Applications for Section 404 and 401 Permits

Riverpointe Public Infrastructure Project
St. Charles, St. Charles County, Missouri

CMT Job Number: 19043402-00

NOVEMBER 12, 2020

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TABLE OF CONTENTS

ENG FORM 4345

PROJECT DESCRIPTION AND OVERVIEW

The City of St. Charles is proposing a new, multi-phase riverfront development project along South River Road located south of Interstate 70 (I-70) to Friedens Road within the City of St. Charles, Missouri. The project consists of three phases of development adjacent to Bangert Island and the Missouri River.

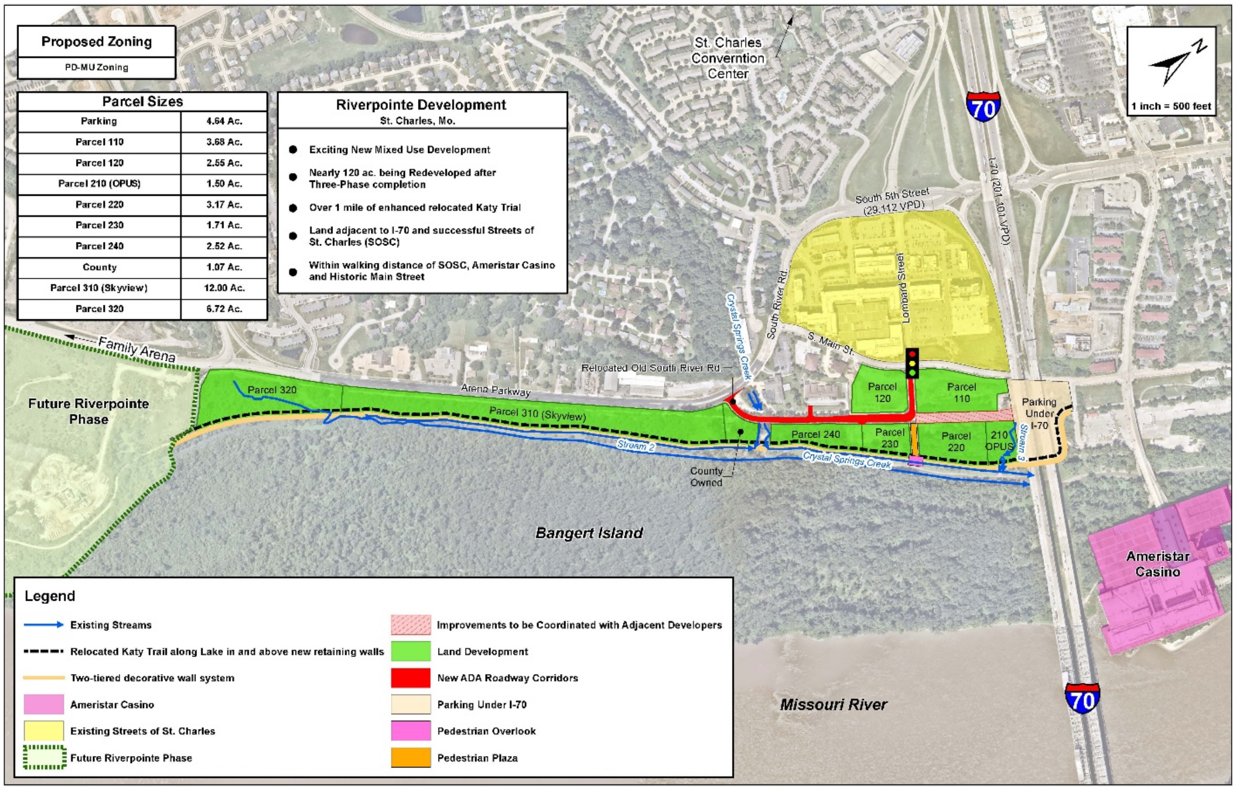


FIGURE 1 – PROPOSED IMPROVEMENTS

Phase 1a and 1b of the project consists of an approximately 22-acre mixed-use development located adjacent to I-70 and South Main Street, and extensions reconstruction of Lombard Street and Old South River Road. Phases 3a and 3b of the project consist of an approximately 20-acre development along South River Road between Phase 1 and Friedens Road. The development will provide recreational, employment, entertainment, and retail opportunities along approximately 1.1 miles of riverfront.

In addition to new mixed-use developments, the project will contain the following key components:

- New roadway infrastructure and ADA sidewalks
  - Lombard Street extension from South Main Street to a new intersection
  - New Phase 1 loop road from Old South River Road to Lombard intersection
  - Old South River Road reconstruction from South Main Street to South River Road, including a new bridge
- Reconstructed roadways and ADA sidewalks
  - Old South River Road from South Fifth Street to south of Friedens Road
- Off-street trail facilities

    - Reconstruction of over 1 mile of flood-prone Katy Trail through Phases 1 and 3 built at an elevation above the 500 year floodplain
- Flood mitigation
    - Approximately 120 acres of ground directly removed from flood damages by elevation change.

Phase 1A, located east adjacent to South Main Street and entirely outside of the jurisdictional boundary, is currently under construction. Construction of Phases 1B and 3a is anticipated to begin construction in early 2021; construction of Phase 3b is anticipated to begin in 2023 or later.

PROJECT LOCATION

The proposed project is located along South River Road between I-70 and Friedens Road within the City of St. Charles in St. Charles County, Missouri. The project is located near Sections 5 and 8, Township 46 North, Range 5 East of the U.S. Geological Survey (USGS) St. Charles and Kampville, Missouri Quadrangles. The project location is in a relatively developed area with Bangert Island and the Missouri River to the east, I-70 to the north, and residential, commercial, and industrial development to the west and south.

From the I-70 and South 5th Street interchange, travel southwest on South 5th Street for 0.2 mile; keep left to continue onto South River Road for 0.2 mile. Turn left onto Old South River Road; the project area will be to the east.

The City of St. Charles is located in eastern St. Charles County, as shown on **Figure 2.** The City is situated along the Missouri River, approximately 27 miles upstream of its confluence with the Mississippi River.

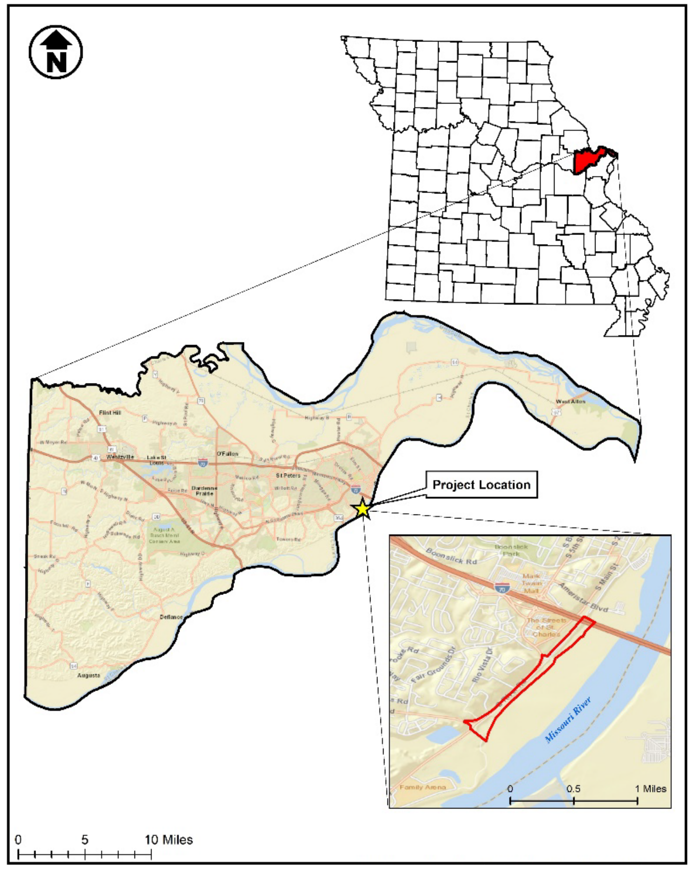


FIGURE 2 – COUNTY LOCATION MAP

PURPOSE AND NEED

The purpose of the proposed Riverpointe project is to support economic development within the City of St. Charles, while promoting multi modal transportation. Details on the project need elements are provided below.

ECONOMIC DEVELOPMENT

For over 30 years, St. Charles County has been the fastest growing part of the St. Louis region and the fastest growing county in Missouri. With a population estimated at over 400,000, this growth creates new and expanded service needs, which are heavily reliant on sales tax revenues.

The master planning efforts for the county identified that the county's economic potential would not be realized without the development of larger tracts of land at prime locations for business and commerce. One of the goals identified St. Charles County Master Plan – Envision 2030, was to encourage the creation of mixed-use development campus sites around the community. Some of the specific strategies indicated in the plan include:

- Targeting and recruiting a wide range of businesses to create diversity in employment opportunities and the tax base,
- Promote redevelopment of existing sites along Interstate 70 in St. Charles, and
- Encourage development at Arena Parkway (South River Road) in St. Charles.

