds in that they tend to cover a single tomb (Railey 1990:254). Additional interments are distributed horizontally in

Hopewell contexts instead of vertically, as in Adena contexts (Railey 1990:254). Whole ceramic vessels, mica cut-outs, obsidian artifacts, platform pipes, terra-cotta figurines, and copper celts are items that appear in Hopewell contexts and are absent or rare in Adena (Railey 1990:254).

Hopewell sites date from A.D. 1-500 and tend to be concentrated in southern Ohio. However, a number of Woodland sites showing Hopewell influence have been documented in Kentucky (Applegate 2008). Clay (1991:35) has interpreted "Hopewell as an extension of the complexity that developed in Adena." Railey (1996:100) concluded that "Adena should be viewed as an early regional expression of Hopewell rather than its predecessor." Applegate (2006) suggested a similar interpretation, stating that Adena developed during the late Early Woodland in Ohio and Kentucky. By the early Middle Woodland times in Ohio, the Adena mortuary-ritual complex morphed into or was superseded by Hopewell (Applegate 2008). In Kentucky; however, the predominate mortuary-ritual complex continued to be Adena with limited and irregular influences from Ohio Hopewell, Appalachian Summit Hopewell, Copena Hopewell, and to a lesser extent, Illinois Hopewell (Applegate 2008). In essence, the distinction between Adena and Hopewell in Kentucky is much less clear-cut than it is in Ohio. This is not surprising, because Kentucky is located in an area that was a "hinterland" or "periphery" to classic Hopewell (Applegate 2008).

The transition from Middle to Late Woodland (A.D. 500-1000) times in Kentucky does not appear to have been abrupt. Instead it was a gradual process, linked to changes in plant subsistence practices and hunting technology, a decline in long-distance trade networks, and changes in ritual expression (Pollack and Henderson 2000:615). In some parts of Kentucky, the Late Woodland was "a time of appreciable cultural change," including population increase, development of the bow-and-arrow technology, changes in the amount of mound construction, shifts in social organization, and subsistence change (Anderson and Mainfort 2002). During the early Late Woodland wild plants and animals continued to be the foundation of the subsistence economy. Cultivation of native plants continued and may have intensified (Applegate 2008:348). Though small amounts of maize are present in Middle and early late Woodland contexts, it was not until the terminal Late Woodland (ca. A.D. 800) that it became a significant component of regional diets (Applegate 2008:348). Early Late Woodland ceramic assemblages are marked by a decrease in vessel wall thickness and a general increase in jar size relative to the Middle Woodland subperiod (Pollack and Henderson 2000). These larger vessels were used to cook nutrient rich starchy-oily seeded crops. Also during this period in time, important technological changes appear with the replacement of notched and stemmed projectile points with smaller, finely knapped corner notched points of the Jacks Reef type and triangular points, marking the introduction of the bow-and-arrow into Kentucky.

MISSISSIPPI/FORT ANCIENT PERIOD (A.D. 900-1750)

The period from A.D. 900 to 1750 in Kentucky is defined by two different cultural traditions: Mississippian and Fort Ancient. The Fort Ancient tradition flourished in central, northern, and eastern Kentucky, as well as southeastern Indiana, southwestern Ohio, and

western West Virginia. Mississippian peoples occupied western Kentucky, as well as the extreme southern and southeastern portions of the state.

The Fort Ancient tradition is generally believed to be a response by local populations to increased reliance on agriculture, increased sedentism, and an accompanying rise in sociopolitical complexity (Sharp 1990:469). Fort Ancient subsistence practices and their environmental focus appear to have developed early and stabilized quickly, changing little over a time spanning 750 years (Henderson 2008). Maize, beans, squash, and sunflower were staples of the Fort Ancient diet, but gourds and tobacco, and to a lesser extent, sumac was grown (Henderson 2008). Relative to earlier Late Woodland peoples and contemporary Mississippian groups, there was much less emphasis on starchy-oily seeded crops, such as maygrass and marshelder (Rossen 1992). The agricultural practices of Fort Ancient groups were supplemented by a variety of small mammals, reptiles, fish, and freshwater mussels. Fort Ancient peoples also depended on deer, elk, and wild turkey for subsistence (Henderson 2008). There is evidence for domesticated dogs and possibly the keeping, but not domesticating, of wild turkey (Henderson 2008:744).

Kentucky Fort Ancient settlements consisted of autonomous villages and small camps. Throughout much of the Fort Ancient culture area, settlements were located along floodplains or terraces of the Ohio River and its major tributaries; however, villages also were located on interior ridges within close proximity of a variety of drainage types and springs (Henderson 2008:745). These villages varied from circular/elliptical, to a linear arrangement of structures located along a ridge or terrace. Fort Ancient community size increased over time and early villages may have been occupied by no more than 40 or 50 people (Henderson 2008). During the Middle Fort Ancient (A.D. 1200-1400) subperiod, villages may have held 90 to 300 individuals and by the Late Fort Ancient (A.D. 1400-1750) subperiod villages are estimated at between 250 and 500 people (Henderson 2008). The development of circular villages and the construction of burial mounds during the Middle Fort Ancient subperiod provide evidence for long-term group planning and socio-political cooperation, and the formalized expression of social inequality (Henderson 2008:745). During the Late Fort Ancient, houses take on the shape of large rectangular structures and differ greatly from older Fort Ancient houses. Distinctive artifacts were small triangular projectile points, bifacial end scrapers, disk pipes, bone and shell beads, copper or brass tube beads or pendants, and shell gorgets. European trade goods also have been reported from Late Fort Ancient sites. Copper tinkling cones and catlinite artifacts have been found in association with extended burials covered with shingled rock slabs (Henderson 2008).

Ceramics are the most common and diagnostic Fort Ancient artifact class. Fort Ancient ceramic vessels were made from locally available clays and are grit, limestone, sandstone, and/or shell tempered. Stylistic differences among Fort Ancient Jars have been used to define regional divisions e.g., (Anderson, Jessamine, and Manion) within the tradition prior to A.D. 1400 (Henderson 2008:741). After A.D. 1400 ceramic vessel types such as bowls and saltpans become common. Vessel rims and necks can be decorated with incising, punctations, or notching.

Fort Ancient chipped stone tools were made from locally available high- to medium-quality cherts (Henderson 2008:742). The lithic toolkit of Fort Ancient peoples included small, generally isosceles triangular arrow points as well as a variety of cutting, scraping, and drilling tools manufactured not only from stone but also animal bone (Railey 1992). Groundstone tools include sandstone abraders, manos, or nutting stones (Henderson 2008). Smoking pipes were manufactured from clay, sandstone, Ohio pipestone, limestone, and catlinite. Chipped limestone disks are diagnostic of the Middle Fort Ancient subperiod (Henderson 2008). Fort Ancient tools also were manufactured from shell and bone. Fort Ancient peoples produced shell or bone spoons and hoes, bone awls, needles, drifts, and beamers. Ornaments in the form of beads, plain or engraved gorgets, earrings, and bracelets, were made of animal teeth and bone, shell (both freshwater and marine), and cannel coal (Henderson 2008:743).

Mississippian society has been exemplified as that of a chiefdom in which leadership roles were ascribed, society was ranked, and the power of chiefs could be great but was usually not absolute (Lewis 1996; Pollack 2008). In addition, Mississippian groups shared a fundamental iconography (Pollack 2008). Mississippian groups throughout the Southeast, including those in Kentucky, shared an economy based on hunting; the cultivation of maize, squash and native plants; and the collection of wild plants (Pollack 2008:605). Gathered plants included hickory nuts, persimmons, and the seeds of goosefoot, erect knotweed, and maygrass. Animals commonly hunted for consumption, include white-tail deer, wild turkeys, turtles, and fish.

The Mississippian settlement system was made up of a hierarchy of habitation sites, most notably, administrative centers, that featured plazas flanked by buildings positioned on platform mounds and sizable populations (Lewis et al. 1998; Pollack 2008:605). The platform mounds constructed at these sites were home to elite members of society. Administrative centers were the social, political, and religious centers of Mississippian society. Other Mississippian site types consisted of large villages, small villages, hamlets, farmsteads, and cemeteries (Pollack 1998, 2008). Hamlets were larger than a farmstead, but smaller than villages.

Large hoes, adzes, abraders, gravers, and picks joined the bow-and-arrow as the main components of the Mississippian toolkit. Non-local materials, such as marine shell and copper, also have been recovered from Mississippian sites. Muller (1986:251) notes that the appearance of these artifacts probably represents hand-to-hand exchange rather than the long-distance movements of traders. Ceramic assemblages consisted of jars, bowls, plates, and pans and the use of shell temper increased as the Mississippian period progressed. Most of the ceramics from lower Ohio Valley sites are plain wares, either fine or coarsely tempered (Muller 1986:238). Finely tempered ceramics were being used primarily for activities like eating, while coarsely tempered wares were being used for food storage and/or food preparation. Decorated ceramics, include incised or trailed designs often found on jars, and rarely negative painted and red slipped treatment found on bowls and bottles.

The centuries between A.D. 1300 and 1700 witnessed both the greatest development and the end of Mississippian culture in Kentucky and most Mississippian sites had been abandoned by A.D. 1400 (Lewis 1996). Changes in environmental conditions and the reduction of agricultural yields may have contributed to the downfall of a single chiefdom; however, disruption to Mississippian interaction spheres and access to prestige goods and esoteric knowledge may have undermined local elites' positions within their respective societies (Pollack 2008). Without the goods they needed to validate their positions in society, local elites may have been unable to withstand the challenges to their authority, which ultimately led to their demise (Pollack 2008:608). In the Caborn-Welborn region and in far southwestern Kentucky, Mississippian sites were occupied well into the 1600s (Pollack 2008:608). The recovery of objects associated with European manufacture, have been found at several Caborn-Welborn sites, further indicating occupation into the seventeenth century (Pollack 2008). Ultimately, the collapse of these societies and the subsequent abandonment of their respective settlements and regions are tied to Euro-American exploration and settlement of the Ohio and Mississippi river valleys, and the disruption of indigenous exchange networks (Pollack 2008:608).

CONTACT PERIOD (A.D. 1540-1795)

In Kentucky, the Contact period extends from when the first indirect effects of European presence were felt by Native American cultures in the area (ca. A.D. 1540), to the signing of the Greenville Treaty in 1795 (Henderson et al. 1986:1). During this period Europeans traded Old World goods (e.g., firearms, metal tools, trinkets, and cloth) first indirectly, and then, after about the 1730s, directly to the indigenous inhabitants. In return native peoples provided the Europeans with information relating to survival (e.g., aboriginal hunting methods, the uses of native materials for shelters and canoes, and the uses of native plants for nourishment and medicinal cures).

The knowledge provided by Native groups could only be built upon by the Europeans and not lost. However, continued demand for European goods ultimately led to material dependency on their European neighbors. This dependency changed the economic, social, and political character of Native culture. These changes, along with conflicts and diseases engendered by the European presence, led to the extinction, amalgamation, and migration of the Ohio Valley indigenous groups (Henderson et al. 1986:2).

European households that moved to the Ohio Valley and Kentucky invaded the territories of the Cherokee, Chickasaw, and Shawnee. The Shawnee, who struggled with early Kentucky settlers more than any other tribe, probably numbered no more than three or four thousand by 1750 (Harrison and Klotter 1997). Many Shawnee and other indigenous groups left Kentucky by the end of the 1700s. Those who remained were absorbed into the culture of the new Commonwealth of Kentucky, although some kept alive the memories of their traditional ways of life.

HISTORIC PERIOD[1]

Warren County was created in 1796 from a portion of Logan County. It was named for General Joseph Warren, who gained notoriety as the dispatcher of William Dawes and Paul Revere to warn of the British invasion. He later died a hero at the Battle of Bunker Hill in the Revolutionary War (Bryant 1992b:933). In 1798, the county seat of Bowling Green was incorporated near the Barren River on two acres of land donated by Virginian brothers Robert and George Moore (Perrin et al. 1888:646; Bryant 1992a:106).

The region's fertile soil and proximity to several waterways allowed for rapid growth in the early nineteenth century. Early river traffic consisted of flatboats and barges along cleared channels. The first steamboat on the Barren River arrived in 1828, and by 1833, the state appropriated some of the first slack-water navigation funds to the Green and Barren rivers. The construction of a series of locks and dams opened the valleys up for major freight traffic and thereby stimulated the growth of Bowling Green. Also contributing to Bowling Green's viability, a portage railroad connected the Barren to the present-day courthouse in 1832, allowing mules to pull supplies into town more swiftly (Goode 1992:55; Smith 1895:523; Bryant 1992a:106).

The arrival of the Louisville & Nashville Railroad (L&N) in 1859 set the stage for Confederate and Union disputes over the corridor for the length of the Civil War. The greatest of these occurred in the fall of 1861. Confederate General Simon Bolivar Buckner and his troops fortified Bowling Green's hills, rails, and bridges and maintained the city as the Confederate State of Kentucky's capital. Discouraged by nearby Union victories, they burned the Barren River bridges, the railroad depot, and other buildings before abandoning the city only a few months later in February of 1862 (Bryant 1992a:106; Bryant 1992b:933).

After the war, Warren County grew to be one of the wealthiest in Kentucky. It thrived agriculturally and primarily produced corn, oats, wheat, tobacco, and livestock. River traffic increased, and the United States government took over maintenance of the navigation system in 1888. As the county's only urban center, Bowling Green quickly rebuilt and expanded its commercial district. A waterworks system and the county's fourth courthouse were completed from 1867 to 1868. Predecessors to Western Kentucky University and a variety of other schools opened in the coming decades, and streetcars (first mule-drawn, then electric) arrived in the 1880s and 1890s (Goode 1992:55; Bryant 1992a:106; Bryant 1992b:933).

The county remained largely unchanged until after World War II. In 1965, steamboat and freight traffic ceased on the Barren River after Lock No. 4 and the dam at Woodbury broke. With plans laid for the National Interstate and Defense Highways System in the 1950s, Interstate 65 was completed through the central and eastern part of the county by the late 1960s. By the 1970s, the Green River Parkway was completed through the western part. These routes kindled an industrial boom that included a Corvette assembly

[1] Adapted from Wetzel 2009

plant among other automotive and electronic operations (Goode 1992:55; Bryant 1992a:106-107).

Within a very short span, the county transitioned from primarily agricultural to a population that was 64 percent urban, 23 percent rural, and 13 percent farm based in 1979. The number of farms increased but the size decreased while many people worked full-time in Bowling Green and only farmed in their spare time. Late-twentieth century products included tobacco, corn, and hay as well as beef cattle, dairy cattle, and hogs (Bryant 1992b:933).

PREVIOUS INVESTIGATIONS

Before initiating fieldwork, site files, archaeological reports, and site information housed at the Office of State Archaeology (OSA) were consulted for Warren County in order to assess previous archaeological work. Most of the reported sites have been identified by professional archaeologists affiliated with federal agencies, state universities, or private archaeological contract firms. A review of previous archaeological research indicated that all or portions of 20 archaeological surveys have been conducted within a two-kilometer radius of the project area. The methods used in the surveys were a combination of pedestrian survey and shovel probing.

Of the 20 archaeological surveys undertaken within or in the vicinity of the project area, no archaeological sites were found during the course of 10 surveys. No find reports were prepared by Shock (1977), Evans (1994), Applegate (2004b), Haney et al. (2006), Arnold (2006a, 2006b), Hockersmith et al. (2011), Wetzel and Schatz (2011), and Barrett (2016, 2018). During the course of the remaining projects, 18 archaeological sites were documented within two kilometers of the project area. Reports could not be found for an additional four sites.

In 1976, an archaeological survey was undertaken of the proposed relocation of US 31W and 68 on the northeast side of Bowling Green (Shock and Foster 1976). During the course of this study five archaeological sites (15Wa30, 15Wa302, 15Wa315, 15Wa945, and 15Wa961) were examined. Sites 15Wa302, 15Wa315, and 15Wa945 are open habitation sites (Schock and Foster 1976). Based on the recovery of Adena and Turkey-tail projectile points, blades, and large unifacial side scrapers both were assigned to the Late Archaic or Early Woodland subperiods (Schock and Foster 1976). The temporal affiliation of Site 15Wa315 was not determined. Site 15Wa961 consisted of an historic dump (15Wa961) and 15Wa30 consisted of the remains of the Baker Hill house. The National Register eligibility of this site has yet to be assessed.

In 1982, a borrow site was investigated by Donald Janzen on the same property as the Baker Hill site (15Wa30). Based on previous disturbance, Janzen (1982) concluded that the site lacked integrity, and warranted no further work.