The existing development in the project area along South River Road includes dilapidated residential, commercial, and industrial land uses. While St. Charles has been able to foster economic growth in the community through other public infrastructure improvement projects, such as the Streets of St. Charles, development potential is waning due to the lack of availability of sites without development constraints. Development along the City of St. Charles' riverfront has remained isolated to approximately one quarter of the City's total riverfront due to impacts from a changing river and historically poor access.

MULTI MODAL TRANSPORTATION

The county master plan identified the need to provide alternative and affordable modes of transportation by providing other modes of transportation, including bikeways, sidewalks, and trails, and supporting land use patterns that will utilize them.

Currently, portions of Historic Main Street suffer from car-centric development where residents will commonly drive from short distances only to struggle to find a place to park within a two-block radius of their final destination. The project will enhance the experience for users of the adjacent Katy Trail (the longest rails-to-trails conversion in the county) by providing improved access and services immediately adjacent to the trail. Other enhancements to multi-modal transportation provided by the project will be the addition of ADA compliant sidewalks and curb ramps, which will connect to the existing pedestrian facilities located north of the project area. The project will serve a population of 100,000 people just within walking (1/4 mile) and biking (3 miles) distance.

PUBLIC INVOLVEMENT

The City of St. Charles plans to hold a public meeting for the project to inform the public on the proposed development and to answer any questions. Due to the ongoing COVID-19 pandemic, the City of St. Charles plans to conduct a virtual public meeting, with live staff available to answer questions. While the specifics are still being planned, residents can sign up to receive a meeting invite at https://www.riverpointe-stc.com/public-involvement.

In addition to the upcoming public meeting, the City has had extensive public involvement in the project. In 2018, the City of St. Charles created a "www.riverpointe-stc.com" to assist in keeping residents up to date. As of early November 2020, the website has approximately 14,000 views.

In June and July 2020, the City conducted its annual roadshow, and with the Riverpointe project serving as the showcased project. The virtual road show received over 5,000 unique views, and the City received valuable feedback from surveys that helped shape the direction and decision making on the project.

The Mayor, City administrator, Director of Engineering, and several engineering staff attended the Big Muddy Speaker series that focused on the Riverpointe Development, and conducted a question and answer session with Greg Poleski, members of 'Friends of the Big Muddy", and other residents. The City has also had numerous council agenda items in which recorded public comments were provided.

The City of St. Charles has received letters of support for this project from Governor Mike Parson, Senator Roy Blunt, Senator Josh Hawley, Congressman Blaine Luetkemeyer, US Representative Ann Wagner, County Executive Steve Ehlmann, Missouri State Senator Bill Eigel, Missouri State Senator Robert Onder, Missouri State Representative Chrissy Sommer, Missouri State Representative Tom Hannegan, Former State Senate Pro Tem Tom Dempsey, and St. Charles Mayor Daniel J. Borgmeyer. The East-West Gateway Council of Governments is supportive of the project because it creates accessibility to this underdeveloped area through transportation improvements. Large and small business alike support the project including the Missouri Chamber of Commerce, the Missouri State Director of Economic Development Rob Dixon, Ameristar Casino, Cullinan Properties, Bike Stop Cafe, TR Hughes Development, Home Builders Association of St. Louis & Eastern Missouri, OPO Startups, Millstone Properties, Cushman Wakefield, and Drury Hotels as it will provide a catalyst for continued economic growth in the region.

ALTERNATIVES ANALYSIS

The project has evolved significantly since the original project inception, in large part due to the impacts to regulated surface water resources. Alternatives considered are described below.

NO BUILD/NO IMPACT ALTERNATIVE

The no build alternative would involve no development action. The project area would remain as it currently is with dilapidated residential, commercial, and industrial land uses. This alternative would have no impacts to identified surface water resources, but does not address the purpose and need to support economic development and multi modal transportation. Additionally, in this no-build scenario the wetlands adjacent to the current dilapidated development woud likely continue to further degrade. Since this alternative would not fulfill the purpose and need, it was eliminated form further consideration.

ALTERNATIVE 1: ELM POINT SITE ALTERNATIVE

This alternative included an evaluation of a development site located south of Missouri Route 370 as part of the Zumbehl Road Corridor Study. A feasibility study was completed for the site which identified a large property available for commercial/industrial development in the area of a proposed new interchange. The study identified that the development of this site would have

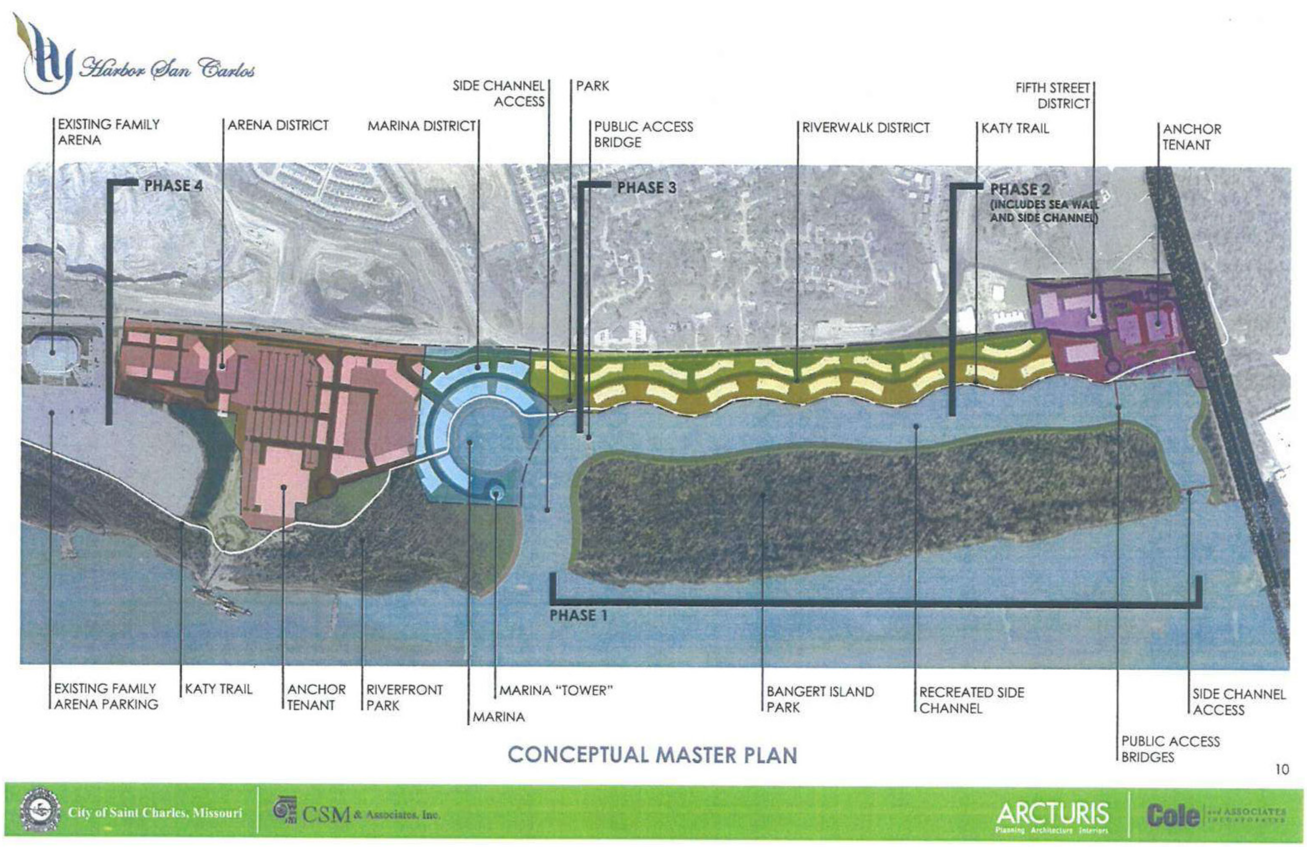
Zumbehl Road Corridor Study
DEVELOPMENT STRATEGIES

ALTERNATIVE 1: ELM POINT SITE

generated up to $3.6M annually in property taxes. The disadvantages of the site included the impact to a large area of wetlands (the study estimated up to 80 acres) and would have required the implementation of flood control strategies. The Elm Point Levee District and levee were proposed to address flooding concerns on the property. While this alternative would support economic development within the City of St. Charles, and promote multi modal transportation, it does not connect to other investments in the area and does not address the countywide plan for the development along Arena Parkway. Based on the environmental impacts along with the substantial up-front costs associated with the development of this property, this alternative was not selected.

ALTERNATIVE 2: HARBOR SAN CARLOS

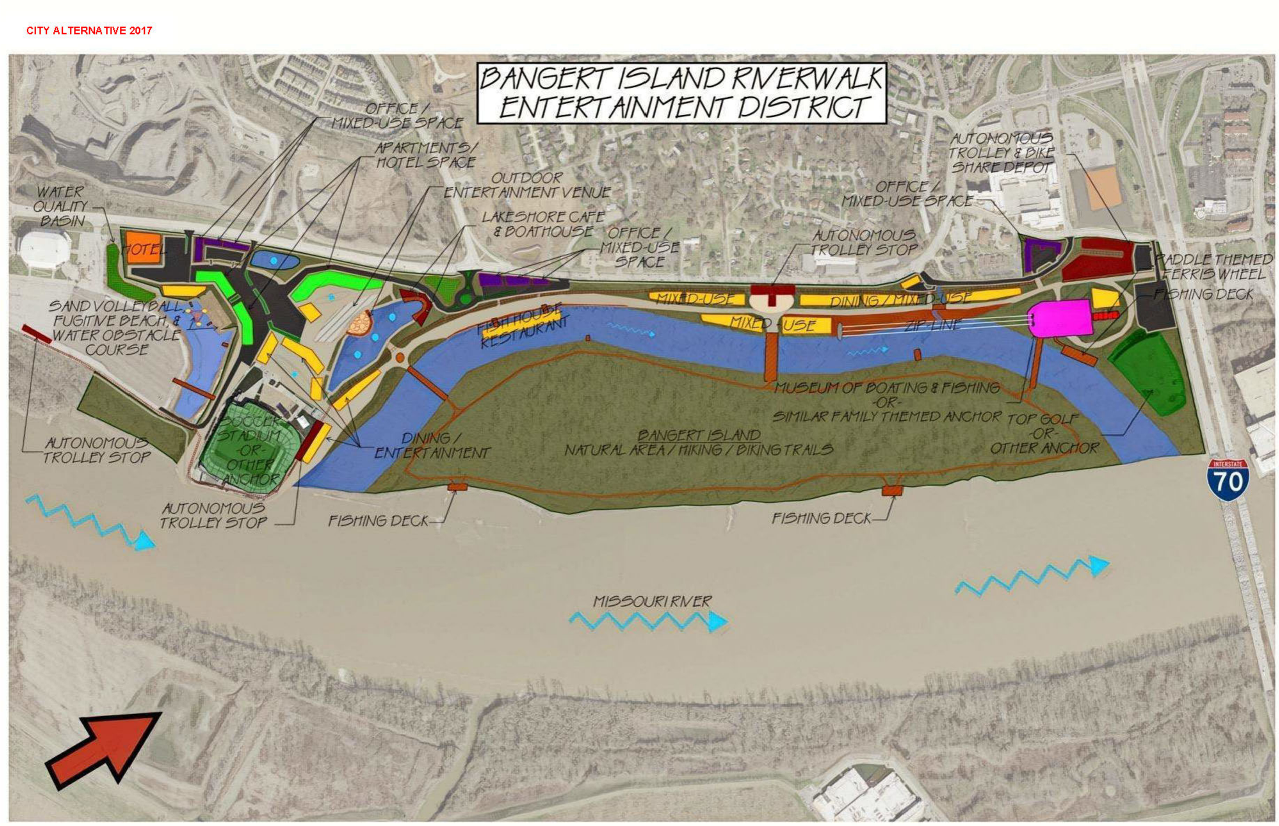
As the City of St. Charles started to conduct early planning efforts for the project adjacent to Bangert Island, the first conceptual site plan involved the creation of a harbor along the river, called Harbor San Carlos. This concept developed, in 2007, would have impacted an estimated 150 acres of wetlands on and around Bangert Island, which included the creation of the harbor channel itself. Relocation of Katy Trail and the construction of a large retaining wall would also be required under this alternative. This alternative would support economic development within the City of St. Charles, promote multi modal transportation. However, based on the substantial wetland impacts, this alternative was not selected.



ALTERNATIVE 2: HARBOR SAN CARLOS

ALTERNATIVE 3: RIVERWALK ENTERTAINMENT DISTRICT

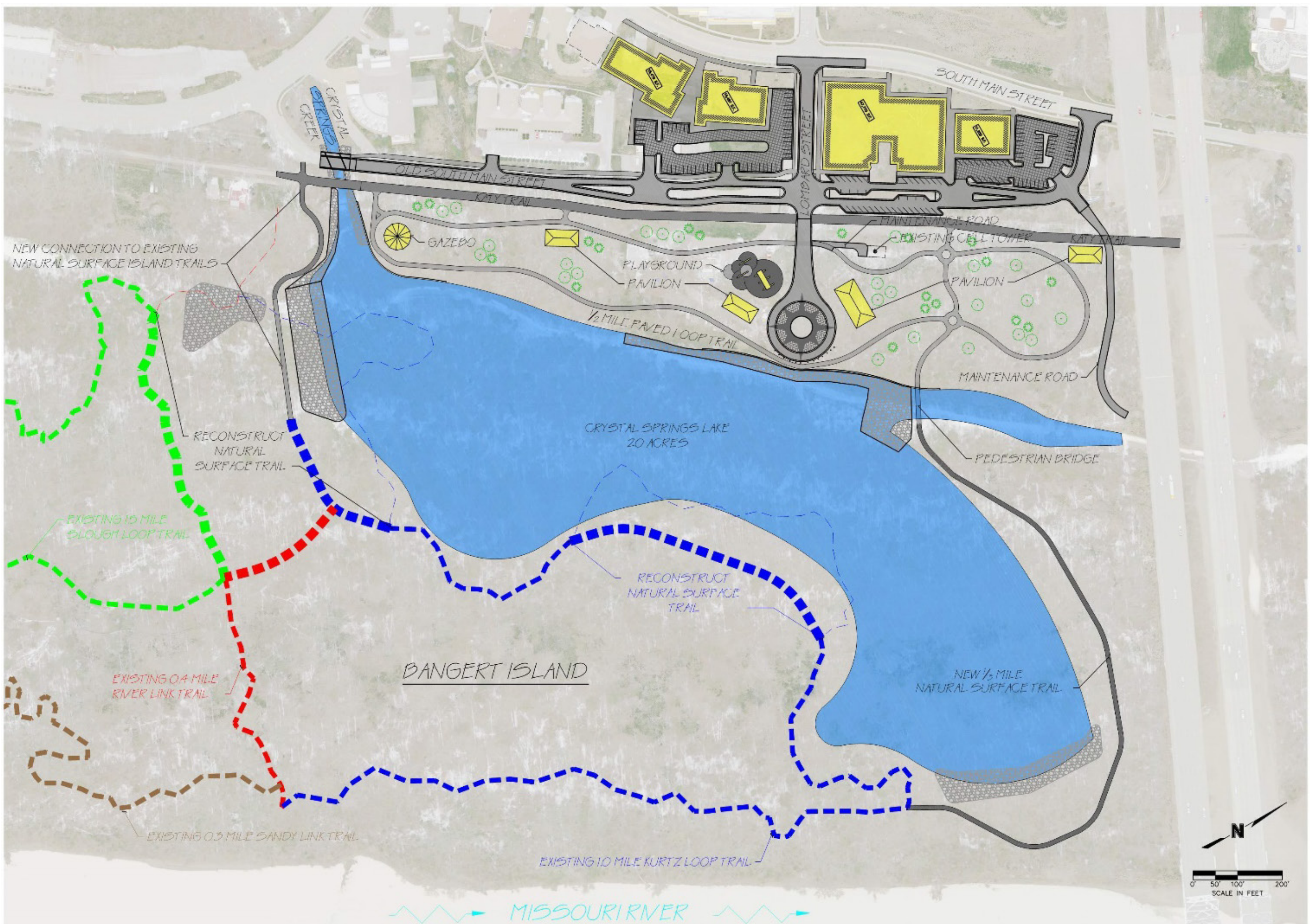
In 2017, an alternative that opened up the Crystal Springs Creek channel on both ends was evaluated. This option was dominated by recreation/entertainment venues and would be expected to generate less economic impact than commercial/retail and office development. While this alternative would support economic development within the City of St. Charles, promote multi modal transportation. This alternative would result in over 20 acres of wetland and stream impact, including impacts within the Missouri River. These impacts do not include the impacts resulting from the creation of the new channel. Due to concerns regarding the navigation channel, the magnitude of surface water resource impacts, and the potential to generate less income for the local economy, this alternative was not selected.