In 1983, an archaeological survey of 25 miles of water lines was undertaken by the University of Kentucky Program for Archaeological Assessment. This work resulted in the documentation of six archaeological sites (15Wa41-46). All were classified as Native American open habitation sites without mounds and none were considered to be eligible for listing in National Register of Historic Places (O'Malley 1983).

In 1986, an archaeological survey of 5.3 miles of a proposed alternate for the Bowling Green Bypass was conducted by Arrow Enterprises (Schock 1986). This work resulted in the documentation of six archaeological sites (15Wa49-54). All were classified as Native American open habitation sites without mounds, with Site 15Wa53 also having an historic component. Of the six sites, three (15Wa49, 15Wa51, and 15Wa52) were determined to be not eligible for listing in the National Register of Historic Places. Sites 15Wa50, 15Wa53, and 15Wa54, which had a Late Archaic component, were determined to be potentially eligible for listing in the National Register of Historic Places and to warrant additional work. None of these sites are located within two kilometers of the project area.

In 1993, an archaeological survey of an area to be impacted by the construction of a plastics plant northeast of Bowling Green was conducted by Arrow Enterprises (Schock 1993a). During the course of this study, one Native American open habitation site was documented (15Wa74). This site was occupied from the Middle Archaic to the Middle Woodland. Subsequent testing of the site did not document any intact subplowzone deposits. Based on the results of this work the site was determined to be not eligible for listing in the National Register of Historic Places (Schock 1993b).

In 1994, an archaeological survey was conducted of 2 miles of highway corridor by Richard Cultural Horizons (1994). During the course of this study they documented two historic archaeological sites (15Wa75 and 15Wa76). Both were determined to be not eligible for listing in National Register of Historic Places. Neither site is located within two kilometers of the project area.

In 2004, Darlene Applegate conducted an archaeological survey of 1.24 acre lot in advance of the construction of a proposed healthcare center (Applegate 2004a). During the course of this study Site 15Wa120, an historic residence, was documented. This site was determined to be not eligible for listing in National Register of Historic Places.

In 2004, Arrow Enterprises conducted a survey of 47 acres for a proposed housing project (Schock 2004). During the course of this study two sites (15Wa118 and 15Wa119) were documented. Both were open habitation sites that had Native American and historic components. Site 15Wa118 also yielded a Late Archaic/Early Woodland Turkeytail point. Neither site was determined to be eligible for listing in National Register of Historic Places.

Another 2004 archaeological survey was conducted by the ASC Group (Striker 2004). This work was undertaken in advance of the extension of the Bowling Green Bypass to Seventh and College Street. During the course of this study two historic residential sites (15Wa116 and 15Wa117) were documented. Both were determined to be potentially

eligible for listing in the National Register of Historic Places. Additional work conducted at these sites focused archaeological resources associated with five urban houselots that were initially developed by wealthy land speculators in the 1840s (Stottman and Stahlgren 2006). By the mid- to late 1800s, middle and working class families owned and lived on smaller house lots along Center Street. As Bowling Green grew in early to mid-twentieth centuries, these families were replaced by African-American tenants who resided in shotgun houses and cottages on small house lots. The work conducted at these sites project highlighted the transformation of the growth of Bowling Green from a small community to a city with distinct neighborhoods. As Bowling Green and other communities grew, large blocks of land were subdivided and neighborhoods developed. Over time, these neighborhoods were redeveloped as successive generations of buildings and people occupied the landscape.

In 2009, an archaeological survey was conducted by Corn Island of a 20 acre area in advance of greenway development in Riverfront Park (Wetzel et al. 2009). During the course of this study, one large Native American open habitation site (15Wa166) was documented. Among the materials recovered were 77 pieces of debitage, some fire-cracked rock, and nut charcoal. The few historic artifacts collected date to the twentieth century and are likely associated with the agricultural use of the property over the years. No diagnostic artifacts were recovered to indicate the temporal affiliation of the Native American materials. Of note, was the presence of a possible buried A horizon just beneath the plowzone. The bottom of the A horizon varied in depth from approximately sixty centimeters below surface to up to one hundred centimeters below surface. Artifacts were recovered from both the disturbed plowzone and the buried A horizon. Based on the presence of the possible buried A horizon and the association of Native American artifacts, Wetzel et al. (2009) concluded that Site 15Wa166 was potentially eligible for listing in the National Register of Historic Places. Additional work was recommended if the site could not be avoided and preserved in place.

In 2016, the Program for Archaeological Research conducted an archaeological survey of improvements to Reservoir Hill Park. Based on the results their study they redefined Site 15Wa942. This resulted in expansion of the site boundaries to include the bastion and linear earthwork fortification remnants of portions of Fort C. F. Smith, which is listed on the National Register of Historic Places.

Sites (n=4) that were not reported on in a professional report that are located within two kilometers of the project area, include 15Wa15, 15Wa29, 15Wa327, and 15Wa644. Data on Sites 15Wa15 and 15Wa29 were collected from site survey forms on file at the Office of State Archaeology in Lexington, Kentucky. Unfortunately, information is lacking for Sites 15Wa327 and 15Wa644.

Site 15Wa15 was recorded by Western Kentucky University in 1968 (Keeling 1968). It is situated on a hilltop next to a stream that flows into Barren River. Artifacts were noted in a plowed field on this hilltop, and a possible mound was observed on the hilltop. Artifacts collected from the site include one Motley projectile point, four unspecified projectile points, 33 other chipped-stone tools, one blade, and unspecified

number of chert flakes. Based on the presence of the Motley point the site was determined to have an Early Woodland component,

Site 15Wa29 was recorded by Western Kentucky University in 1969. The site is situated on cultivated knolls in a housing subdivision. Artifacts collected from the site were concentrated in three areas and include an unspecified number of projectile points and other chipped-stone artifacts. Site 15Wa29 was assigned to the Archaic period (Applegate 2004a).

Sites 15Wa317 and 15Wa644 are of undetermined site types, but most probably represent open habitation sites. Additional information is lacking on these sites, as site forms could not be located.

HISTORIC MAP REVIEW

Historic maps of the region were examined for evidence of historic landowners and/or possible structures within the project area. The earliest map reviewed (the 1860 Oakes hand-painted map) shows no information regarding property owner or structures in the area of the APE (Figure 3.1). The 1877 Beers and Lanagan map indicates that a Mrs. M. E. Baker owned the property on which the project area now lies, though no indications of structures were depicted within the project area (Figure 3.2).

Figure 3.1. Photograph of the 1860 Oakes Map of Bowling Green, Kentucky.

Figure 3.2. Detail of the 1877 Beers and Lanagan Map of Bowling Green showing Project Area. Approximate boundaries of project area in orange.

CHAPTER 4
FIELD METHODOLOGY

Fieldwork was undertaken on the dates 8/26-8/28 and 8/31-9/4 and took 254 person hours to complete. During the course of this study 165 shovel probes were excavated (Figure 4.1). Shovel probes were excavated every 20 m on transects spaced 20 m apart. When debitage was recovered from SP121 placed along the southwestern edge of Site 15Wa166 three radials were excavated (one 10 m to the northwest, one 10 m to the southwest, and one 10 m to the west) to better define the southwestern limits of the site. Each shovel probe measured 30-35 cm in diameter and most were excavated until sterile subsoil was encountered. Some shovel probes were not excavated to subsoil due to standing water. All soils from shovel probes were screened through 6.35 mm mesh. All shovel probe locations were recorded using a Garmin GPSmap 62s hand-held receiver.

During the course of this study shovel probes were excavated on 18 transects (A-R). Transect A was placed to the northeast and parallel to the paved trail that borders Site 15Wa166 (Figure 4.1). Transects B-G were placed in the open field to the southwest of the quail habitat and parallel to Transect A (Figure 4.2). Transects H-M were placed in the southwest portion of the project area and were oriented perpendicular to the river. Disturbed soil, park trails, previous road construction, a cement foundation, and large tree roots interfered with some of the shovel probes placed along these transects (Figures 4.1 and 4.2). Shovel probes were not placed in the northern wooded portions of the project area because of slope, erosion, a streambed and underground waterlines.

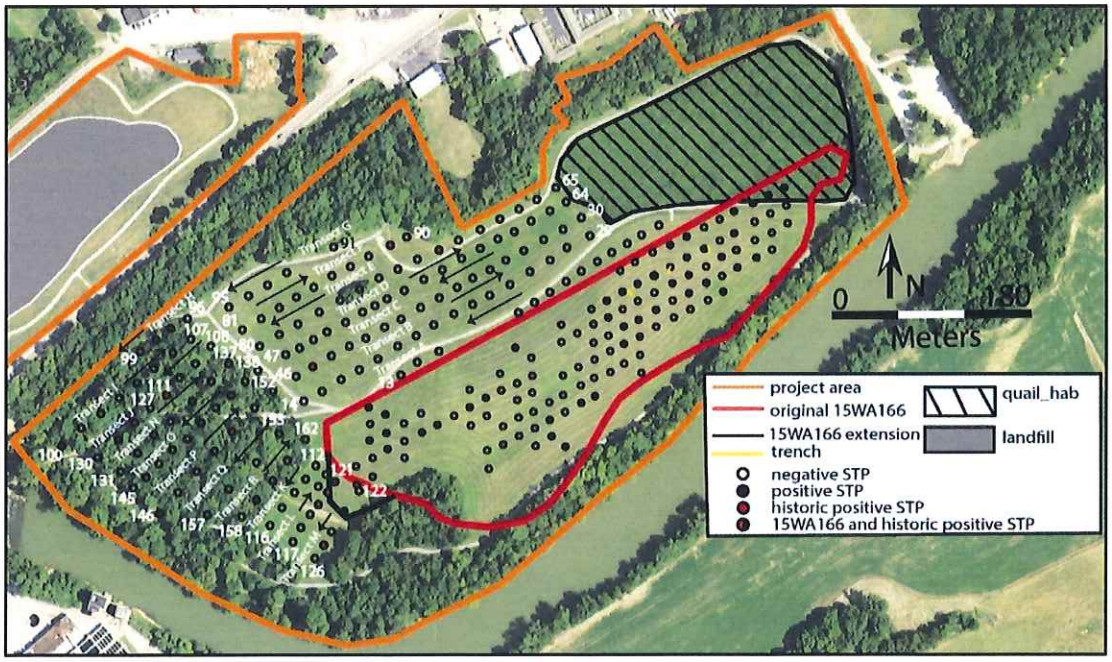


Figure 4.1. KAS survey transects A-R and shovel probes excavated by Corn Island within the boundaries of Site 15Wa166. White numbers indicate shovel tests at the end of transects. Arrows indicate direction of each transect.

A small track-hoe with a toothless bucket was used to excavated three 50 cm x 4 m long trenches. Each trench was excavated to subsoil. The track-hoe trenches were oriented northwest to southeast and perpendicular to the shovel probe transects (Figure 4.2). The northeast wall of each trench was troweled, photographed, and drawn.

Following the documentation of the trench wall, a 1 x 1 m unit was placed adjacent to the northeast wall. The units were excavated stratigraphically. The plowzone was removed as one level. Depending on the thickness of the remaining zones, they were either excavated as a single level or subdivided into 5 or 10 cm levels. All of the soil was screened through 6.35 mm mesh, and bagged by zone and level. When a feature was encountered it was photograph and mapped in planview. The feature fill was then removed and screened through 6.35 mm mesh, with a sample retained for flotation. After excavation a profile was drawn.

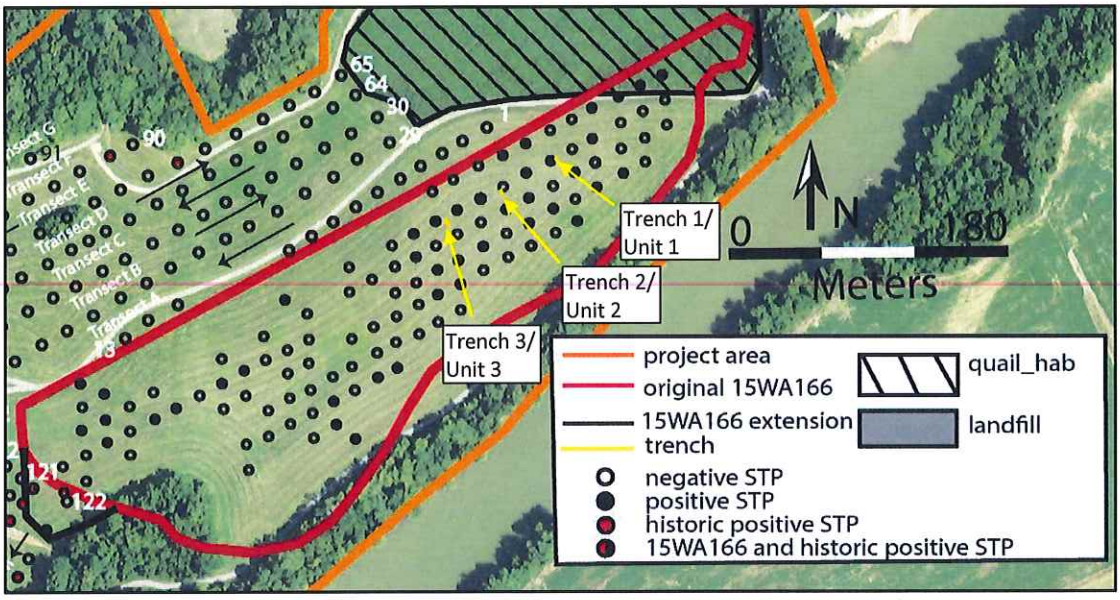


Figure 4.2. Location of excavation trenches and associated units.

The materials recovered were taken to the Western Kentucky University Archaeology Laboratory where they were washed, catalogued, and analyzed. All materials recovered during the course of this study will be curated with the William S. Webb Museum of Anthropology at the University of Kentucky.

CHAPTER 5
CHIPPED STONE

The chipped stone assemblage recovered from the project area consists of only debitage (n=64). Previous work undertaken at the site by Corn Island recovered an additional 77 pieces of debitage (Wetzel et al. 2009).

ANALYTICAL METHODS

Current approaches to the analysis of lithic artifacts include a study of the step-by-step procedures utilized by knappers to make tools. Terms used to commonly describe this process are *chaine operatoire* or reduction strategy (Grace 1989, 1993, 1997; Tixier and Roche 1980). The analysis of stone tool assemblages provides insights into the processes by which flintknappers produced their implements. It also enables archaeologists to characterize the technical traditions of specific cultural groups (Grace 1997).

The production of any class of stone tools involves a process that begins with the selection of a suitable raw material. The basic requirements of any raw material to make flaked stone artifacts include the following: 1) it can be easily worked into a desirable shape; and 2) sharp, durable edges can be produced as a result of flaking (Grace 1997). Once an adequate source is located and a raw material is selected, the process of tool manufacture begins. Two different strategies can be utilized. One involves the reduction of a material block directly into a tool form, like a biface, or the production of a core. The second involves the preparation of a block of raw material so that flakes or blanks of a suitable shape and size can be detached. These blanks are then flaked by percussion or pressure flaking into a variety of tool types, including scrapers, bifacial knives, and projectile points.

Experimental work has shown that the former manufacturing strategy, involving a raw material block, begins with the detachment of flakes with cortical or natural surfaces. This is accomplished by direct percussion, usually involving a hard hammer (stone) that more effectively transmits the force of the blow through the outer surface. Having removed a series of flakes and thus created suitable striking platforms, the knapper begins the thinning and shaping stage. The majority of the knapping is conducted with a soft hammer (antler billet). The pieces detached tend to be invasive, extending into the mid-section of the biface. A later stage of thinning may follow, which consists of further platform preparation and the detachment of invasive flakes with progressively straighter profiles in order to obtain a flattened cross-section. By the end of this stage, the biface has achieved a lenticular or bi-convex cross-section. Finally, the tool's edge is prepared by a combination of fine pressure work and pressure flaking if desired. It should be noted that flakes derived from biface reduction are sometimes selected for bifacial, unifacial, and expedient tool manufacture.

The second type of manufacturing trajectory, utilizing a flake or blank, begins with core reduction and the manufacture of a suitable flake blank. The advantages of employing a flake blank for biface reduction include the following: 1) flakes are generally light-weight and can be more easily transported in large numbers than blocks of material; and 2) producing flakes to be used for later biface reduction allows the knapper to assess the quality of the material, avoiding transport of poorer-grade chert.

The initial series of flakes detached from the flake blank may or may not bear cortex. However, they will display portions of the original dorsal or ventral surfaces of the flake from which they were struck. It should be noted that primary reduction flakes from this manufacturing sequence could be entirely noncortical. Therefore, the presence of cortex alone to define initial reduction is of limited value. Biface reduction on a flake involves the preparation of the edges of the piece in order to create platforms for the thinning and shaping stages that follow. In most other respects, the reduction stages are similar to those described above, except that a flake blank often needs additional thinning at the proximal or bulbar end of the piece to reduce the pronounced swelling and achieve a thinned final product.

FORMAL CHIPPED STONE TOOLS

The identification of formal and informal chipped stone tools is useful in addressing questions involving the trajectory of reduction and the general activities undertaken by the occupants of a site(s). Formal tools are defined as implements with a standard morphology. Formal tools, such projectile points, may in fact be produced for a specific anticipated function or functions. However, we also know they were often used to perform a wide variety of tasks. Identification of formal chipped stone tools recovered from this site was based on comparisons with previously defined types (Justice 1987).

There were no formal stone tools recovered from Site 15Wa166.

INFORMAL CHIPPED STONE TOOLS

Informal chipped stone tools are those artifacts that were manufactured for a specific task at, or shortly before the point at which they are to be used. These tools either show evidence of utilization without modification, or minimal modification through nominal retouching.

There were no informal stone tools recovered from Site 15Wa166.

DEBITAGE (N=64)

The French term *debitage* has two related meanings: 1) the act of intentionally flaking a block of raw material to obtain its products, and 2) the products themselves (Grace

1989, 1993). Commonly, the term *debitage* is used by prehistorians to describe flakes that have not been modified by secondary retouch and made into tools. For the purpose of this analysis, which is based on the research of Grace (1989, 1993), each type of debitage has been assigned to a specific class. These classes are as follows:

1) Initial reduction flakes (Initial): produced from hard hammer percussion; are typically thick; display cortex on all or part of their dorsal surfaces; and have large plain or simply faceted butts (striking platforms).

2) Unspecified reduction sequence flakes (URS): applies to those pieces to which a specific reduction sequence cannot be assigned. With these pieces, it is impossible to tell whether they have been detached by simple core reduction or biface manufacture. For example, cortical flakes initially removed from a block of material can appear similar in both core and biface reduction strategies.

3) Biface initial reduction flakes (BIR): produced from hard or soft hammer percussion; are typically thick; display cortex on part of their dorsal surfaces; and have large plain or simply faceted butts (striking platforms). These flakes display more dorsal scars than initial reduction flakes.

4) Biface thinning and shaping flakes (BTS): result from shaping the biface while its thickness is reduced; generally lack cortex; are relatively thin; and have narrow, faceted butts, multidirectional dorsal scars, and curved profiles. Bifacial thinning flakes are typically produced by percussion flaking.

5) Biface finishing or trimming flakes (BFT): produced during the preparation of the edge of the tool. These flakes are similar in some respects to thinning flakes, but are generally smaller and thinner and can be indistinguishable from tiny flakes resulting from other processes, such as platform preparation. Biface finishing flakes may be detached by either percussion or pressure flaking.

6) Chips (Chip): describes flakes (< 1cm in length) that are detached during several different types of manufacturing trajectories. First, they can result from the preparation of a core or biface edge by abrasion, a procedure that strengthens the platform prior to the blow of the hammer. Second, tiny flakes of this type also are removed during the manufacture of tools like endscrapers.

7) Shatter (Shatter): produced during the knapping process and through natural agents. Naturally occurring shatter is usually the result of thermal action shattering a block of chert. During biface reduction, shatter results from an attempt to flake a piece of chert with internal flaws (fossils) and fracture lines. For the purpose of this analysis, shatter is defined as a piece of chert that shows no evidence of being struck by a human (i.e., bulb of percussion and faceted butt [striking platform]), but may nonetheless be a waste product from a knapping episode.

8) Janus Flakes (Janus): produced during the initial reduction of a flake blank (Tixier and Roche 1980). The removal of a flake from the ventral surface of a larger flake results in a flake the dorsal surface of which is completely or partially composed of the ventral surface of the larger flake.

Discussion

The debitage (n=64) assemblage consisted of initial reduction flakes (n=1), unspecified reduction sequence (n=40), biface initial reduction (n=1), biface thinning and shaping flakes (n=5), biface finishing or trimming flakes (n=4), and shatter (n=13) (Table 5.1). Most of the debitage was comprised of unspecified reduction sequence flakes (62.5 percent) and shatter (20.3 percent), which together accounted for 82.8 percent of the assemblage. That biface thinning and shaping (7.8 percent) and biface finishing and trimming (6.3 percent) account for most of the identifiable flakes is suggestive of a focus on tool sharpening and maintenance. The remaining flakes consisted of initial reduction (1.6 percent) and biface initial reduction (1.6 percent). The paucity of this types of flakes also argues against tool production being undertaken at the site.

Table 5.1. Flake Types.

Flake Type	Frequency	Percentage
Initial Reduction	1	1.6
Unspecified Reduction Sequence	40	62.5
Biface Initial Reduction	1	1.6
Biface Thinning and Shaping	5	7.8
Biface Finishing or Trimming	4	6.3
Shatter	13	20.3
Total	**64**	**100.0**

LITHIC RAW MATERIAL IDENTIFICATION

Raw material identification was conducted on all lithic debitage recovered from the project area. Raw material types were identified on the basis of personal experience, physical properties of the raw materials (i.e., color, luster, fracture, and texture), reference to published descriptions (Applegate 1996; Meadows 1977) and comparisons with chert specimens from the author's personal collection. A 20X LED Fencii hand lens and a AmScope Stereo Microscope (20X-40X) were used to identify inclusions and to evaluate texture and structure.

Ste. Genevieve

Ste. Genevieve chert derives from Upper Mississippian Ste. Genevieve limestone formation. Color is gray to black; blue; translucent brownish gray; some mottling. Inclusions consist of oolites in cortex, occasional cubic and irregularly shaped concavities, and some fenestrate bryozoans and brachiopods. When weathered color can change to a creamy white and reddish brown (Gatus 1986).

Unidentified Chert

The remaining raw material type consisted of an unidentified chert. Several of the specimens were fossiliferous. Natural breakdown of residual chert was found throughout the project area during current and previous investigations. The identified chert may be derived from these residual cherts.

Discussion

The lithic raw material consists of locally available Ste. Genevieve chert (n=56; 87.5 percent) and unidentified chert (n=8; 12.5 percent) (Table 5.2). It should be noted that residual limestone/chert was found throughout the project area and is associated with Baxter soils found in the project area.

Table 5.2. Raw Material Types

Chert Types	Frequency	Percentage
Ste. Genevieve	56	87.5
Unidentified	8	12.5
Total	**64**	**100.0**

Site 15Wa166 is located on a floodplain of the Barren River and raw material for tool production could have been obtained from sources located near the project area, where there are outcrops of Ste. Genevieve chert. This being the case, however, one would expect to have recovered a much larger amount of debitage and early stage bifaces.

SUMMARY

Site 15Wa166 is located on a floodplain of the Barren River and raw material for tool production may have been obtained from sources located near the project area, where there are outcrops of Ste. Genevieve chert. That the identifiable flakes were primarily biface thinning and shaping, and biface finishing or trimming speaks more to tool maintenance and resharpening then it does to tool production. The small amount of debitage recovered from the excavation units and previous work at the site is suggestive of short-term visits to this locality.

CHAPTER 6
HISTORIC MATERIALS

ANALYTICAL METHODS

Historic material identification is based on a variety of characteristics such as material type, color, function, and marks resulting from production processes. Typically, material types used in the production of historic objects will include ceramics, glass, metal, earth-based/stone, and organics. Identification of the function or use of historic objects is possible through archival information, such as documents, oral history, photos, and cultural knowledge, that has persisted into present day. The use of these data sources lends a high degree of confidence in the identification of historic materials when their condition permits and allows for more fine-grained analyses, such as the use of functional groups and dating.

The classification of objects into functional groups has been a common practice of historic archaeologists for over 40 years (Ball 1984; South 1977). This method assigns materials to groups based on their historically derived function. For example, objects associated with kitchen activities, like food service or preparation, are assigned to the kitchen group, and items related to architecture are assigned to the architecture group. The number of groups in the classification scheme can range from seven to 16 depending on the type of site and the individual researcher. Percentages are then calculated for each group to characterize a site or the function of a particular deposit or feature. The functional groups represented and described in this report are architecture, activities, furniture, kitchen, and fuel. The furniture group includes items related to household furnishings and will include mainly furniture hardware, flower pots, lamps, and decorative items. The activities group is basically a catch all group that includes items not assigned to other functional groups which are generally associated with activities that take place around residences and farms. These typically include fencing, buckets, non-architectural bolts and nuts, machine parts, unidentified metals, etc. The fuel group consists of fuels and their byproducts, such as coal, cinder, slag, and charcoal.

The presence of diagnostic (datable) objects can be used to assign a temporal range to an assemblage and associated site, stratigraphic layer, or feature. For some objects, a manufacture date range can be established by using archival resources. This date range can provide a sense of the assemblage's age. If enough diagnostic objects are present within an assemblage, the midpoint of each date range can be averaged to acquire a mean date of manufacture for the assemblage (South 1977). Unfortunately, the date range or mean age of a collection does not always represent when all the materials were deposited. This is due to the fact that some objects are lost or discarded soon after they were manufactured, while others enter the archaeological record many years after they ceased to be made.

In order to get a better indication of when materials associated with a particular strata or feature were deposited, other dating methods like *terminus post quem* (T.P.Q.) are used in conjunction with mean dating and stratigraphic context (Noël Hume 1969). The

T.P.Q. is derived from the latest beginning date of a group of objects. This provides a time after which a deposit could have been formed.

ASSEMBLAGE

Historic materials (n=66) were recovered from nine shovel probes excavated in the southwestern portion of the project area just outside of the boundaries of Site 15Wa166 (Table 6.1). The materials recovered included mostly container glass, such as for beer, soft drinks, or food (n=22) assigned to the kitchen group, and thin lamp or light bulb glass (n=21) assigned to the architecture group. They occurred in clear, brown, blue tinted, and green tinted colors. Other objects recovered included a few brick fragments (n=2), cinder/slag (n=11), unidentified metal (n=5), plate glass (n=3), a metal bolt (n=1), and unidentified plastic (n=1) (Table 6.1). Also found in the area, but not collected, were several fragments of clay shooting target pigeons.

Table 6.1. Historic Materials

Functional Group	Count	Percentage
Activities		
Metal, bolt	1	
Metal, unidentified	5	
Plastic	1	
Subtotal	7	10.6
Architecture		
Brick, unidentified fragment	2	
Subtotal	2	3.0
Fuel		
Cinder/Slag	9	
Charcoal	2	
Subtotal	11	16.7
Furniture		
Glass, lamp chimney/light bulb	21	
Glass, plate glass, blue tint	3	
Subtotal	24	36.4
Kitchen		
Glass, bottle-beer, brown, body	9	
Glass, unidentified, green tint, body	3	
Glass, unidentified, clear, body	5	
Glass, jar-unidentified, clear, rim, machine-made	3	
Glass, bottle-unidentified, clear, body	1	
Glass, unidentified, milk glass-white, body	1	
Subtotal	22	33.3
Total	**66**	**100.0**

The only diagnostic materials recovered were fragments of a machine-made jar rim, clear glass, and brown glass. Machine-made glass jars date generally from the 1910s to present day (Miller 2000). Although clear glass has been produced for hundreds of years, mass production has only occurred since around 1875 (Fike 1987). Brown colored glass used for bottles was developed in the 1860s and is still used today (Fike 1987). Although only a few of these materials are particularly diagnostic, all are typical of the mid- to late twentieth century.

Most of the materials were assigned to the furniture (36.4 percent) and kitchen groups (33.3 percent), which included mainly unidentified container glass and lamp chimney/light bulb glass (Table 6.1). These objects are most likely associated with soft drink and beer bottles and broken light bulb. Materials recovered also were assigned to the fuel (16.7 percent) and activities (10.6 percent) groups, and included mainly cinder/slag and unidentified metal (Table 6.1). Minimally represented was the architecture group.

The functional groups represented indicate that most of the historic material are the byproduct of the disposal of glass containers and some light bulbs or lamp chimneys. The paucity of architecture group materials indicates that the assemblage was not associated with a structure, such as a house or farm buildings.

SUMMARY

These objects are similar in nature to those found during the initial survey of property, which indicated that it was unlikely that a structure was located there historically and that the recovered materials were most likely associated with modern trash disposal that often occurs in farm fields and parks throughout the twentieth century (Wetzel et al. 2009). Given that there are no structures indicated on historic maps of the area and the minimal presence of architecture related objects, our findings concur with the interpretation offered by Wetzel et al. (2009) that the objects found likely originated from modern trash disposal associated with farming and park activities. Therefore, these materials do not represent an archaeological site.

CHAPTER 7
RESULTS

The project area, which is bisected by River Street, consisted of two large areas (Area 1 and Area 2) (Figure 7.1). The Barren River flows along the southern boundary of both areas. Area 1, which is the focus of this study, is located south of River Road. It is composed of a large field and wooded areas to the north and southwest. A gravel parking lot for Wheldon Peete park is situated on the northeastern boundary of the project area. A paved path runs through the project area. Gravel roads and dirt mountain biking trails are primarily associated with the wooded areas (Figure 7.1). A quail habitat consisting of dense low trees and shrubs is located in the northeast part of the project area. Within Area A, shovel probes were excavated every 20 m on northeast-southwest transects spaced 20 m apart, within the portion of the project area that had not been previously surveyed by Corn Island (Wetzel 2009). During the course of this study, KAS excavated 165 shovel probes in Area 1 (Figure 7.1). These probes were primarily placed in the open field to the northwest of Site 15Wa166 and the woods to the south and southwest of this site.

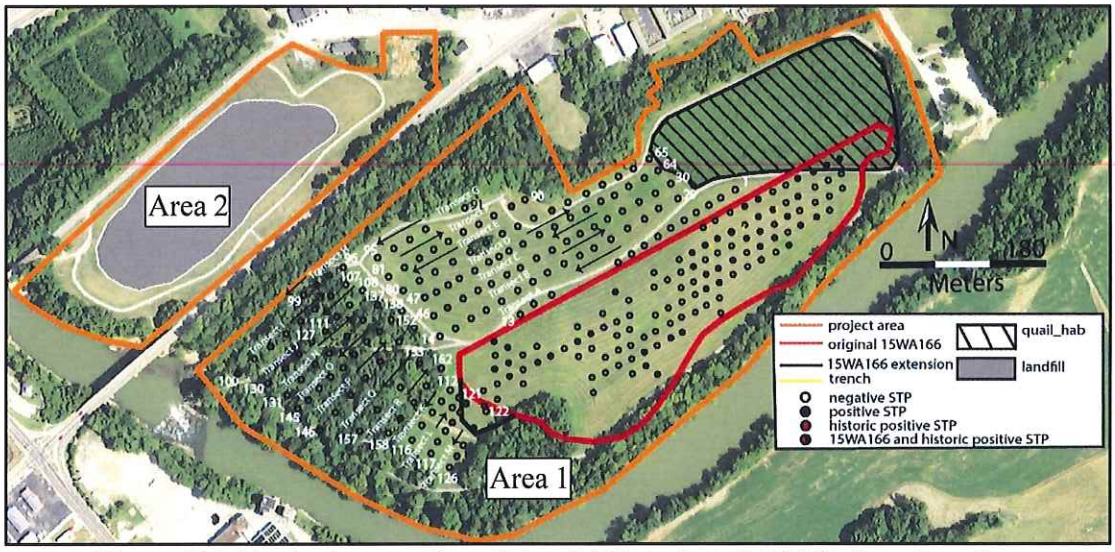


Figure 7.1. Project area; Corn Island (Wetzel et al. 2009) shovel probes are within 15WA166 boundary (red); KAS shovel probes outside red boundary.

Area 2 consisted of the remains of an old land fill. On the topographic map the landfill shows as a large depression (Figure 1.2), but today in consists of a large earthen mound surrounded by a paved trail. Upon inspection, it was noted that much disturbance had occurred at this location. Due to the disturbance no shovel probes were placed in Area 2 (Figure 7.1).

Following the excavation of shovel probes and the refinement of the boundaries of Site 15Wa166, limited testing was conducted at Site 15Wa166. This work consisted of the excavation of three track-hoe trenches and three 1 x 1 m units.

SURVEY

Most of the excavated shovel probes were negative for Native American artifacts. These included shovel probes placed along the northwestern boundary of Site 15Wa166 as defined in 2009. A couple of shovel probes were positive for artifacts along the southwestern boundary of Site 15Wa166 in an area that Corn Island was not able to survey in 2009. As a result of this work the boundaries of Site 15Wa166 was expanded to include this area (Figure 7.1).