ALTERNATIVE 3: RIVERWALK ENTERTAINMENT DISTRICT

ALTERNATIVE 4: CRYSTAL SPRINGS LAKE

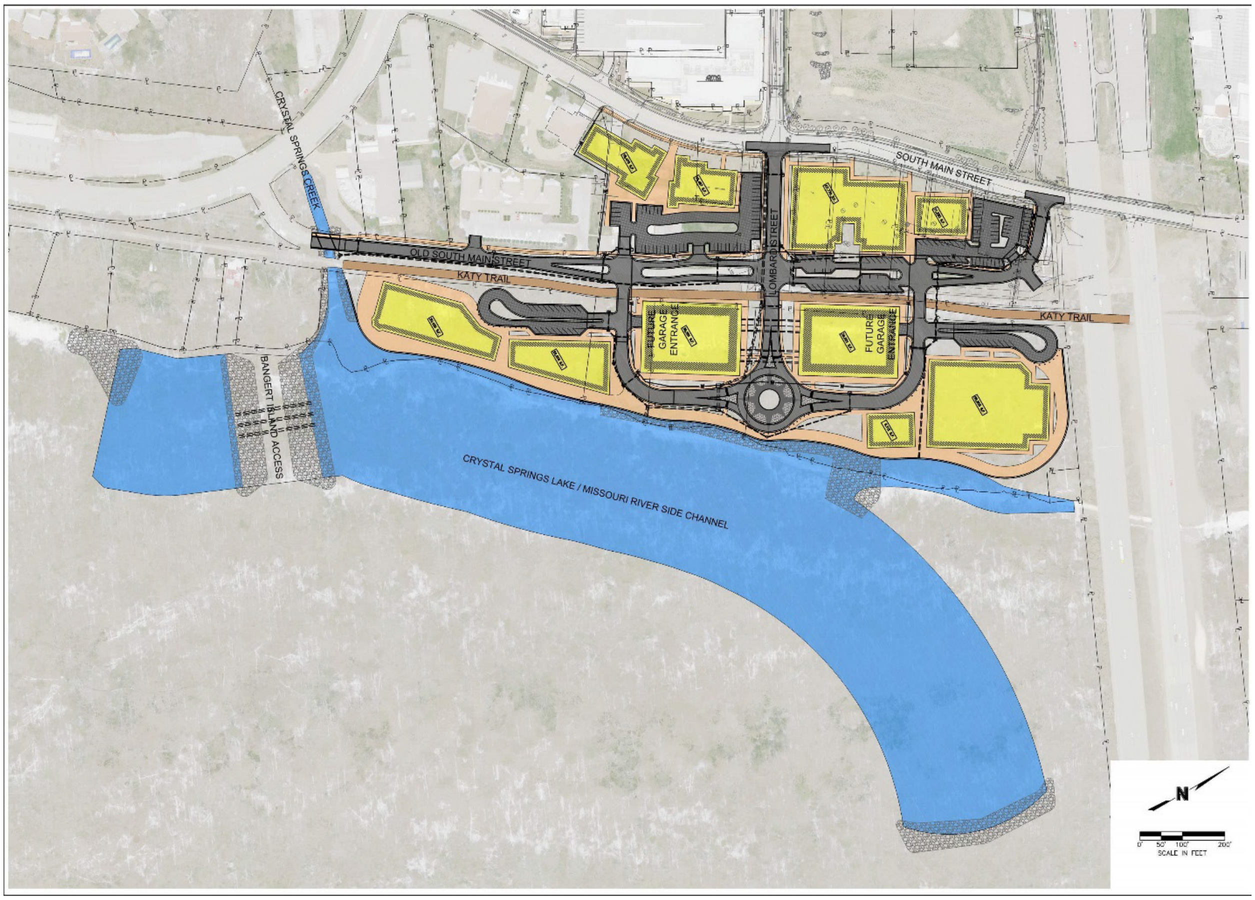
Under this alternative, Crystal Springs Creek would be impounded to create a 20-acre Crystal Springs Lake. The alternative would also include a small development area and outdoor recreation facilities including a playground, pavilions, and gazebos along with new trails on Bangert Island. The new park facilities and economic development area would impact an estimated 8 acres of wetland and an estimated 1,000 linear feet of stream, excluding the 20 acres of wetland impact for the creation of the lake. While this alternative would support economic development within the City of St. Charles and promote multi modal transportation, it would fail to provide enough economic development potential to be feasible.



ALTERNATIVE 4: CRYSTAL SPRINGS LAKE

ALTERNATIVE 5: CRYSTAL SPRINGS LAKE MINIMIZED

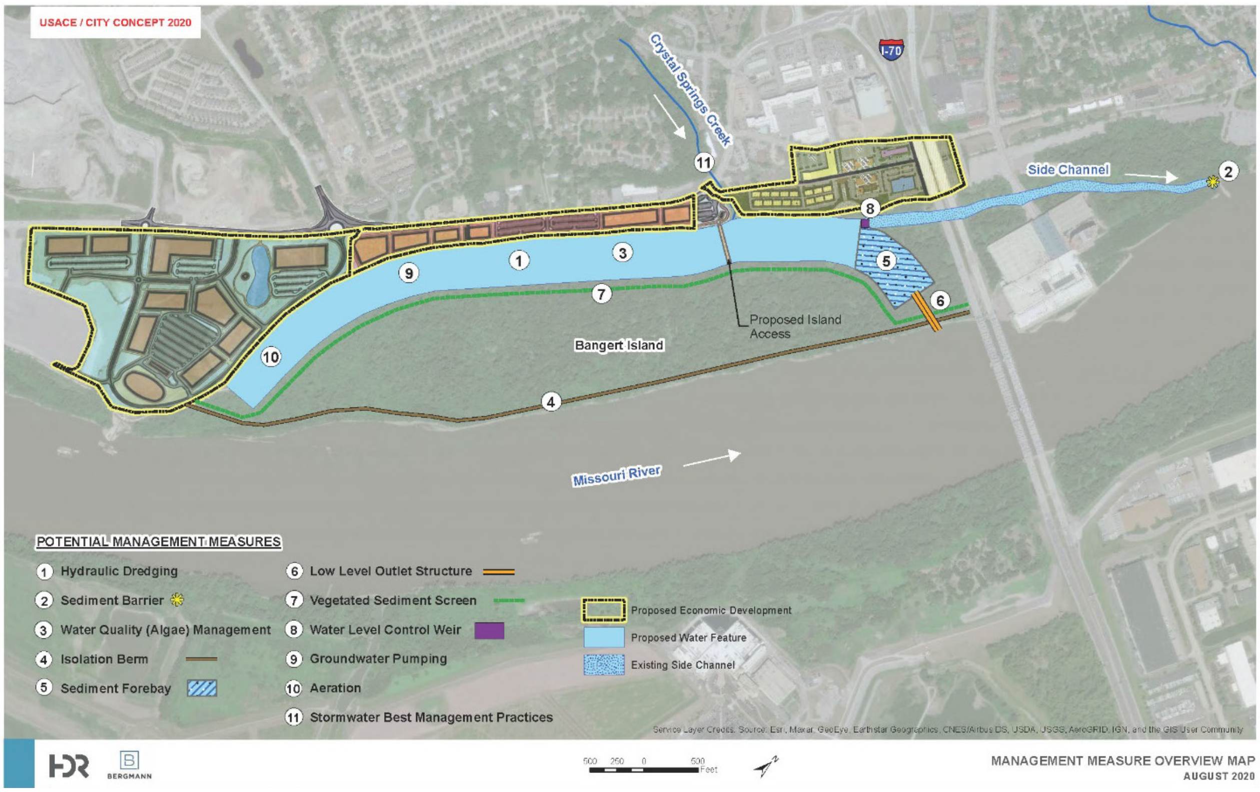
Under this alternative, Crystal Springs Creek would be impounded to create a smaller Crystal Springs Lake. Similar to Alternative 4, economic development area would impact an estimated 10 acres of wetland, excluding the area for the lake. While this alternative would support economic development within the City of St. Charles, promote multi modal transportation, it would fail to provide enough economic development potential to be feasible.



ALTERNATIVE 5: CRYSTAL SPRINGS CREEK MINIMIZED

ALTERNATIVE 6: RIVERPOINTE 2020 CONCEPT

This alternative resulted from the study conducted by HDR for the US Army Corps of Engineers Kansas City District Civil Works Division. This alternative combines economic development areas and the restoration of the existing channel to trap sediment and prevent it from entering the Missouri River. The alternative provides the necessary land for economic development and promotes multi-modal transportation. However, under this alternative, the development of the proposed economic development area would have impacted 20.2 acres of wetlands, which excludes the wetland impacts from the creation of the proposed water quality basin. Based on the magnitude of wetland impacts, this alternative was not selected as the preferred alternative.