Shovel probes excavated throughout most of Area 1 showed the impacts of water saturation on soils in this low-lying floodplain (Figure 7.2). As in 2009, areas of standing water were noted throughout the project area and water was often encountered during shovel probe excavation (Figure 7.3). These areas were primarily located in the middle of the large field along either side of the paved trail (Figure 7.2). Shovel probes were not placed in the northern wooded portions of the project area because of slope, erosion, a streambed and underground waterlines.

Figure 7.2. Transect A, looking southwest. Water was evident in shovel probes throughout the field.

Because of the consistent water saturation and periodic flooding of the project area, the soils in many of the shovel probes showed evidence of this in the form of iron staining and nodules associated with wetting and drying, and gleying associated with consistent saturation that reduces oxygen (Figure 7.3). An example profile from a shovel probe that had no standing water contained three zones (Figure 7.4). Zone I was a 25 cm thick 10YR5/3 brown silty clay plowzone with iron staining. Zone II was a 20 cm thick 10YR5/2 greyish brown silty clay subsoil with increased iron staining and Zone III was a 10YR6/2 light brownish grey silty clay subsoil with pebble sized iron concretions and minimal iron staining.

Figure 7.3. Shovel Probe 7 showing water.

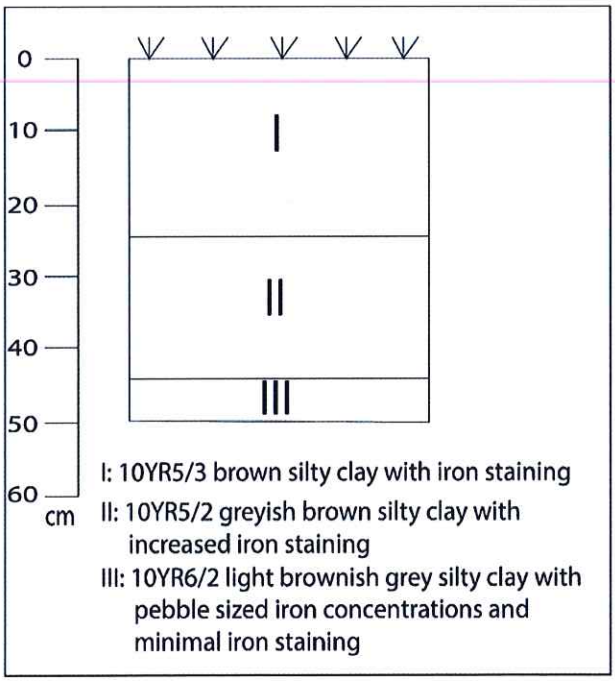


Figure 7.4. Profile of Shovel Probe 30, on Transect C.

Historic Materials

Mid- to late twentieth century historic materials were recovered from nine shovel probes (SP45, 71, 89, 111, 120, 121, 121-10SW, 125, 150) (Figures 7.1 and 7.7); Table 7.1). Also noted but not collected were clay pigeons.

Table 7.1. Historic materials by shovel probe.

Shovel Probe	Functional Group/Description	Frequency
45	*Kitchen*	
	Glass, bottle-beer, brown, body	2
	Glass, unidentified, green tint, body	1
	Glass, unidentified, clear, body	2
	Subtotal	5
71	*Architecture*	
	Brick, unidentified, fragment	1
	Subtotal	1
89	*Kitchen*	
	Glass, jar-unidentified, clear, rim, machine-made	3
	Glass, unidentified, clear, body	1
	Subtotal	4
111	*Activities*	
	Metal, unidentified	4
	Plastic, unidentified	1
	Fuel	
	Cinder/slag	1
	Furniture	
	Glass, lamp chimney/light bulb	1
	Glass, plate glass, blue tint	3
	Kitchen	
	Glass, bottle-beer, brown, body	7
	Glass, unidentified, milk glass-white, body	1
	Glass, unidentified, clear, body	2
	Glass, unidentified, green tint, body	2
	Subtotal	22
120	*Fuel*	
	Cinder/Slag	1
	Subtotal	1
121	*Activities*	
	Metal, bolt	1
	Architecture	
	Brick, unidentified, fragment	
	Furniture	
	Glass, lamp chimney/light bulb	2
	Subtotal	3
121-10SW	*Activities*	
	Metal, unidentified	1
	Architecture	
	Brick, unidentified, fragment	1
	Subtotal	2
125	*Fuel*	
	Cinder/slag	7
	Charcoal	2
	Kitchen	
	Glass, bottle-unidentified, clear, body	1
	Subtotal	10
150	*Furniture*	
	Glass, lamp chimney/light bulb	18
	Subtotal	18
	Grand Total	**66**

Historic materials recovered from the project area were primarily assigned to the furniture (36.4 percent) and kitchen groups (33.3 percent), which included mainly lamp chimney/light bulb glass and unidentified container glass (Table 7.1). These objects are most likely associated with broken light bulbs and soft drink and beer bottles. Materials recovered also were assigned to the fuel (16.7 percent) and activities (10.6 percent) groups, and included mainly cinder/slag and unidentified metal (Table 7.1). Minimally represented was the architecture group. The functional groups represented indicate that most of the historic material are the byproduct of the disposal of some light bulbs or lamp chimneys and glass containers and. The paucity of architecture group materials indicates that the assemblage was not associated with a structure, such as a house or farm buildings. These objects are similar in nature to those found during the initial survey of property, which indicated that it was unlikely that a structure was located there historically and that the recovered materials were most likely associated with modern trash disposal that often occurs in farm fields and parks throughout the twentieth century (Wetzel et al. 2009). Given that there are no structures indicated on historic maps of the area and the minimal presence of architecture related objects, our findings concur with the interpretation offered by Wetzel et al. (2009) that the objects found likely originated from modern trash disposal associated with farming and park activities. Therefore, these materials do not represent an archaeological site.

SITE 15WA166

Site Type:	open-air habitation
UTM Coordinates:	N 4228307 E 634543
Elevation:	146 m AMSL
Physiography:	Floodplain
Aspect:	Flat
Slope:	0-4 degrees
Soil Types:	Nolin and Newark Silt Loam
Vegetation:	tall grass
Visibility:	0-10 percent
Size:	5 hectares
Disturbances:	None

Site 15Wa166 is located on a relatively flat low-lying floodplain in Riverfront Park in the city of Bowling Green. The park is located along a bend in the Barren River, which is a tributary of the Green River. The site is located to the north and east of the river depending upon the direction viewed. Based on shovel probe data the site encompasses 50,000 m^2 or 5 ha. The site is in an open field bordered on the east by the Barren River, the north by quail habitat, the west by a walking path, and the south by forest with the site dropping off into a low lying area. Most of the site area was defined in 2009 by Corn Island (Wetzel et al. 2009). The exception being the southwestern edge that was flooded in 2009.

At the time of the survey summarized in this report, there was no standing water in this location and KAS archaeologists were able to place shovel probes in this location to determine if the site continued in this direction (Figures 7.5 and 7.6). Immediately apparent is that the elevation drops at this location, whereas most of Site 15Wa166 is on a very slight rise on the landform. Two shovel probes (SP121 and SP123) placed in this area yielded chert flakes (Figure 7.7). This portion of the site is bordered by a bicycle path with two wooden ramps runs. Some mid- to late twentieth century historic materials were recovered from SP121 and a nearby radial (Sp121-10SW) and two shovel probes (SP120 and SP125 just to the southwest of the site (Figure 7.7). All of these materials are interpreted as representing recent trash.

Shovel Probe 121 contained three zones. Zone I was a 10YR4/3 brown silty clay loam. A flake was found in Zone I, with the remaining flakes being recovered from Zone II. Zone II was a 10YR4/4 dark yellowish brown silty clay with iron nodules. Zone III was a 10YR5/6 yellowish brown silty clay with small iron nodules and iron depletion features. The buried A horizon was not found in this portion of the site. Based on the recovery of debitage from shovel probes 121 and 123 during the course of this study, the site area was extended 30 m to the southwest.

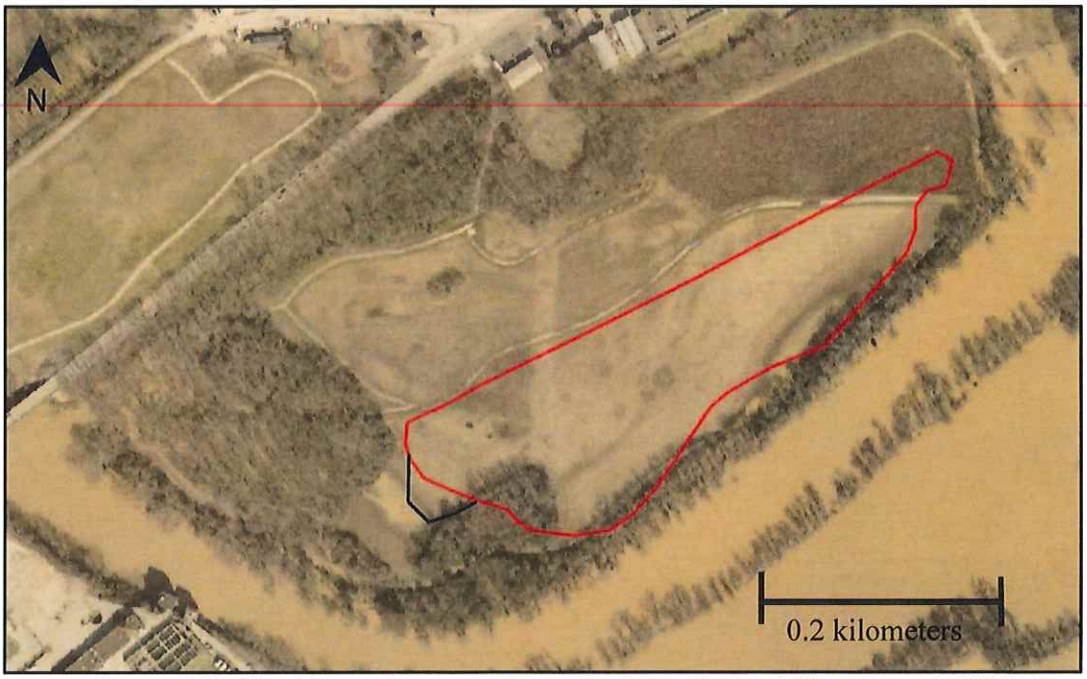


Figure 7.5. Site Extension: previous site boundaries (Wetzel et al. 2009) in red and extension in black (BGKY 2020) (Note flooding along the southeastern edge of the site).

Figure 7.6. Site 15Wa166 extension, facing southwest.

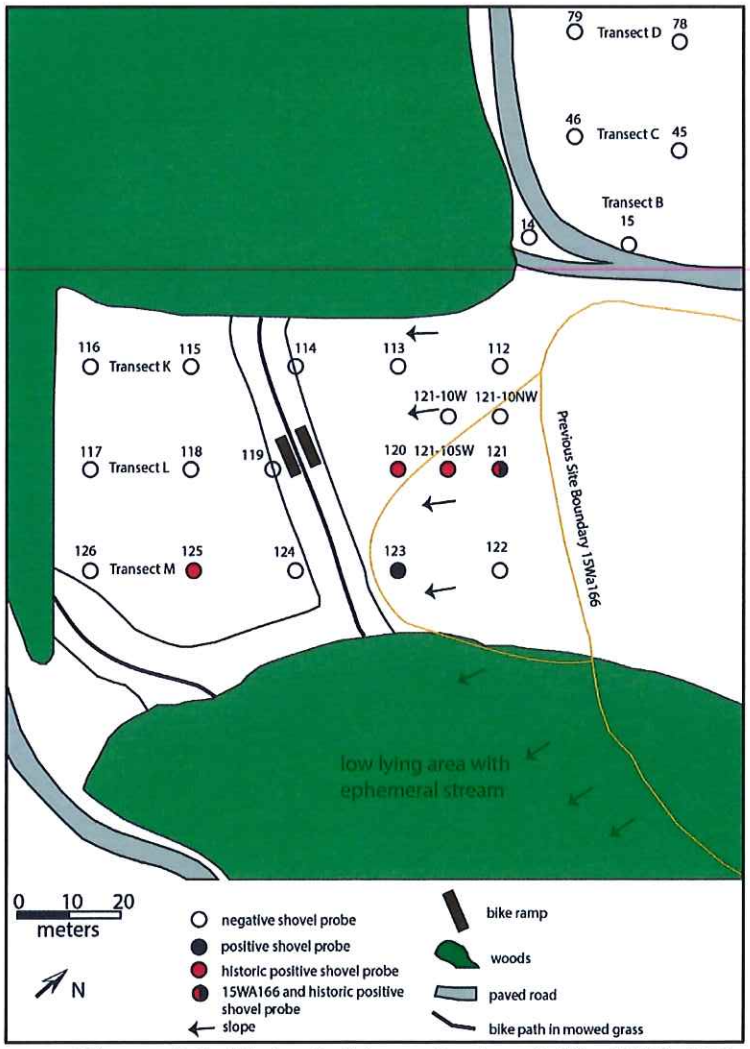


Figure 7.7. Extended boundaries of Site 15Wa166 based on shovel probes.

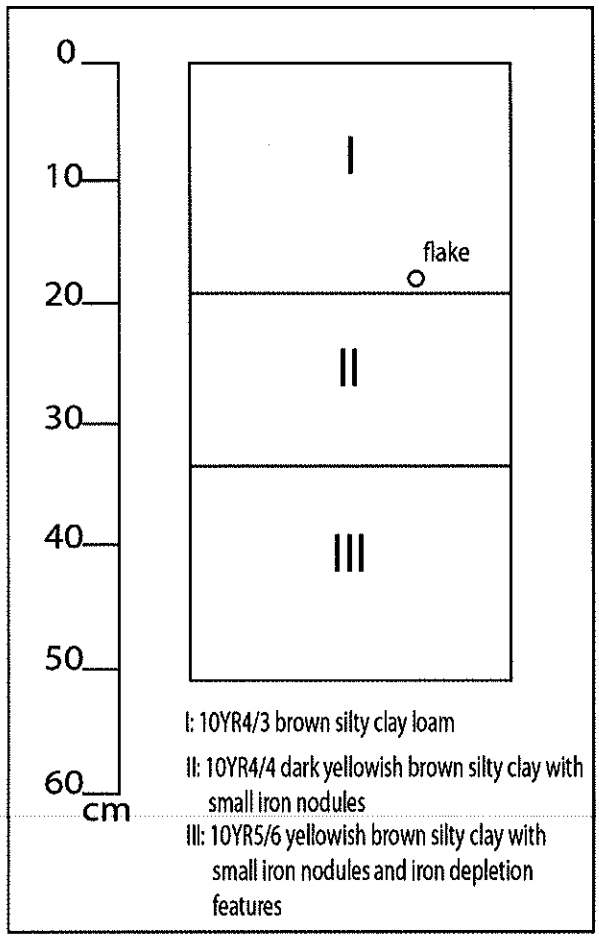


Figure 7.8. Profile of Shovel Probe 121, on Transect L.

As defined by Corn Island Archaeology Site 15Wa166 is a large open habitation site. In 2209, a light scatter of chipped stone debris (n=77), a possible hammerstone, some fire-cracked rock (n=8) were recovered from 67 positive shovel probes. This comes to 1.3 artifacts per positive shovel probe. Some of these materials (28 pieces of debitage and four fire-cracked rock fragments) were recovered from a 20 cm thick potential buried A horizon. A small amount of wood and nut charcoal also recovered from the potential buried A horizon. The possible A horizon was described as a 10YR4/4 to 10YR4/6 silty loam. During the course of this study an additional 64 pieces of debitage were recovered from the site, with most being recovered from subplowzone deposits (Table 7.2)

Materials Recovered

Debitage (n=64) and carbonized plant remains (7.8 g) were the only Native American cultural materials recovered from Site 15Wa166 during the course of this study.

Chipped Stone

The chipped stone assemblage recovered from the project area consists of only debitage (n=64). Previous work undertaken at the site by Corn Island recovered an additional 77 pieces of debitage (Wetzel et al. 2009). The count of debitage from Units 1 (n=12), 2 (n=19), and 3 (n=28) increases towards the southwest which is also towards the center of the site. Most of the debitage consisted of unspecified reduction flakes (n=40) or shatter (n=13). Of the remaining flakes the most common were bifacial thinning and shaping (n=5) and bifacial finishing or trimming flakes (n=4). That biface thinning and shaping and biface finishing and trimming account for most of the identifiable flakes is suggestive of a focus on tool sharpening and maintenance. The remaining flakes consisted of initial reduction (n=1) and biface initial reduction (n=1). The paucity of these types of flakes argues against tool production being undertaken at the site.

Table 7.2. Debitage by Units.

Unit	Zone	Level	Initial reduction	Unspecified Reduction	Biface Initial Reduction	Biface Thinning	Biface Finishing	Shatter	Total
1									
	I	1		4		1	1	1	7
	II	2		2	1				3
	III	4		1					2
	III	5		1					1
		Subtotal		8	1	1	1	1	12
2									
	I	1		4					4
	II	2		5			1		6
	II	3		5		1		2	8
	III	4		1					1
		Subtotal		15		1	1	2	19
3									
	I	1		2					2
	II	2		9		2	1	1	13
	III	3		3				8	11
	III	4	1					1	2
		Subtotal	1	14		2	1	10	28
Sp121				2		1	1		4
Sp123				1					1
Subtotal				3		1	1		5
Grand Total			**1**	**40**	**1**	**5**	**4**	**13**	**64**

The majority of lithic raw material from the site is locally available Ste. Genevieve chert (87.5 percent) with the rest being an unidentified chert. Most of the unidentified chert flakes were recovered from Unit 2. This is also the unit where Feature 1 was located and

burning of residual cherts was noted. The burning associated with this feature may have resulted in the inability to identify this chert (Table 7.3).

Site 15Wa166 is located on a floodplain of the Barren River and raw material for tool production may have been obtained from sources located near the project area, where there are outcrops of Ste. Genevieve chert. That the identifiable flakes were primarily biface thinning and shaping, and biface finishing or trimming speaks more to tool maintenance and resharpening then it does to tool production. The small amount of debitage recovered from the excavation units and previous work at the site is suggestive of short-term visits to this locality.

Table 7.3. Raw Material by Units.

Unit No.	Ste. Genevieve	Unidentified	Total	Percentage
1	11	1	12	18.8
2	13	6	19	29.7
3	27	1	28	43.8
SP121	4	-	4	6.3
SP123	1	-	1	1.6
Total	**56**	**8**	**64**	**100.0**

Wood Charcoal

Wood charcoal (7.8 g) was recovered from subplowzone contexts in all three units, with nut charcoal also being recovered from Units 1 and 2 (Table 7.4). The largest quantity of wood was recovered from Feature 1, with a small amount of nutshell also being recovered from this feature. The largest and most complete nutshell fragments were recovered from Unit 1, with some of the nut being tentatively identified as walnut.

Table 7.4. Carbonized Wood

Unit	Zone	Level	Feature	Type	Weight
1	II	2		nut	0.9 g
1	II	3		nut	0.1 g
1	III	4		nut - walnut	0.8 g
2	II	3		wood	0.3 g
2	II	3	1	wood and nut	3.5 g
2	III	4		wood	2.1 g
3	III	4		wood	0.1 g

Trenches\Units

Following the extensive shovel probing of the park and the expansion of the site boundaries further to the southwest, a track-hoe was used to excavate three trenches in what were the most likely spots to contain cultural materials and features associated with Site 15Wa166 (Figure 7.9). These four-meter-long trenches were oriented southeast-northwest and spaced 40 m apart from each other. They were all situated in an area where the previous survey had recovered flakes and identified a possible buried A horizon (Wetzel et al. 2009). It was also the area on the landform with the highest elevation. All the trenches were excavated to subsoil. The stratigraphic profile consisted of four zones

(though at times these differed in color due to differential water saturation across the area): a plowzone (Zone I), a buried A horizon/midden (Zone II), a transition to subsoil (Zone III), and subsoil (Zone IV).

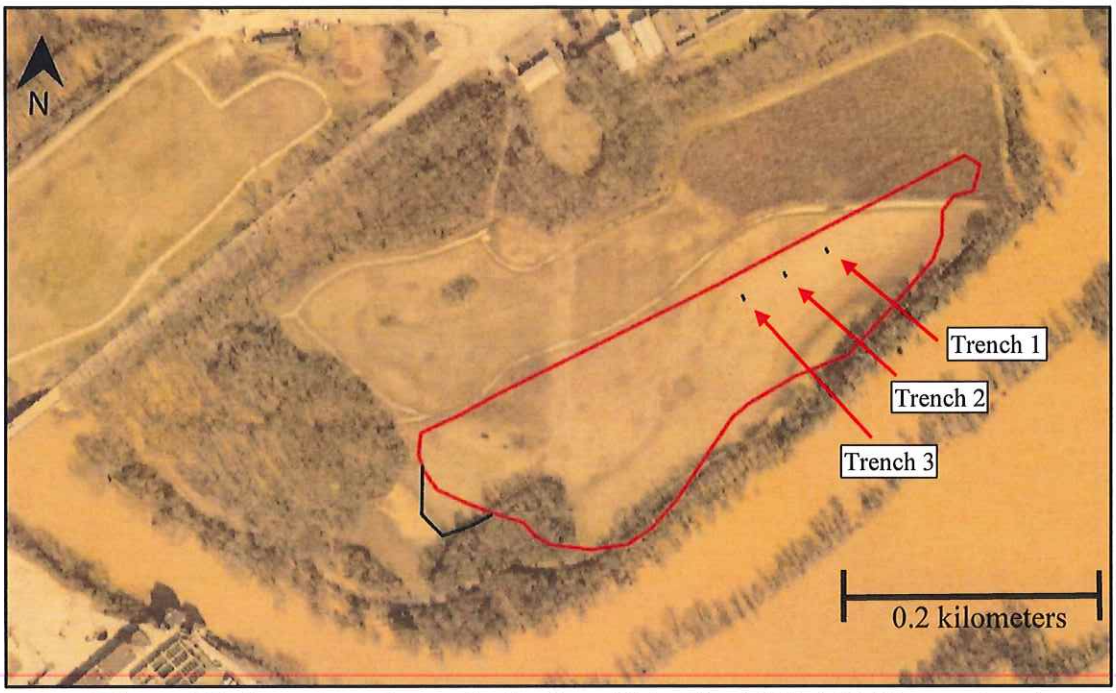


Figure 7.9. Location of trenches\units within Site 15Wa166 (Note extensive flooding of the Barren River (BGKY 2020).

Trench 1\Unit 1

Trench 1 was the furthest northeastern trench on the landform. It was excavated to a depth of approximately 80 cm below the surface (Figure 7.10). Examination of the trench profile revealed four zones (Figure 7.11). Zone I consisted of a 20 cm thick 10YR3/4 dark yellowish brown silty clay loam plowzone. Zone II consisted of a 22 cm thick 10YR4/4 dark yellowish brown silty clay loam. Zone III ranged in thickness from 10 to 30 cm. It consisted of a 10YR5/6 strong brown silty clay loam. Charcoal flecking, residual chert fragments and iron staining and nodules were observed in Zone II and III. Zone IV was a 7.5YR4/6 strong brown silty clay loam. Crawdad activity was evident in the profile as sporadic vertical burrows (Figure 7.10).

Unit 1 was placed adjacent to the southwest wall of Trench 1, 1.5-2.5 m from the trench's southeast end (Figure 7.11). It was dug to a depth of 60 cm below the surface (Figure 7.12). The 20 cm thick plowzone was excavated as one level. Zones II and III were excavated two 10 cm levels. Crawdad burrows were also evident in the unit. Unit excavations ceased upon reaching subsoil.

Figure 7.10. Trench 1, southwest wall.

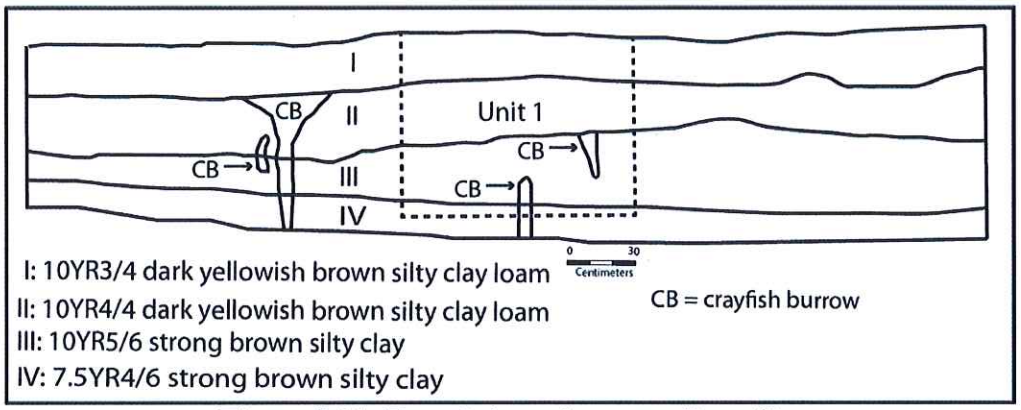


Figure 7.11. Trench 1 southwest wall profile.

Figure 7.12. Unit 1 northwest wall profile.

Five lithic flakes and three pieces of shatter were recovered from the plowzone (Table 7.2). Zone II yielded small pieces of nut charcoal and three pieces of shatter (Table 7.4). A single interior flake and a single piece of shatter were recovered from Zone III.

Trench 2\Unit 2

Trench 2 was the central trench and excavated to a depth of 90 cm below the surface (Figure 7.13). Examination of the trench profile revealed four zones. Zone I was a 25 cm thick 10YR3/4 dark yellowish-brown silty clay loam (Figure 7.14). Zone II was a 15 cm thick 10YR4/4 dark yellowish-brown silty clay loam. Zone III was a 20 cm thick 7.5YR4/6 strong brown silty clay loam mottled with 10YR5/4 and iron staining and nodules. Zone IV was a homogenous 7.5YR4/6 strong brown silty clay loam subsoil with small spherical hematite nodules.

Figure 7.13. Trench 2, southwest wall.

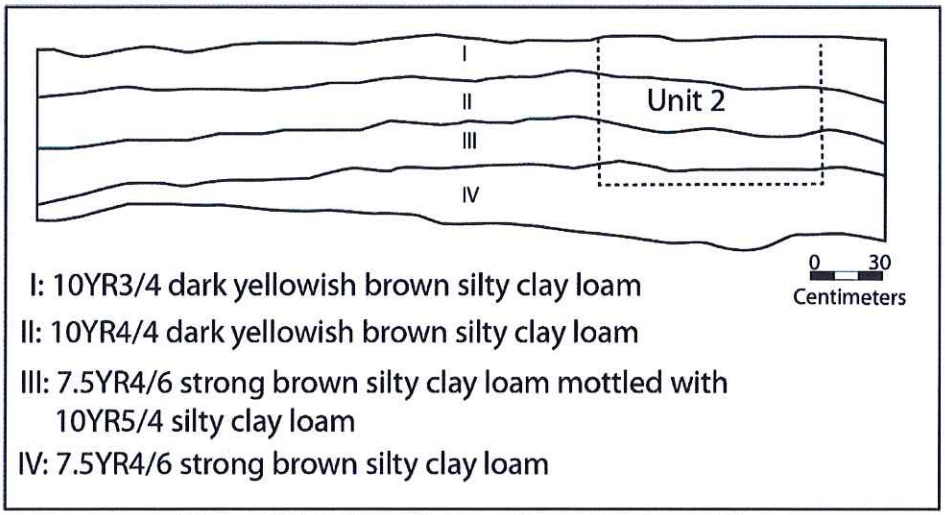


Figure 7.14. Trench 2 southwest wall profile.

Unit 2 was placed adjacent to the southwest wall of Trench 2, 30 cm from the southeastern end of the trench (Figure 7.14). It was excavated to a depth of 65 cm below the surface (Figures 7.15). The 24 cm thick plowzone was dug as one level. Zones II and III were excavated as two 10 cm levels. Crawdad burrows were evident in the unit. Unit excavations ceased upon reaching subsoil.

Figure 7.15. Unit 2 and Feature 1, northwest profile.

Feature 1, a small pit, was documented at the base of Zone II at depth of 38 cm below the surface (Figure 7.15). The pit extended into the northwest wall of the Unit. The excavated portion of the pit measured 30 x 50 cm and was 13 cm thick extending to a depth of 51 cm below the surface. The pit had straight sides and a flat bottom (Figures 7.16 and 7.17). The base of the feature was very hard with reddish mottling, which suggests that it may have been a cooking or roasting pit. Only two flakes and a small amount of wood and nut charcoal were recovered from this pit, though it contained burned residual chert and burned sediment. A floatation sample was taken but has yet to be analyzed.

Trench 3\Unit 3

Trench 3 was the southwestern most trench and was located in an area that was wetter relative to the other trenches. It was excavated to a depth of 90 cm below the surface (Figure 7.18). Examination of the trench profile revealed four zones. Zone I was a 24 cm thick 10 YR 4/4 dark yellowish-brown unconsolidated silty clay loam (Figure 7.19). Zone II was a 10 cm thick 10YR4/3 brown silty clay loam. Zone III was a 25 to 30 cm thick 7.5YR4/4 brown silty clay loam mottled with a 10YR5/4 yellowish brown silty clay with

dime-sized iron depletion features. It also had small spherical iron nodules. Zone IV was a 10YR5/6 yellowish silty clay loam with 10YR6/4 light yellowish-brown mottling suggesting iron depletion. It also contained hematite nodules as large as pebbles at the base of the excavation trench.

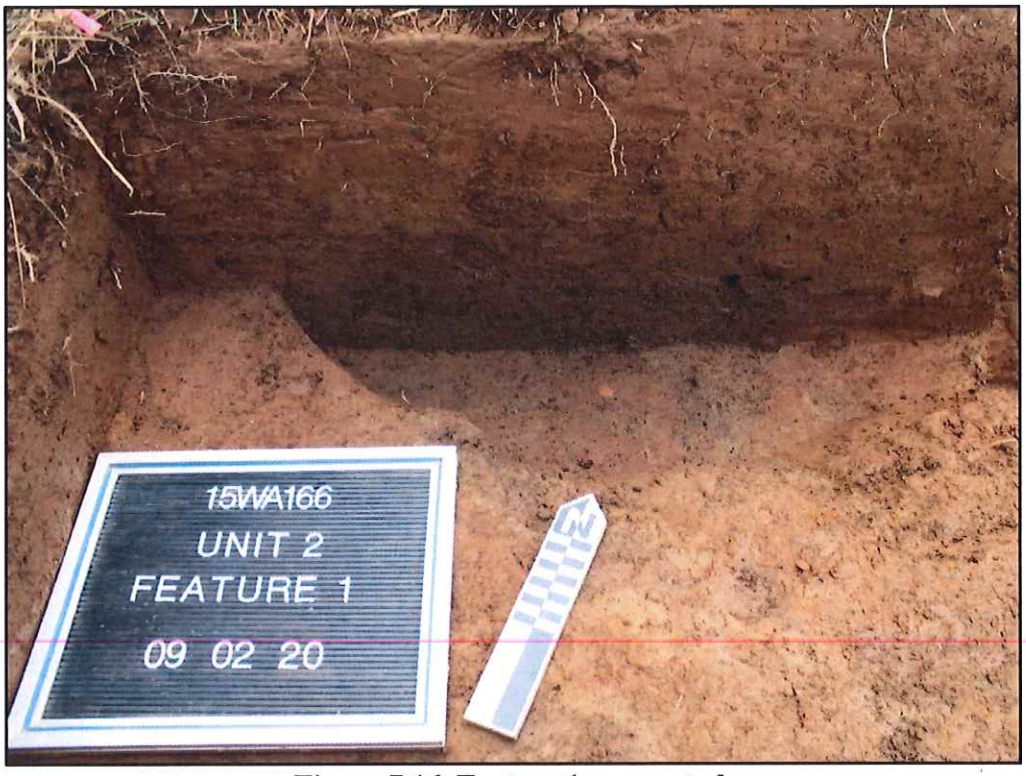


Figure 7.16. Feature 1, excavated.

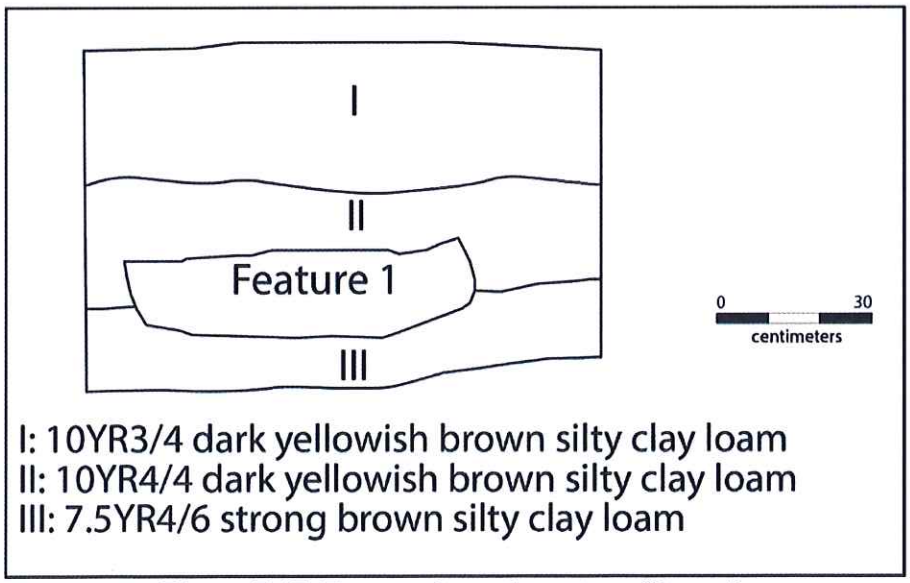


Figure 7.17. Feature 1 northwest profile wall.