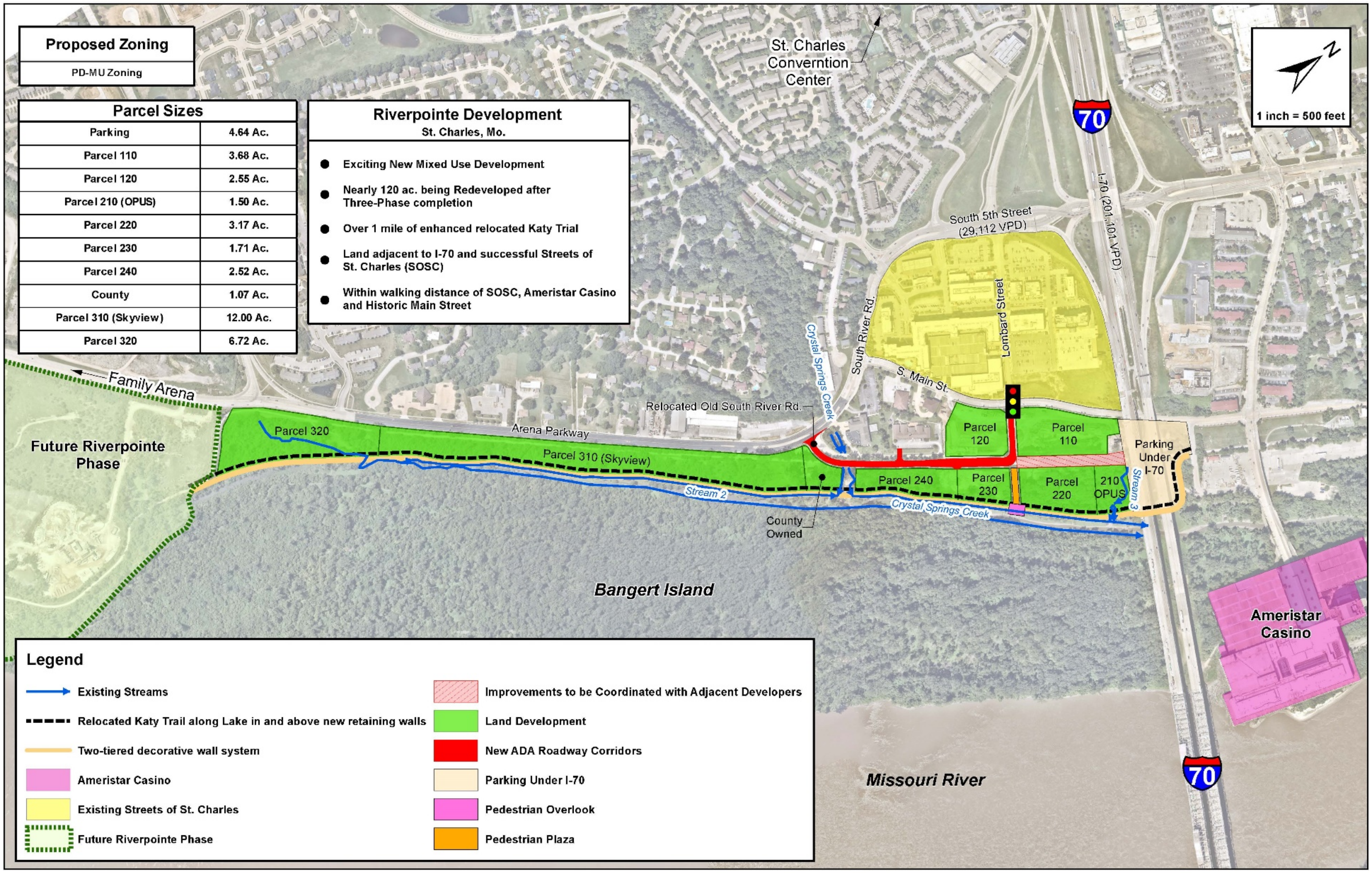
ALTERNATIVE 6: RIVERPOINTE 2020 CONCEPT

PREFERRED ALTERNATIVE

Under this alternative, Riverpointe will be a mixed-use development with office, retail, commercial business and the associated attendant parking and infrastructure will provide approximately 120 acres of land for development, as shown on . Riverpointe will convert an underutilized section of riverfront to complement existing development within St. Charles' Historic Main Street and Streets of St. Charles and serve as a connection between these areas and Family Arena to the south. Riverpointe is expected to create approximately 4,000 jobs and stimulate approximately $1.5 billion in growth within the city through annual property and sales tax revenues. Access to Bangert Island Park would be maintained at all times and the project is expected to enhance the parking and services for park and Katy Trail users. The improved Katy Trail along with the additional ADA compliant sidewalks provided by the project will encourage multi-modal transportation. This alternative results in approximately 13.95 acres of wetland impact and an estimated 1,260 linear feet of stream impact. The preferred alternative meets both purpose and need elements while reducing the impacts to regulated surface water resources.

MINIMIZATION AND AVOIDANCE

Through the alternatives evaluation process, the project has reduced the wetland impacts to the extent possible while meeting the purpose and need elements of the project and meeting the goals outlined in the St. Charles County Master Plan. The most recent iteration of the alternatives reduced the wetland impacts from 20.2 acres to approximately 13.95 acres. As discussed in the alternatives analysis, all sites and configurations analyzed would result in surface water resource impacts.



Parcel Sizes	
Parking	4.64 Ac.
Parcel 110	3.68 Ac.
Parcel 120	2.55 Ac.
Parcel 210 (OPUS)	1.50 Ac.
Parcel 220	3.17 Ac.
Parcel 230	1.71 Ac.
Parcel 240	2.52 Ac.
County	1.07 Ac.
Parcel 310 (Skyview)	12.00 Ac.
Parcel 320	6.72 Ac.

ALTERNATIVE 6: RIVERPOINTE 2020 CONCEPT

AQUATIC RESOURCES

As summarized in the table below, a total of four (4) streams, an approximately 76-acre forested wetland, and four (4) ponds were identified within the study area. A map showing the resource locations is provided on the following page. The Wetlands and Other Waters of the United States Delineation Report is included in Appendix B.

AQUATIC RESOURCES		
RESOURCE	TYPE	EXISTING CONDITION
Crystal Springs Creek	Perennial	Moderately Functional
Stream 2	Perennial	Moderately Functional
Stream 3	Intermittent	Functionally Impaired
Stream 4	Ephemeral	Functionally Impaired
Wetland	Forested	Slightly Impaired/Fully Functional
Pond 1	Man-made impoundment of former river channel	--
Pond 2	Man-made impoundment of former river channel	--
Pond 3	Man-made stormwater pond	--
Pond 4	Ephemeral Pond	--

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - Overall

CMT
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SURFACE WATER IMPACTS

Although surface water resource avoidance measures were diligently employed throughout the development of alternatives, waters of the United States will be unavoidably affected. Surface water resource impacts associated with the project have, to every extent practicable, been evaluated based on the need for human safety throughout the planning and design processes and balanced against appropriate engineering design criteria.

As summarized in the table on the next page, the project will impact three of the four identified streams and a portion of the 76-acre forested wetland for the construction of the proposed development. The wetland area will be filled behind a retaining wall to build up the area for the proposed development; the Katy Trail will be rerouted from its current position to on top of the retaining wall. Crystal Springs Creek will be permanently impacted for culvert extensions under South River Road and Old South River Road. The upstream portion of Stream 2 will be permanently impacted with the placement of a pipe. Stream 3 will be permanently impacted; it will be straightened and converted to a grassed waterway along the north side of proposed retaining wall and piped under the Katy Trail. Plan and cross section views of the impact areas are provided in Appendix A.

SURFACE WATER IMPACT SUMMARY									
RESOURCE ID	TYPE	EXISTING CONDITION	IMPACT TYPE/ACTIVITY	IMPACT LENGTH (LINEAR FEET)		IMPACT AREA (ACRES)		VOLUME (CUBIC YARDS)	
				Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
Stream 1 - Crystal Springs Creek	Perennial	Moderately Functional	Below Grade Culvert	0	74	0	0.05	0	425
			Morphological Disturbance	0	20	0	0.01	0	0
			Crystal Springs Creek subtotal	*0*	*94*	*0.00*	*0.07*	*0*	*425*
Stream 2 (upstream)	Intermittent	Moderately Functional	Pipe	0	790	0	0.09	0	146
Stream 3	Intermittent	Functionally Impaired	Morphological Disturbance	0	276	0	0.08	0	613
			Pipe	0	100	0	0.03	0	222
			Stream 3 subtotal	*0*	*376*	*0*	*0.10*	*0*	*836*
			Stream Subtotal	0	1,260	0.00	0.26	0	1,407
Wetland	Forested	Slightly Impaired	Fill	--	--	0	13.97	0	22506
			Clearing	--	--	1.57	0	0	0
			Wetland subtotal	--	--	1.57	13.97	0	22,506
			TOTALS	**0**	**1,260**	**1.57**	**14.23**	**0**	**23,913**

OTHER ENVIRONMENTAL RESOURCE IMPACTS

Beyond direct impacts to aquatic resources, a summary of the impacts on select other environmental resources is provided below to assist the USACE with their NEPA compliance determination.

CULTURAL RESOURCES

Efforts to identify historic properties and assess potential adverse effects pursuant to 36 CFR 800, Protection of Historic Properties, regulations implementing Section 106 of the National Historic Preservation Act (16 USC 470) have been implemented. A reasonable and good faith effort has been made to identify historic properties that would be of “extraordinary circumstances,” none of which have been ascertained in the undertaking’s area of potential effects.