Figure 7.18. Trench 3, southwest wall profile

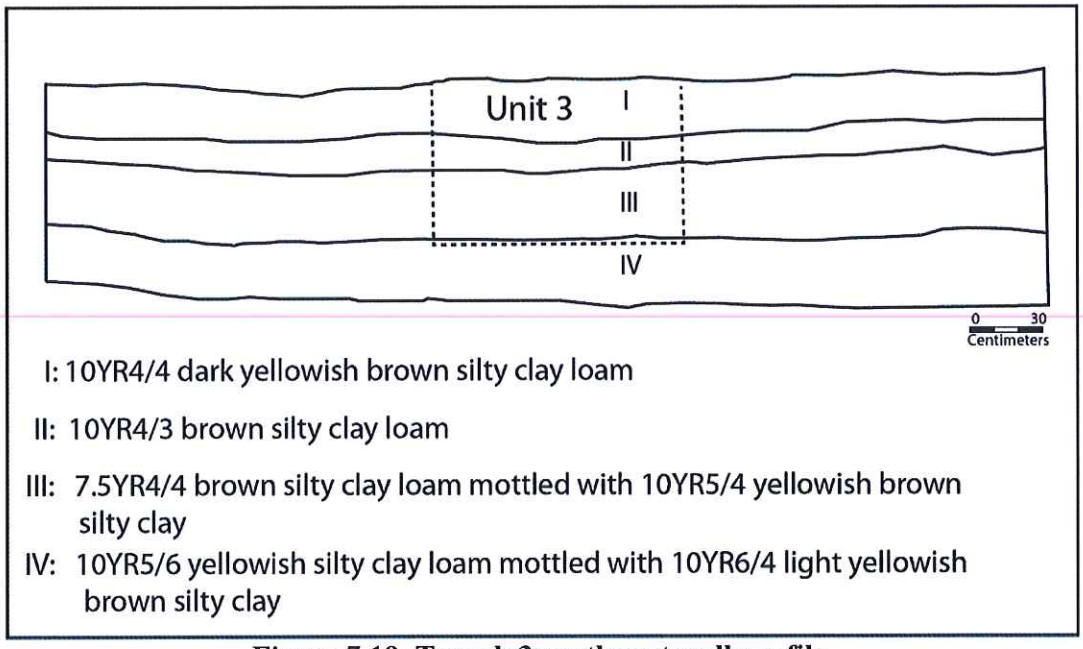


Figure 7.19. Trench 3 southwest wall profile.

Unit 3 was dug adjacent to the southwest wall of Trench 3, 1.50 m from the southeast corner of the trench (Figure 7.19). It was dug to depth of 60 cm below the surface (Figure 7.20). The 24 cm thick plowzone and Zone II was dug as one level, while the thicker Zone III was dug as three 10 cm levels. Crawdad burrows were evident in the unit. Unit excavations ceased upon reaching subsoil.

Two chert flakes were recovered from the plowzone (Table 7.2). Zone II yielded nine flakes and one piece of shatter. Zone III yielded 15 flakes and nine pieces of shatter from two excavated levels (Table 7.2). A small amount of charcoal also was recovered from this zone (Table 7.4). Crawdad burrows were evident in the unit. Unit excavation ceased upon reaching subsoil.

Figure 7.20. Unit 3 northwest profile.

SUMMARY

Shovel probes placed in the field north of the paved trail running through the middle of the open field did not yield any cultural material associated with the Native American occupation of Site 15Wa166. Nor were additional archaeological sites documented. The northwestern edge of the site is demarcated by a walking path as identified by Corn Island's 2009 survey. Shovel probes did extend the southwestern edge of the site about thirty meters into an area that could not be shovel probed in 2009 due to standing water. The results of systematic shovel probing of Area A determined that in general soils at the site are saturated with water, suggesting poor drainage in many areas. Crawdad burrows are evident throughout the project area. This work also confirmed that Site 15Wa166 is located on the highest portion of the floodplain. The low-lying areas surrounding Site 15Wa166 do not appear to have been conductive to Native American or Historic occupation.

The only cultural materials recovered from shovel probes excavated in the open field and the wooded areas beyond the boundaries of Site 15Wa166 were mid- to late twentieth century clear and green bottle glass, light bulb fragments, cinder/slag, and unidentified metal. Given that no structures are indicated on historic maps of the area coupled with the minimal presence of architecture related objects, our findings concur with the interpretation offered by Wetzel et al. (2009) that these objects likely represent modern

trash disposal associated with farming and park activities. Therefore, these materials do not represent an archaeological site.

The limited test excavations undertaken at Site 15Wa166 confirmed the presence of a 10 to 22 thick buried A horizon (Zone II) that contained a small amount of debitage, and wood and nut charcoal. This organically enriched zone was thickest in the northeastern portion of the site and thinned towards the southwestern portion. Zone III the transition to subsoil also yielded cultural materials. It is a mottled zone that has characteristics more similar to the subsoil, yet it is not as homogenous as the subsoil (Zone IV). The archaeological materials recovered from Zone III are interpreted as representing materials that have moved downward from the Zone II buried A horizon/midden. There are vertical crawdad burrows throughout the landform and they may have contributed to this downward movement. The soils profiles exhibited by Trenches/Units 1 through 3 are all very similar, though more water features are evident as you move to the southwest.

Though only small amount of debitage was recovered from Zone II, a small feature, possibly a roasting or cooking pit was documented within the buried A horizon. Though this study extended the boundaries of Site 15Wa166 and confirmed the presence of a buried A horizon, no diagnostic materials were recovered the site. In general, Site 15Wa166 appears to have been repeatedly used for short durations, perhaps on a seasonal basis. But additional work is needed to determine when these visited occurred.

Based on the work conducted to date, we concur with Wetzel et al.s' assessment that Site 15Wa166 is potentially eligible for listing in the National Register of Historic Places. The site should be preserved and protected. Prior to undertaking any ground disturbing activities within the boundaries of the site, the City of Bowling Green should consult with the Kentucky Heritage Council (State Historic Preservation Office) to determine the nature and extent of additional archaeological investigations that may be needed. Given the limited amount of ground that will be disturbed by the placing of posts for a disc golf course, we do not recommend additional work in advance of this undertaking.

CHAPTER 8
SUMMARY AND RECOMMENDATIONS

At the request of the city of Bowling Green, the Kentucky Archaeological Survey (KAS) conducted an archaeological survey of 20.1 ha (51 acres) of the Riverwalk Park in Bowling Green, Warren County, Kentucky. The focus of this study was the portion of the project area that had not been examined during a 2009 investigation of the southeastern portion of the park. In addition to conducting the archaeological survey, limited testing was conducted at Site 15Wa166.

Shovel probes placed in the field north of the paved road running through the middle of the open field did not yield any cultural material associated with the Native American occupation of Site 15Wa166. Nor were additional archaeological sites documented. The northwestern edge of the site is demarcated by a walking path as identified by Corn Island's 2009 survey. Shovel probes did extend the southwestern edge of the site about thirty meters into an area that could not be shovel probed in 2009 due to standing water. The results of systematic shovel probing of the project area determined that in general soils throughout the park are saturated with water, suggesting poor drainage in many areas. Crawdad burrows were evident throughout the project area. This work also confirmed that Site 15Wa166 is located on the highest portion of the floodplain. The low-lying areas surrounding Site 15Wa166 do not appear to have been conductive to Native American or Historic occupation.

The only cultural materials recovered from shovel probes excavated in the open field and the wooded areas beyond the boundaries of Site 15Wa166 were mid- to late twentieth century clear and green bottle glass, light bulb fragments, cinder/slag, and unidentified metal. Given that no structures are indicated on historic maps of the area coupled with the minimal presence of architecture related objects these materials likely represent modern trash disposal associated with farming and park activities. Therefore, they do not represent an archaeological site.

The limited test excavations undertaken at Site 15Wa166 confirmed the presence of a 10 to 22 thick buried A horizon (Zone II) that contained a small amount of debitage, and wood and nut charcoal. Though only small amounts of debitage were recovered from the units, a small feature, a possible roasting or cooking pit was documented within the buried A horizon. Though the study extended the boundaries of Site 15Wa166 and confirmed the presence of a buried A horizon, no temporally diagnostic materials were recovered from the site. In general, Site 15Wa166 appears to have been repeatedly used by Native Americans for short durations, perhaps on a seasonal basis. But additional work is needed to determine when these visited occurred.

Based on the work conducted to date, we concur with Wetzel et al.s' assessment that Site 15Wa166 is potentially eligible for listing in the National Register of Historic Places. The site should be preserved and protected. Prior to undertaking any ground disturbing activities within the boundaries of the site, the City of Bowling Green should

consult with the Kentucky Heritage Council (State Historic Preservation Office) to determine the nature and extent of additional archaeological investigations that may be needed. Given the limited amount of ground that will be disturbed during placement of the posts for a disc golf course within the boundaries of Site 15Wa166, we do not recommend additional work in advance of this aspect of the project. Nor is additional work recommend in advance of the construction of the golf pavilion as its proposed location is located along the edge of the site in an area that has a low potential for containing intact deposits. None of the other proposed activities have the potential to impact significant archaeological resources.

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Exhibit 7

USACE Consultation

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT
600 DR. MARTIN LUTHER KING JR PL
LOUISVILLE, KY 40202

February 18, 2021

Regulatory Division
South Branch
ID No. LRL-2021-138-sea

Mr. Nick Cook
Bowling Green Kentucky
Neighborhood & Community Services Department
707 E. Main Street
P.O. Box 430
Bowling Green, Kentucky 42102

Dear Mr. Cook:

This is in response to your request dated April 27, 2020, concerning a proposal to construct the City of Bowling Green Riverfront Development Project. This project would include a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities. The proposed project would be located in Bowling Green, Warren County, Kentucky (Latitude: 37.001368°N; Longitude: 86.423428°W).

The U.S. Army Corps of Engineers (USACE) exercises regulatory authority under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act, 1972 (33 USC 1344) for certain activities in "waters of the United States (U.S.)." These waters include all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce. "Waters of the U.S." include hydrologically connected lakes, rivers, and stream channels exhibiting an Ordinary High Water Mark (OHWM); wetlands; sloughs; and wet meadows and wetlands adjacent to "waters of the U.S."

Based on the information provided by you in the above-referenced request, it appears a Department of the Army (DA) Permit may be required. The mapping you provided shows proposed work in or near what appears to be "waters of the U.S." These waters include the Barren River. If the project would necessitate the discharge of dredged or fill material into any "waters of the U.S." including wetlands, then you should submit a DA permit application for review by this office. We will need a completed DA permit application along with additional details regarding the project's design, scope, construction methods, purpose and a delineation of all "waters of the U.S.," including the coordinates and locations of each "water" within the proposed project area and all impacts to waters (linear feet, width and acreage).

You are reminded that all drawings must be submitted on 8½ x 11-inch paper and be of reproducible quality, and if possible, please also submit the information in electronic format via CD (please note we cannot accept thumb drives).

Our comments on this project are limited to only those effects which may fall within our area of jurisdiction and thus does not obviate the need to obtain other permits from State or local agencies.

Further information on the Regulatory Program, including the DA Permit application, can be obtained from our website at http://www.lrl.usace.army.mil/Missions/Regulatory.aspx. Please allow sufficient time in your preconstruction schedule for the processing of a DA permit application.

Your request has been assigned ID No. LRL-2021-138-sea. Please reference this number on all correspondence pertaining to this project. Please contact us by writing to the District Regulatory Office at the above address, ATTN: CELRL-RDS, or contact me directly at (502) 315-6711 or Sarah.E.Atherton@usace.army.mil.

Sincerely,

Date: 2021.02.18 16:01:58 -05'00'

Sarah Atherton
Project Manager, South Branch
Regulatory Division

Nick Cook

From: Nick Cook
Sent: Monday, February 01, 2021 3:14 PM
To: 'david.e.baldridge@usace.army.mil'
Subject: City of Bowling Green
Attachments: U.S.A.C.E. Letter 4-27-20.pdf

Mr. Baldridge,

I received your voicemail and learned how Ms. Archer previously retired. Please find attached letter a sent to Ms. Archer regarding a project the City is currently working with the National Park Service on. Could you please forward to the appropriate person at USACE.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

Nick Cook

From: Nick Cook
Sent: Monday, April 27, 2020 2:17 PM
To: 'Jane.E.Archer@usace.army.mil'
Subject: City of Bowling Green
Attachments: U.S.A.C.E. Letter 4-27-20.pdf

Please find attached letter and let me know if an original should be mailed.

Thanks,

Nick Cook
Grants Coordinator
City of Bowling Green
PO Box 430
Bowling Green, KY 42102
Ph: 270-393-3659
Fax: 270-393-3168
nick.cook@bgky.org

Nick Cook
Grants Coordinator
Telephone: 270.393.3659
Fax: 270.393.3168
Nick Cook@bgky.org

707 E. Main Ave
PO Box 430
Bowling Green, Kentucky 42102
www.bgky.org

Neighborhood & Community Services Department

April 27, 2020

Ms. Jane Archer
U.S. Army Corps of Engineers
Louisville Engineer District
P.O. Box 59
Louisville, KY 40201-0059

RE: City of Bowling Green Riverfront Development Project

Dear Ms. Archer,

The National Park Service selected a preliminary application for the above referenced project under the 2017-2018 Land and Water Conservation Fund, Outdoor Recreation Legacy Partnership Program. The City must now submit a final application which includes consultation with the U.S. Army Corps of Engineers (U.S.A.C.E.) regarding the project's impacts on the U.S.A.C.E.'s jurisdictional responsibilities.

The project will revitalize park areas along Bowling Green's downtown riverfront. Improvements include a boat access ramp, fishing facilities, a boulder park for rock climbing, a disc golf course, pedestrian bridge with trail connections, sidewalks, parking lots, restrooms, picnic pavilions, lighting, and supporting amenities (i.e. trash receptacles, signage, benches, etc.). The improvements will provide access to new recreational opportunities while addressing recreational deficiencies in the community.

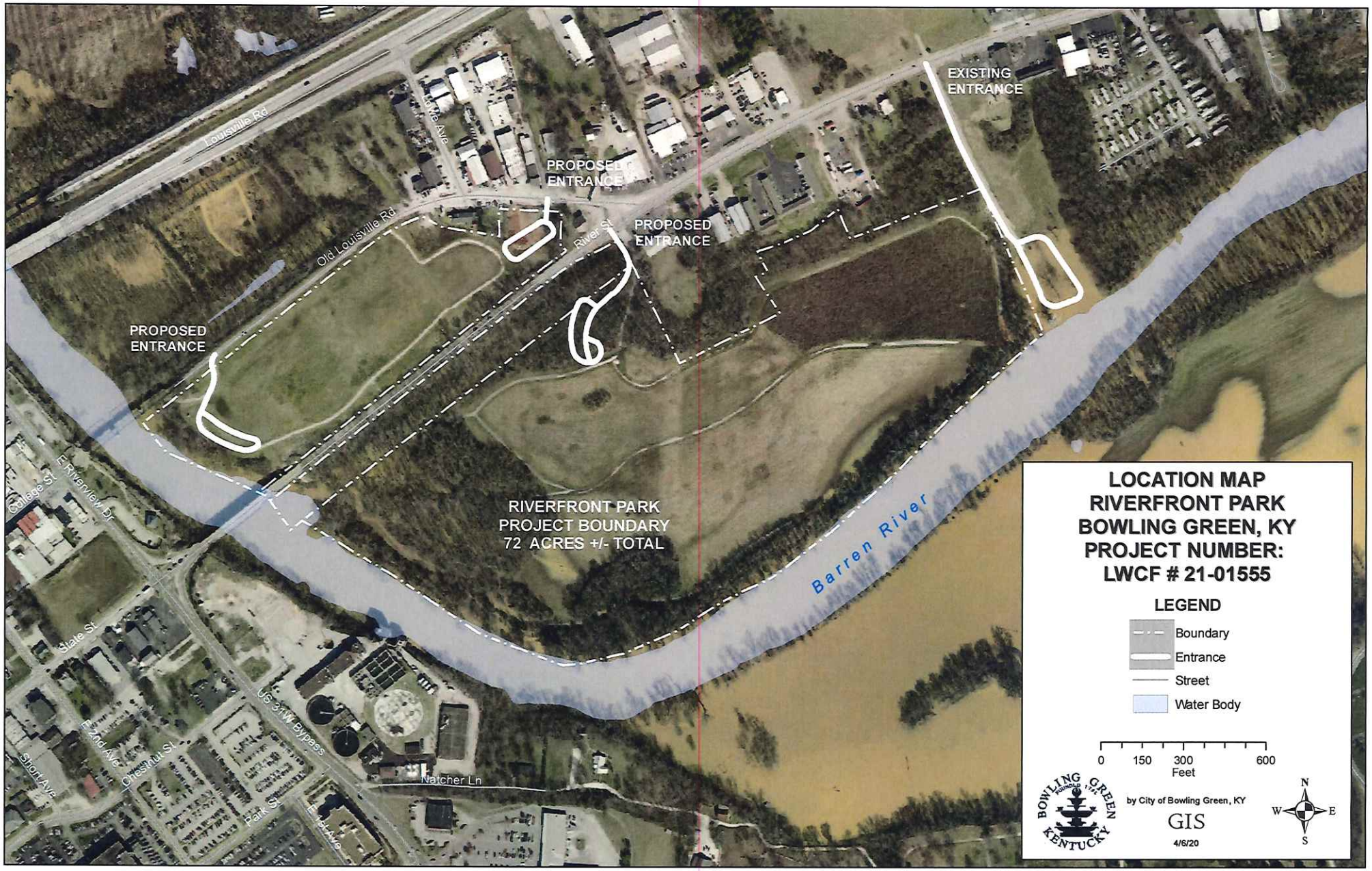
The Riverfront Development Project will breathe life into distressed park areas significantly underutilized due to a lack of amenities and safety concerns arising from steep terrain, absent lighting, natural vegetation seclusion, and reported crime. The project's boat ramp will improve search and rescue efforts within the Barren River while increasing safety of first responders. Furthermore, the project compliments the revitalization of the River Street corridor led by a grass roots effort poised to remove blight, attract new private investment, and increase jobs in a distressed area.

I am requesting a review by your office relative to any environmental concerns under your jurisdiction. Total cost of the project is estimated to be $2,250,000. Included with this letter you will find maps and drawings of the proposed project. Any comments from your agency would be greatly appreciated in the next thirty (30) days. Thank you for your assistance and if you have any questions, please contact me (270-393-3659) or nick.cook@bgky.org.

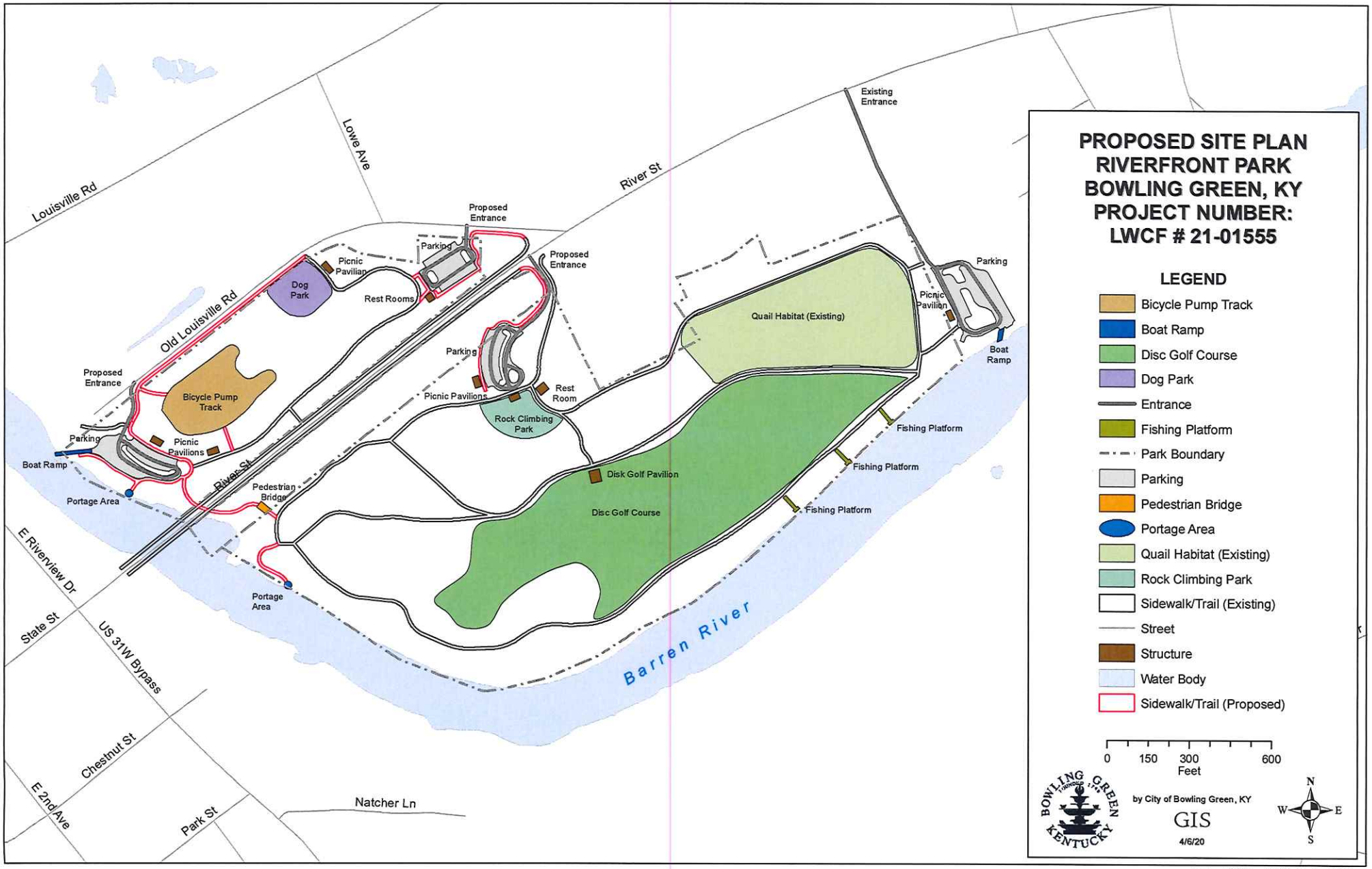
Sincerely,

Nick Cook

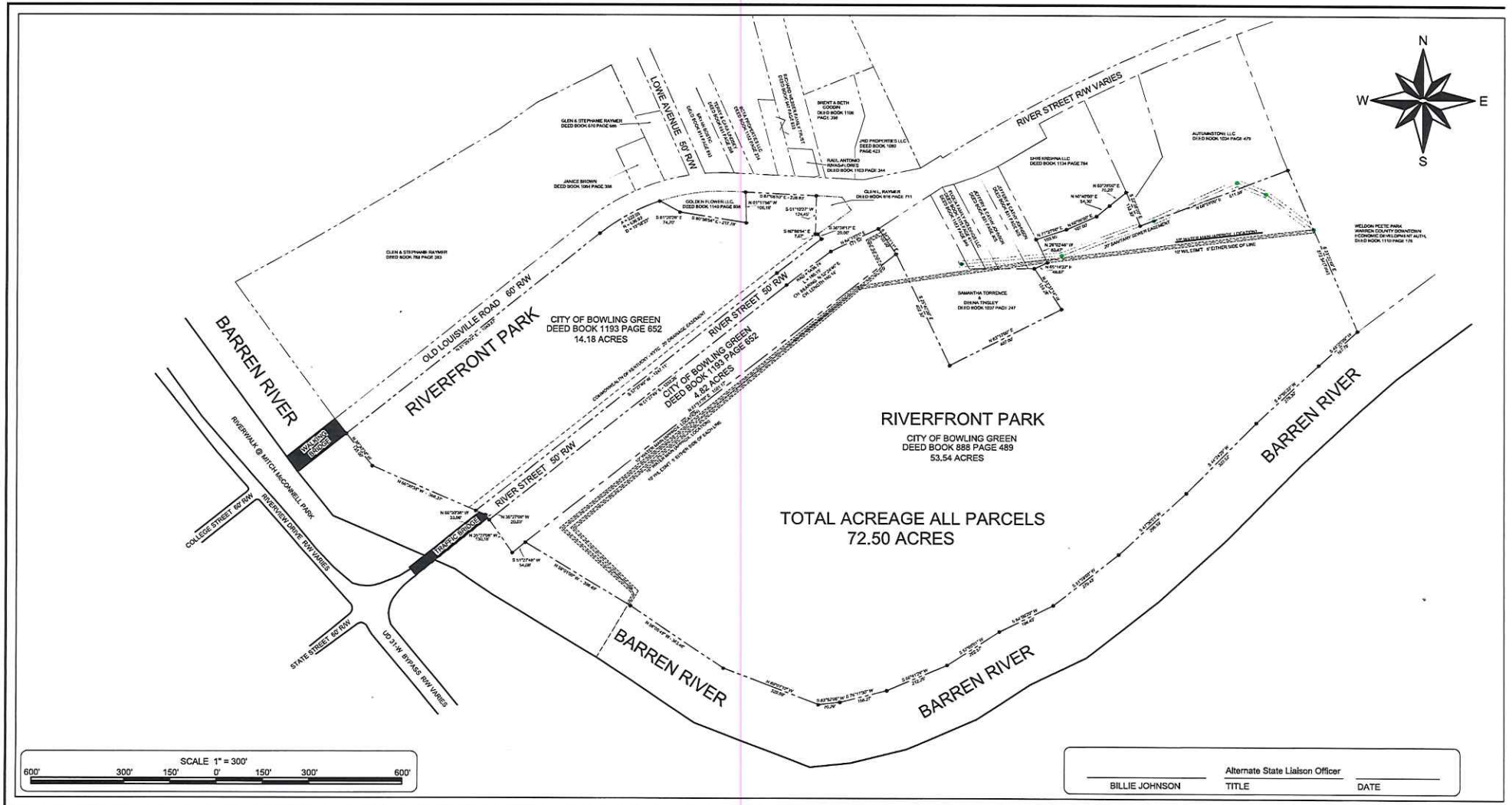
Enclosure



Bearden - L:/2020 Maps/NCS/Riverfront Grant/BoundaryMap



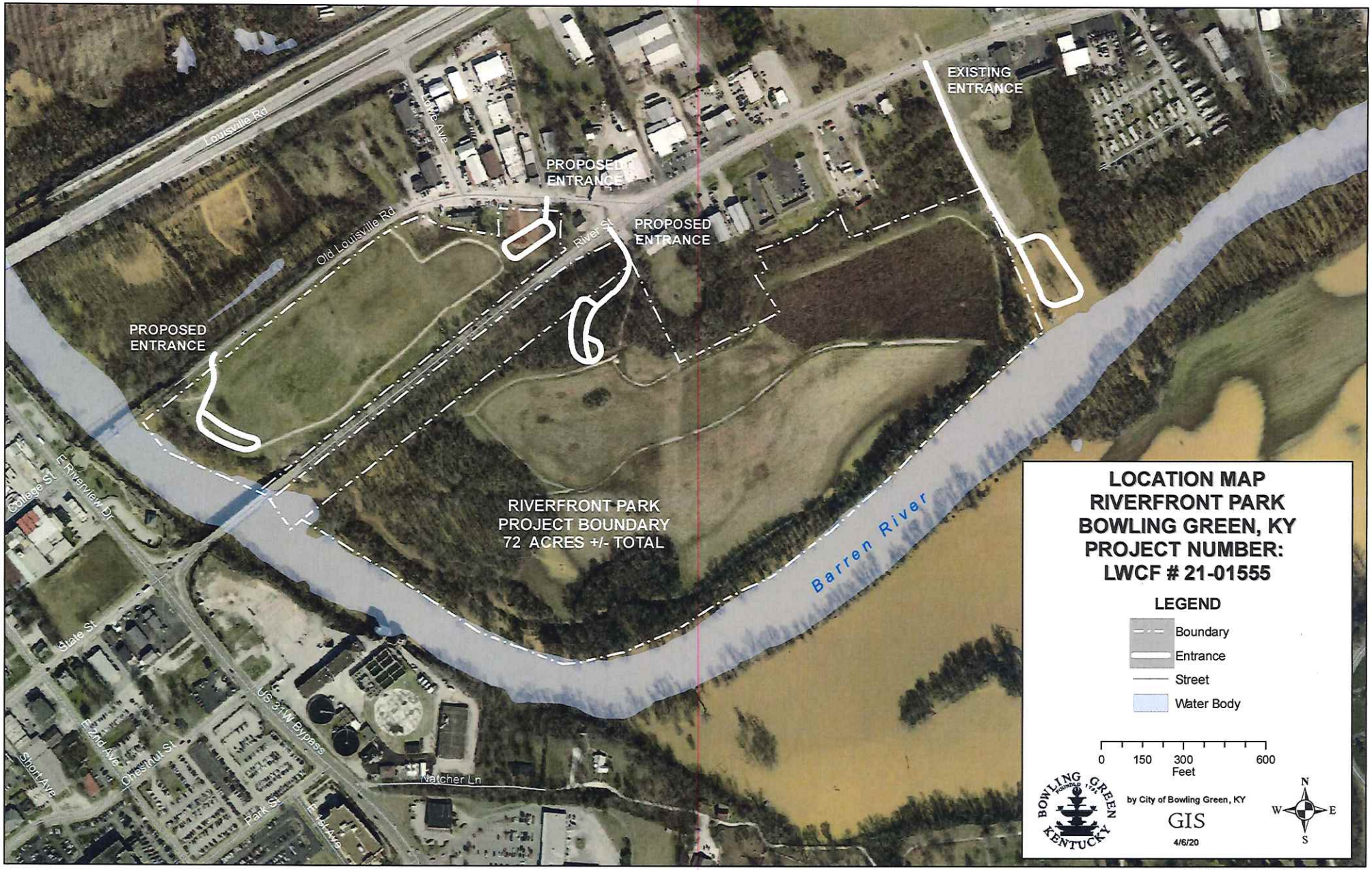
Bearden - L:/2020 Maps/NCS/Riverfront Grant/SitePlan



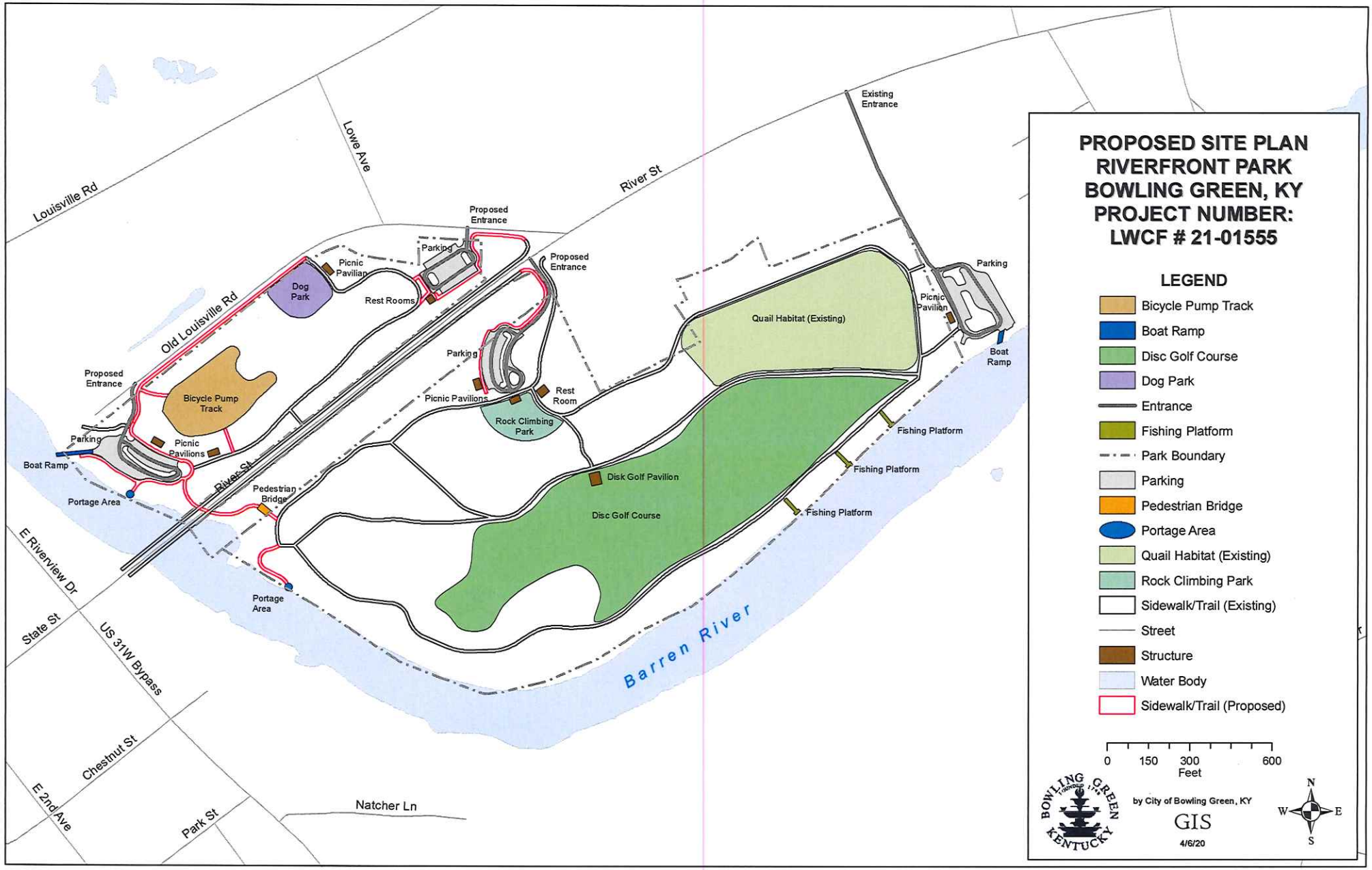
CITY OF BOWLING GREEN	LWCF-ORLP 6 (f) MAP	RIVERFRONT PARK BOWLING GREEN, KENTUCKY PROJECT # 21-01555	SHEET OF JOB NO. 20024 SCALE 1" = 300' DATE 04/09/2020