A background literature search was conducted in accordance with Section 106 of the National Historic Preservation Act (as amended). There are multiple residential structures located within the project area. Missouri DNR mapping indicates that there are no historic sites within the project area. The nearest property listed on the National Register of Historic Places is located north of the project area, in the St. Charles Historic District.

A request for a Section 106 review was submitted to Missouri Department of Natural Resource – State Historic Preservation Office (SHPO) on July 6, 2020. On July 30, 2020, the SHPO Deputy State Historic Preservation Officer indicated that the review of the project would proceed once a survey and magnetometer survey being conducted in cooperation with the Kansas City US Army Corp of Engineers and the City of St. Charles was received. A magnetometer survey was completed by the Center for Archaeological Research at Missouri State University to determine if any buried steamboat wrecks would be disturbed as a result of the proposed re-excavation of a historic channel of the Missouri River. The report concluded that based on the partial magnetometer survey, historic records about shipwrecks in the area, a large suite of historic maps and aerial photographs, and the geomorphological history of Bangert Island, it appears to be extremely unlikely that any buried steamboat wrecks dating to the nineteenth century are located within the project area.

On October 26, 2020, the SHPO Deputy State Historic Preservation Officer indicated that there will be “no historic properties affected” for the area covered by the survey. On October 28, 2020, a follow-up email with revised limits of the proposed development was sent to SHPO to confirm that the proposed project had received Section 106 clearance since portions of the development were outside the boundary of the magnetometer survey. On November 6, 2020, the SHPO Deputy State Historic Preservation Officer indicated that there will be “no historic properties affected” for the areas of the proposed development (Phases 1, 3a, and 3b).

A copy of the Section 106 request, the magnetometer survey, and the SHPO responses are provided in Appendix C.

ENDANGERED SPECIES

According to the United States Fish and Wildlife Service (USFWS) IPAC Official Species list generated April 16, 2020 (Consultation Code: 03E14000-2020-SLI-1940), the project is located within the known or historic range of the following federally endangered or threatened species:

- Gray bat (*Myotis grisescens*), endangered
- Indiana bat (*Myotis sodalis*), endangered
- Northern long-eared bat (*Myotis septentrionalis*), threatened
- Pallid sturgeon (*Scaphirhynchus albus*), endangered
- Decurrent false aster (*Boltonia decurrens*), threatened

The Missouri Department of Conservation (MDC) Natural Heritage Review (NHR) indicated that there were known records of federal- and state-listed endangered species near the project area.

- Pallid sturgeon (*Scaphirhynchus albus*), federal and state-listed endangered
- Lake sturgeon (*Acipenser fulvexcens*), state-listed endangered
- American bittern (*Botaurus lentiginosus*), state-listed endangered
- Flathead chub (*Platygobio gracilis*), state-listed endangered

GRAY BAT (MYOTIS GRISESCENS): With rare exceptions, gray bats live in caves year-round. During the winter they hibernate in deep, vertical caves. In the summer, they roost in caves in limestone karst areas which are scattered along rivers. No caves are known to be present in the project area so suitable habitat is not expected to be available in the project area.

A total of five acoustic sites were surveyed from 23 to 25 June 2020 by consultant HDR. Survey efforts consisted of four detectors deployed for two nights (one detector was moved to a new site after one night), for a total of eight detector nights. Bat calls were analyzed using a software program approved by the USFWS: Kaleidoscope Pro (KPro) Version 5.1.1. The only Federally listed bat calls identified by KPro were from gray bats. Calls identified as gray bats by KPro were manually verified.

INDIANA BAT (MYOTIS SODALIS), AND NORTHERN LONG-EARED BAT (MYOTIS SEPTENTRIONALIS): The Indiana bat life cycle requires suitable summer roosting and brood rearing habitat (which includes living or standing dead trees or snags with exfoliating, peeling or loose bark, split trunks and/or branches, or cavities) and suitable hibernacula during the winter months (typically caves, or abandoned mines that provide cool, humid, stable conditions for hibernation). During winter, northern long-eared bats hibernate in caves and abandoned mines. Summer habitat requirements for the species are not well defined but include roosting habitat in dead or live trees and snags ≥ 3 inches in diameter at breast height with cavities, peeling or exfoliating bark, split tree trunk and/or branches, which may be used as roost or maternity roost areas. Occasionally the species may roost in structures like barns and sheds. Foraging habitat for the species includes upland and lowland woodlots and tree lined corridors.

Approximately 50 acres of the project study area was assessed for suitable habitat for the Indiana and Northern long-eared bat on May 1, 20-21, 2020. Suitable habitat for these species was identified as any tree over 3 inches DBH with peeling bark or cavities that would provide shelter and allow bats to move around the tree for thermoregulation. Within assessed area, 40 potential bat habitat trees were identified. Of the potential bat habitat trees, 24 were suitable snags. Based on the size of the study area and the composition of the forested habitat, more potential bat habitat trees are expected to occur within the larger forested study area. Approximately 115 acres of the study area are forested; the forest and vegetation density was variable throughout, but the majority of the forested study area was dominated by forest canopy with thin, relatively open midstory and understory, which is ideal bat habitat along a large riparian corridor. Approximately 32 acres of trees will be cleared for this project.

A total of five acoustic sites were surveyed from 23 to 25 June 2020 by consultant HDR. Survey efforts consisted of four detectors deployed for two nights (one detector was moved to a new site after one night), for a total of eight detector nights. No Indiana or northern long-eared bat calls were recorded.

PALLID STURGEON (*SCAPHIRHYNCHUS ALBUS*): Pallid sturgeon are bottom dwellers in the Missouri and Mississippi Rivers in Missouri., including parts of major tributaries. They live in areas of strong current that have firm sand substrates in the main river channels, such as along sand bars and behind wing dikes with deeply scoured trenches. Their preferred habitat has a diversity of depths and velocities formed by braided channels, sand bars, sand flats, and gravel bars. The MDC NHR indicated there were records of pallid sturgeon 0.08 mile from the project area. As no direct impacts to the river will occur, the preferred habitat for the species will not be impacted by the project.

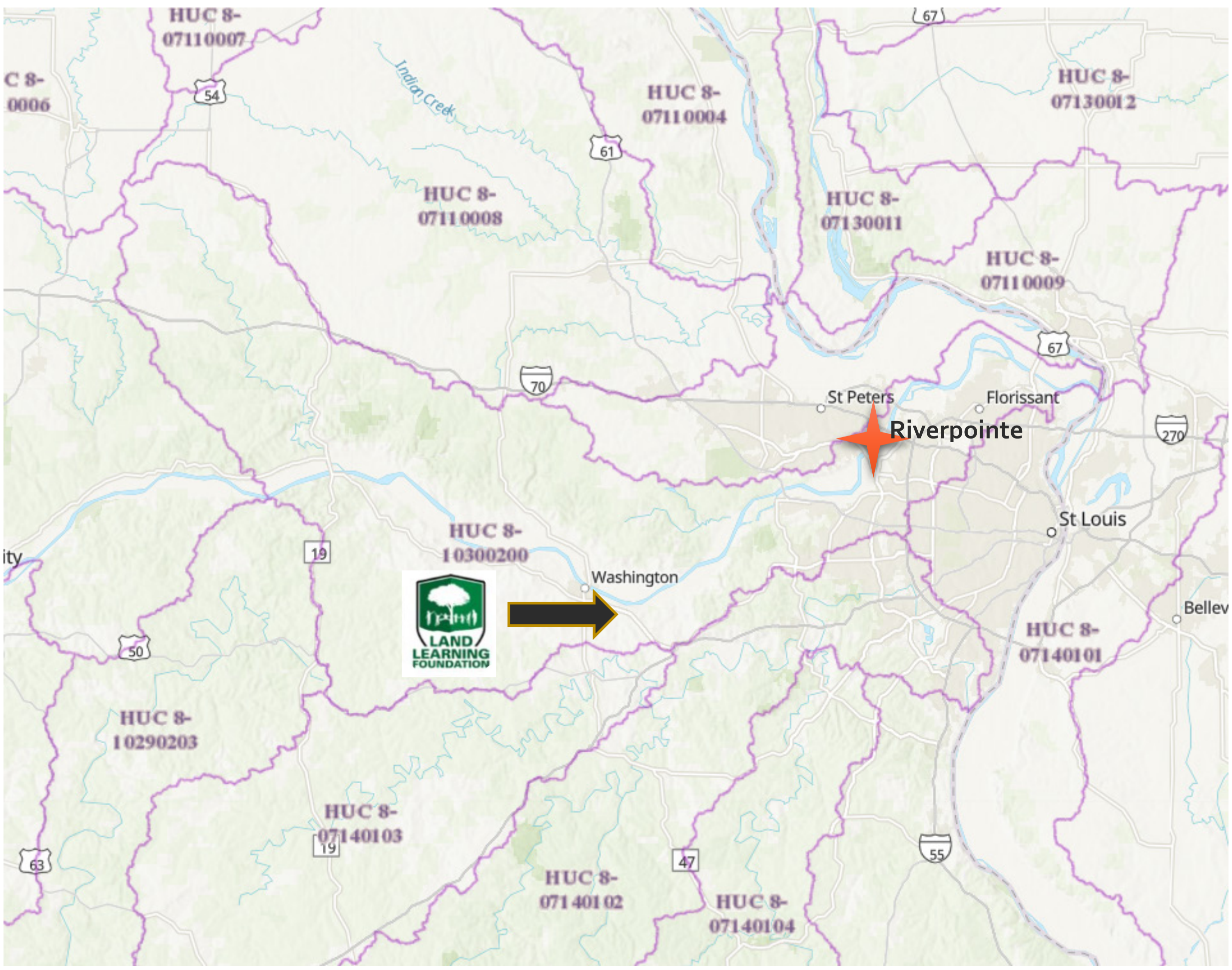
DECURRENT FALSE ASTER (*BOLTONIA DECURRENS*): Decurrent false aster is found on moist, sandy, floodplains, and prairie wetlands. This species needs periodic flooding or disturbance to eliminate competing vegetation and to provide the high light and moist soil that its seeds require to germinate. The MDC NHR did not indicate there were records of decurrent false aster near the project area and none were identified during the on-site investigations on May 1, 20-21, 2020.