Exhibit 8

Project Maps



Bearden - L:/2020 Maps/NCS/Riverfront Grant/BoundaryMap



PROPOSED SITE PLAN
RIVERFRONT PARK
BOWLING GREEN, KY
PROJECT NUMBER:
LWCF # 21-01555

LEGEND

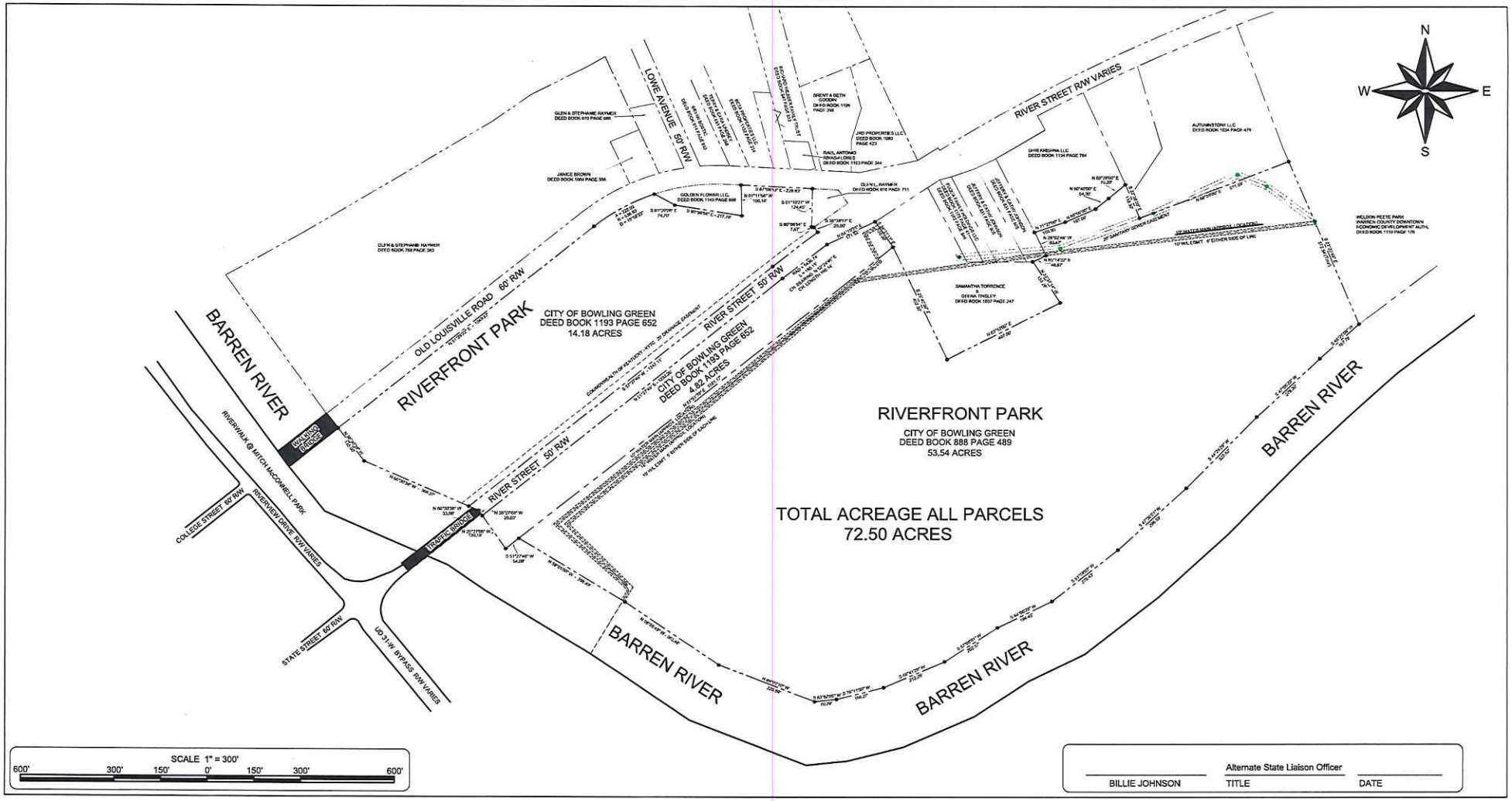
- Bicycle Pump Track
- Boat Ramp
- Disc Golf Course
- Dog Park
- Entrance
- Fishing Platform
- Park Boundary
- Parking
- Pedestrian Bridge
- Portage Area
- Quail Habitat (Existing)
- Rock Climbing Park
- Sidewalk/Trail (Existing)
- Street
- Structure
- Water Body
- Sidewalk/Trail (Proposed)

0 150 300 600
Feet

by City of Bowling Green, KY
GIS
4/6/20

N
W E
S

Bearden - L:\2020 Maps\NCS\Riverfront Grant\SitePlan



BILLIE JOHNSON | Alternate State Liaison Officer | TITLE | DATE

CITY OF BOWLING GREEN	LWCF-ORLP 6 (f) MAP	RIVERFRONT PARK BOWLING GREEN, KENTUCKY PROJECT # 21-01555	SHEET OF JOB NO. 20024 SCALE 1" = 300' DATE 04/09/2020

Exhibit 9

Kentucky State Clearinghouse Comments

ANDY BESHEAR
GOVERNOR

DEPARTMENT FOR LOCAL GOVERNMENT
OFFICE OF THE GOVERNOR
100 AIRPORT ROAD, 3rd FLOOR
FRANKFORT, KENTUCKY 40601-8204
PHONE (502) 573-2382 FAX (502) 573-2939
TOLL FREE (800) 346-5606/ TDD:711
WWW.kydlgweb.ky.gov

DENNIS KEENE
COMMISSIONER

May 14, 2020

Mr. Nick Cook
City of Bowling Green
P.O. Box 430
Bowling Green, KY 42102-0430

RE: Downtown Riverfront Development Project
SAI# KY202005070634
CFDA# 15.916

Dear Mr. Cook:

The Kentucky State e-Clearinghouse is the official designated Single Point of Contact (SPOC) for the Commonwealth pursuant to Presidential Executive Order 12372, and supported by Kentucky Statutes KRS 45.031. The primary function of the SPOC is to streamline the review aforementioned process for the applicant and the funding agency. This process helps in vocalizing the statutory and regulatory requirements. Information in the form of comments, if any, will be attached to this correspondence.

This proposal has been reviewed by the appropriate state agencies in the e-Clearinghouse for conflicts with state or local plans, goals and objectives. After receiving this letter, you should make it available to the funding agency and continue with the funding agencies application process. This e-clearinghouse SPOC letter signifies only that the project has followed the state reviewing requirements, and is neither a commitment of funds from this agency or any other state or federal agency. Please remember if any federal reviews are required the applicant must follow through with those federal agencies.

The results of this review are valid for one year from the date of this letter. If the project is not submitted to the funding agency or not approved within one year after the completion of this review, the applicant can request an extension by email to Lee.Nalley@ky.gov. If the project changes in any way after the review, the applicant must reapply through the eclearinghouse for a new review. There are no exceptions.

If you have any questions regarding this letter or the review process please contact the e-Clearinghouse office at 502-573-2382, ext. 274.

Sincerely,

Lee Nalley

Lee Nalley, SPOC
Kentucky State Clearinghouse

Attachment

Barren River Area Development District
Dajana Crockett

No duplications or conflicts. Supports BRADD's CEDS Community Services & Facilities Goal 3: Promote a healthier lifestyle and improve the quality of life for the residents of the region. Also support Environmental - Natural, Physical & Cultural Resources Goal 1:Objective B: Encourage development in a manner that is sensitive to environmental constraints, natural resources and conditions, cultural resources and the protection of agricultural resources within the District.

Department for Environmental Protection
Louanna Aldridge

This review is based upon the information that was provided by the applicant through the Clearinghouse for this project. An endorsement of this project does not satisfy, or imply, the acceptance or issuance of any permits, certifications, or approvals that may be required from this agency under Kentucky Revised Statutes or Kentucky Administrative Regulations. Such endorsement means this agency has found no major concerns from the review of the proposed project as presented other than those stated as conditions or comments.

Kentucky Division for Air Quality Regulation 401 KAR 63:010 Fugitive Emissions states that no person shall cause, suffer, or allow any material to be handled, processed, transported, or stored without taking reasonable precaution to prevent particulate matter from becoming airborne. Additional requirements include the covering of open bodied trucks, operating outside the work area transporting materials likely to become airborne, and that no one shall allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway. Please note the http://air.ky.gov/SiteCollectionDocuments/Fugitive%20Dust%20Fact%20Sheet.pdf

Kentucky Division for Air Quality Regulation 401 KAR 63:005 states that open burning is prohibited. Open Burning is defined as the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the atmosphere without passing through a stack or chimney. However, open burning may be utilized for the expressed purposes listed on the http://air.ky.gov/Pages/OpenBurning.aspx.

All solid waste generated by this project must be disposed at a permitted facility. If underground storage tanks are encountered, they must be properly addressed. If asbestos, lead paint, and/or other contaminants are encountered during this project, they must be properly addressed.

If the proposed project site is in a designated flood hazard area, application must be made to the Division of Water for a floodplain construction permit. Permission, or exemption, depends upon design and the exact site.

Utility line projects that cross a stream will require a Section 404 permit from the US Army Corps of Engineers and a 401 Water Quality Certification from DOW.

If the construction area disturbed is equal to or greater than 1 acre, the applicant will need to apply for a Kentucky Pollutant Discharge Elimination System (KPDES) stormwater discharge permit from the Division of Water.

Best Management Practices (BMPs) should be utilized to control storm water runoff and sediment damage to water quality and aquatic habitat. For technical assistance on the kinds of BMPs most appropriate for housing and related construction, please contact the local Soil and Water Conservation District or the Division of Conservation.

If an existing water server is to be utilized for new water tap-ons (rehabilitations, new constructions), ascertain the capacity and operating condition of the originating water treatment plant and of the server (if different) in comparison to the water needs of the proposed housing. DOW cannot permit connections to water servers under tap-on bans, Agreed Orders, or Court Orders. DOW may not give approval to connections to water systems operating near, at, or over capacity. If a new water source is to be utilized, ascertain the source's (stream's or well's)

low flow ability to serve the proposed project. Prior approval from DOW is required for water withdrawals of over 10,000 gallons per day and for all public drinking water. Final plans and specifications are subject to review by DOW.

If an existing wastewater server is to be utilized for new wastewater tap-ons (rehabilitations, new construction), ascertain the capacity and operating conditions of the receiving wastewater treatment facility (wastewater treatment plant or package sewage treatment plant) and of the server (if different) in comparison to the wastewater needs of the proposed housing. DOW cannot permit connections to wastewater servers under tap-on bans, Agreed Orders, or Court Orders. DOW may not give approval to connections to wastewater systems at or over hydraulic capacity. If a new wastewater treatment facility is to be utilized, ascertain the discharge stream's ability to absorb the proposed projects treated wastewater.

DOW notes the requirements of onsite sewage disposal statutes, KRS 211.350 to 211.380, and administrative regulations, 902 KAR 10:060 to 10:110, must be met. DOW requests provisions are made for future connections to a wastewater treatment system. A Groundwater Protection Plan, as required by 401 KAR 5:037, needs to be prepared by all onsite wastewater system owners. Contact the DOW regarding requirements.

Prior approval from DOW is required for all discharges into streams and for all wastewater treatment facilities. DOW reminds the applicant to seal abandoned wastewater service connections.

Department of Housing, Buildings and Construction
Kevin Carlin

The Department of Housing Buildings and Construction, Division of Building Code Enforcement, has no comments concerning this proposed project. A building permit from the Local Jurisdiction will be required, prior to construction.

Fish and Wildlife
Dan Stoelb

Based on the information provided, the Kentucky Department of Fish & Wildlife Resources has no comments concerning the proposed project. Please contact Dan Stoelb @ 502-892-4453 or Daniel.Stoelb@ky.gov if you have further questions or require additional information.

Kentucky Transportation Cabinet
Joseph Plunk

Related to the proposed entrance on River Street and the proposed pedestrian access under the River Street bridge, KYTC and the City of BG have been coordinating. Eventually, an encroachment permit will be required when final plans are developed. Contact KYTC District 3 Office at 270-746-7898.

KY Heritage Council
Yvonne Sherrick

To receive a review from the KY Heritage Council/State Historical Preservation Office (SHPO) you must follow the instructions located on their website at http://www.heritage.ky.gov/siteprotect/ . There you will find the required documents for the Section 106 Review and Compliance for 36 CFR Part 800. This Section 106 submission process to SHPO will assist applicants and agencies in providing the appropriate level of information to receive comments from SHPO. If you have any questions please contact Yvonne Sherrick, Administrative Specialist III, (502) 564-7005, Ext. 113, yvonne.sherrick@ky.gov.

Please note: If your project is funded through Transportation Alternative (TAP), Transportation Enhancements (TE), Congestion, Mitigation, Air Quality (CMAQ), or Safe Routes to School (SRTS) you will need to send this information to Michael Jones, Historic Preservation Program Administrator with the Kentucky Transportation Cabinet via email MichaelR.Jones2@ky.gov or hard copy to Michael Jones, Office of Local Programs, KY Transportation Cabinet, 200 Mero Street Frankfort, KY 40622. Do not send materials directly to SHPO if your project involves funding from these four sources as it will cause delays in the review process. Michael Jones will consult directly with the SHPO on projects with these funding sources to complete the Section 106 review.

Exhibit 10

Public Notice

CITY OF BOWLING GREEN
ENVIRONMENTAL ASSESSMENT
LAND AND WATER CONVERSATION FUND
OUTDOOR RECREATION LEGACY PARTNERHIP PROGRAM
$750,000 GRANT
RIVERFRONT PARK PROJECT

The City of Bowling Green has received pre-application approval of a $750,000 Land and Water Conservation Fund (LWCF), Outdoor Recreation Legacy Partnership Grant from the National Park Service (NPS) through the Kentucky Department for Local Government.

One of the conditions of the grant is for the City to prepare an Environmental Assessment (EA) of the project. States are required to ensure the interested and affected public has had an opportunity to review and provide written comments on completed environmental assessments for LWCF proposals. This public comment period shall be no less than 30 days. The notice an EA is available for review shall be published in the local newspapers and community notices, posted on the sponsoring agency's web site, and made broadly known to the public in such a way that the interested and affected public has ample notice of the public comment period. The State/project sponsor is responsible for reviewing the public comments. These comments and the responses that address all substantive comments are to be included in the proposal's submission to NPS.

The Environmental Assessment has been prepared and is available for review on the City's website page at https://www.bgky.org/. The public comment period will run from April 7, 2021 through May 7, 2021.

Please send all comments regarding the Environmental Assessment to the office of the City Grants Coordinator by email to:

Nick.Cook@bgky.org

Or by mail to:

City of Bowling Green
Attention: Nick Cook
P.O. Box 430
Bowling Green, KY 42102-0430