Copies of the Missouri Natural Heritage Database review results and IPAC report are provided in Appendix D.

CONCEPTUAL MITIGATION (COMPENSATION)

The conceptual stream and wetland compensatory mitigation proposed for this project will involve the three components listed below. The implementation of the mitigation would be coordinated with the impacts so that appropriate mitigation occurs in advance or concurrent to the impact in the various construction phases.

1. Purchase of in-lieu fee stream credits from the Land Learning Foundation (LLF)
2. Wetland preservation of an estimated 70 acres of wetland and 30 acres of upland buffer on Bangert Island using a conservation easement protecting the island from development in perpetuity
3. Creation of wetlands on a site at Labadie Bottoms (within 10300200 -the same 8-digit HUC as the impact site) in coordination with LLF



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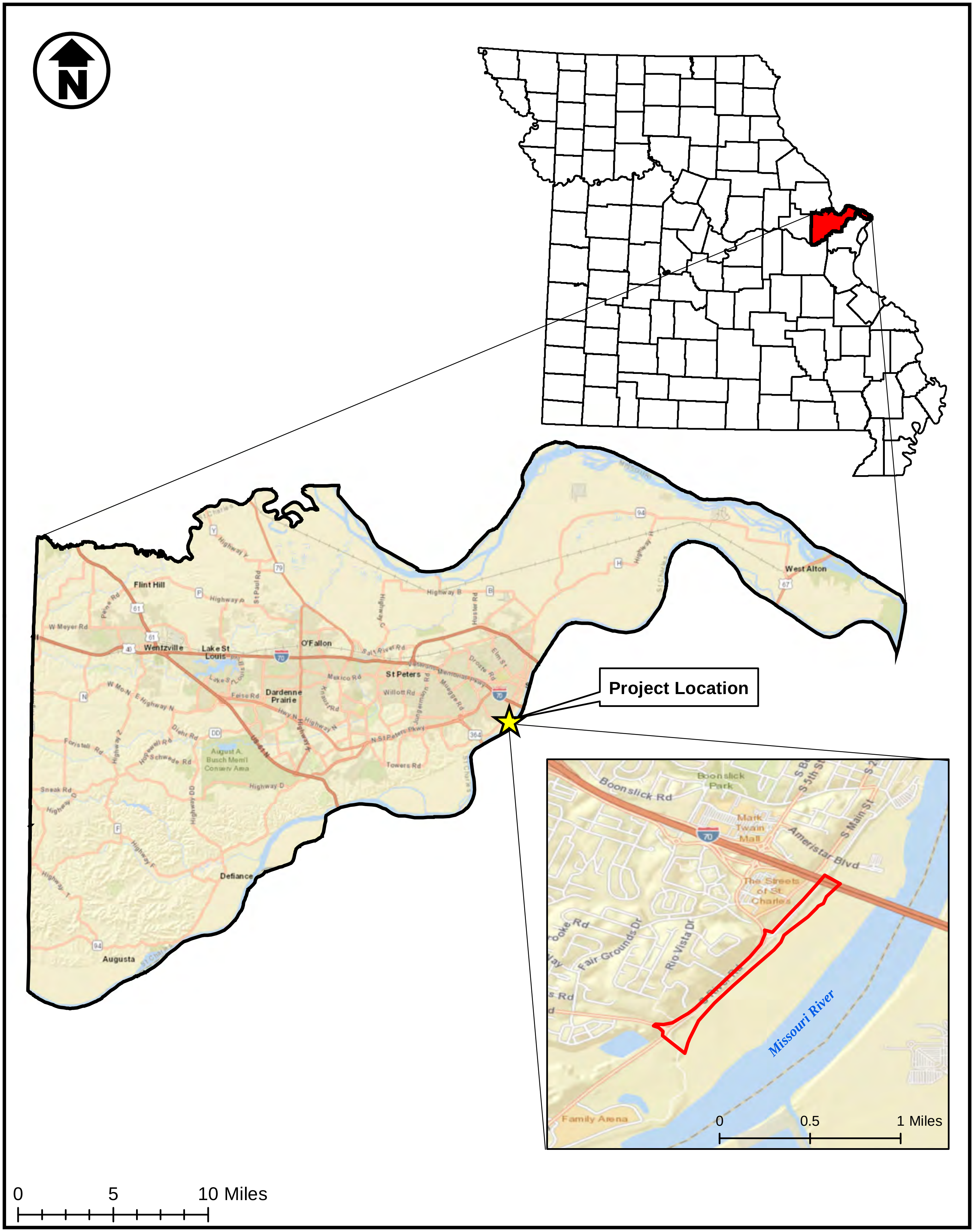
Riverpointe Public Infrastructure Project

APPENDIX A: PROJECT IMPACT MAPPING

CMT



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Riverpointe Public Infrastructure Project

Location Map - St. Charles County, MO

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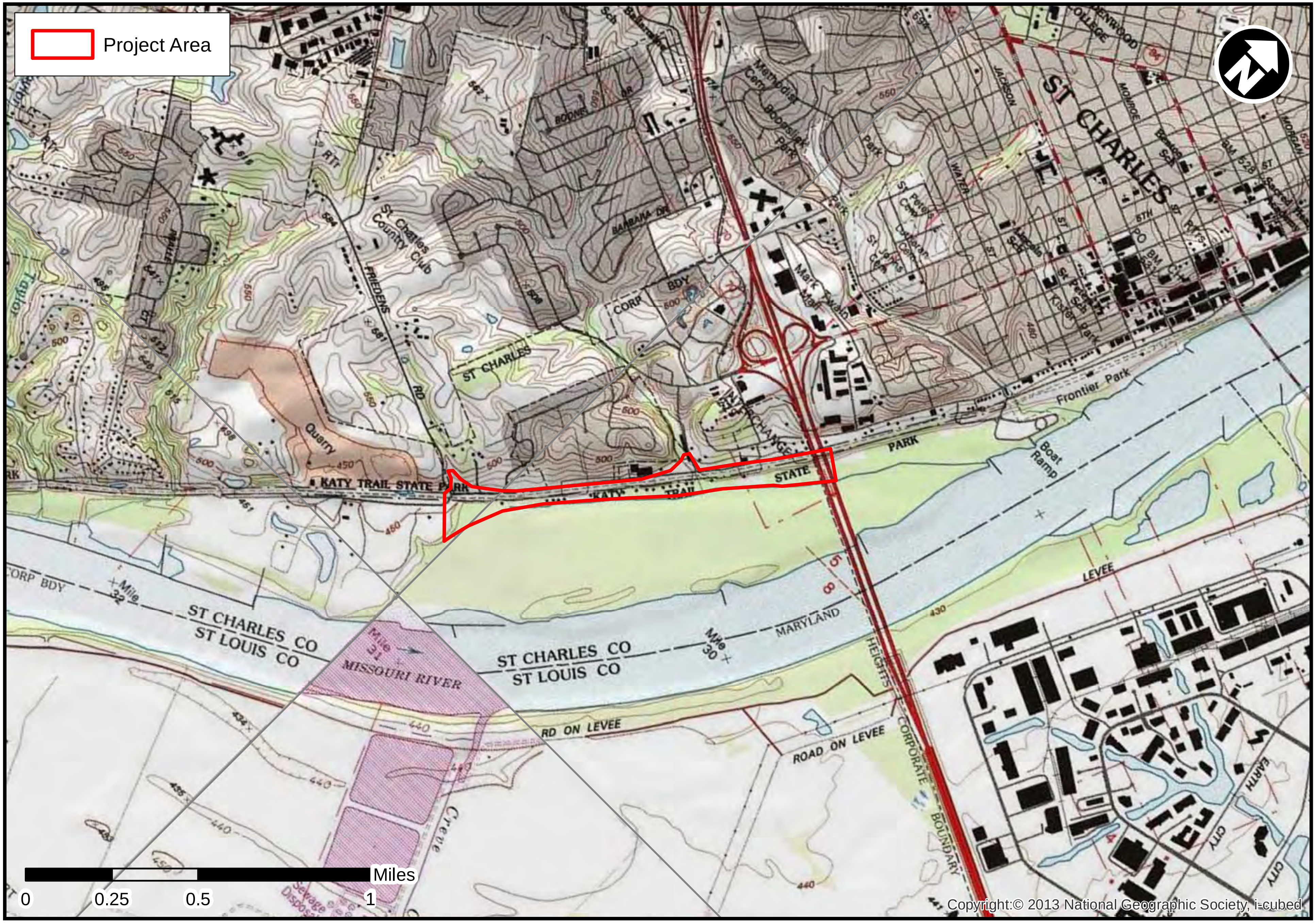

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

USGS Topographic Map - St. Charles and Kampville, MO Quadrangles

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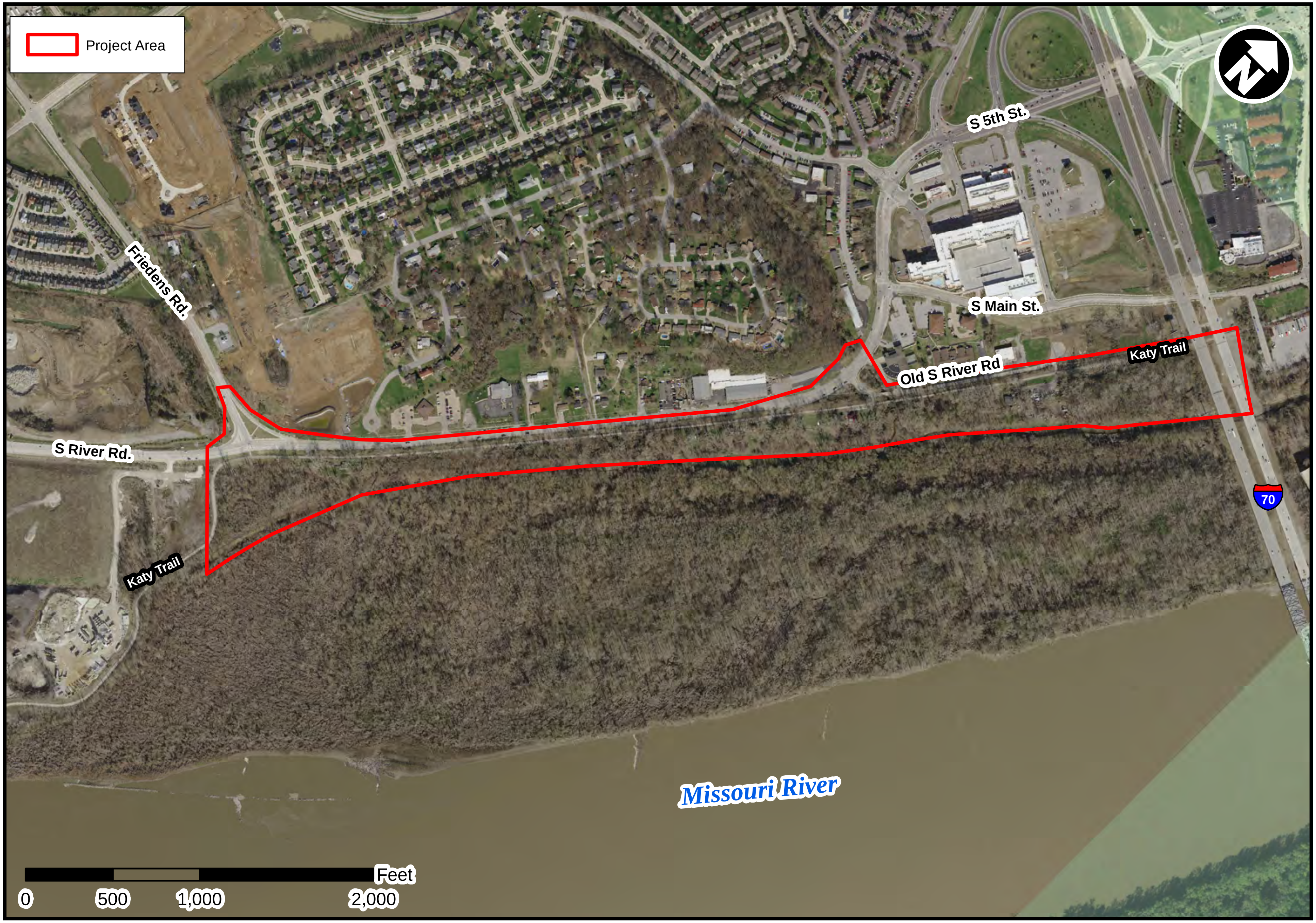

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Aerial

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Crawford, Murphy & Tilly

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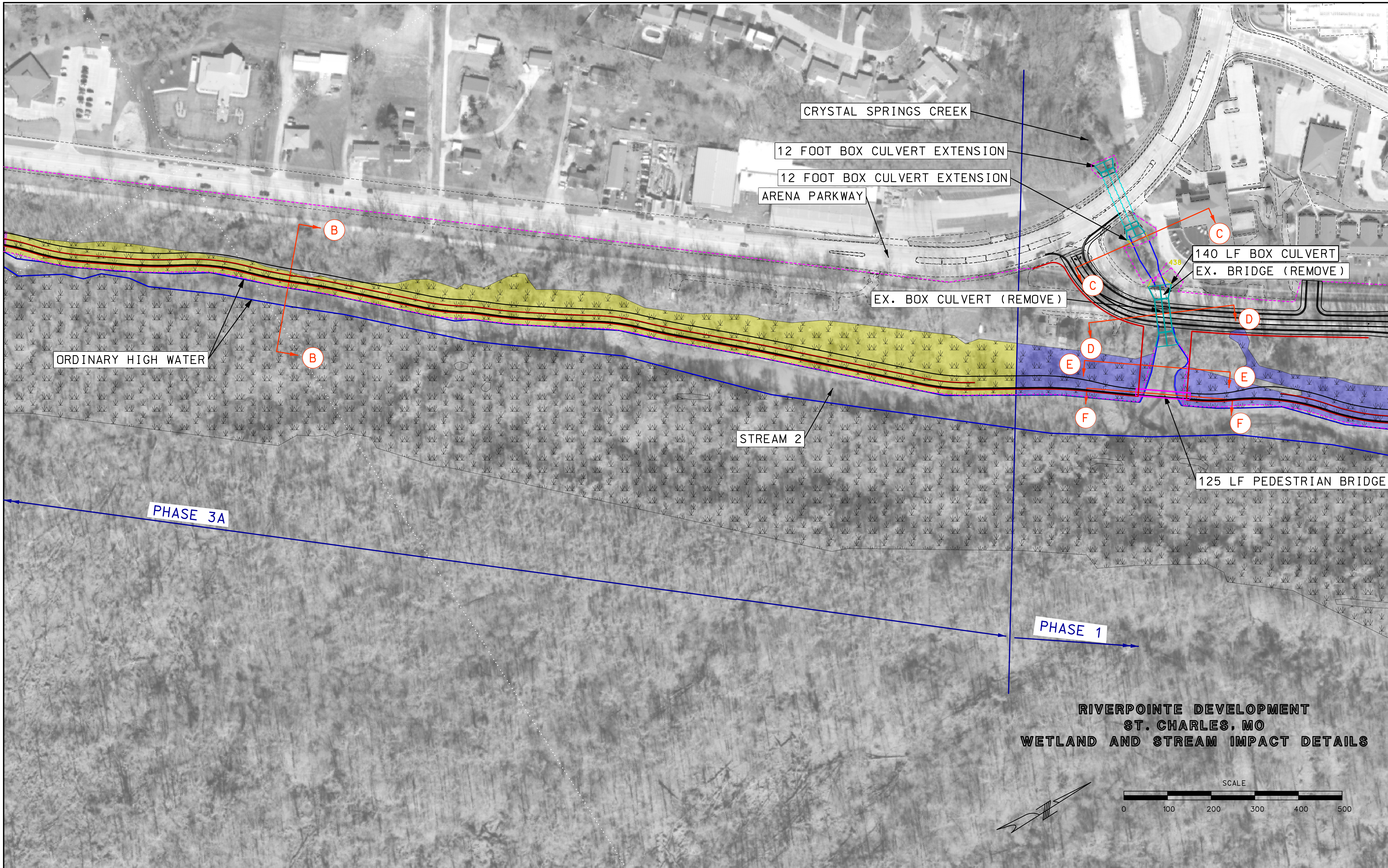

RIVERPOINTE DEVELOPMENT
ST. CHARLES, MO
WETLAND AND STREAM IMPACT DETAILS

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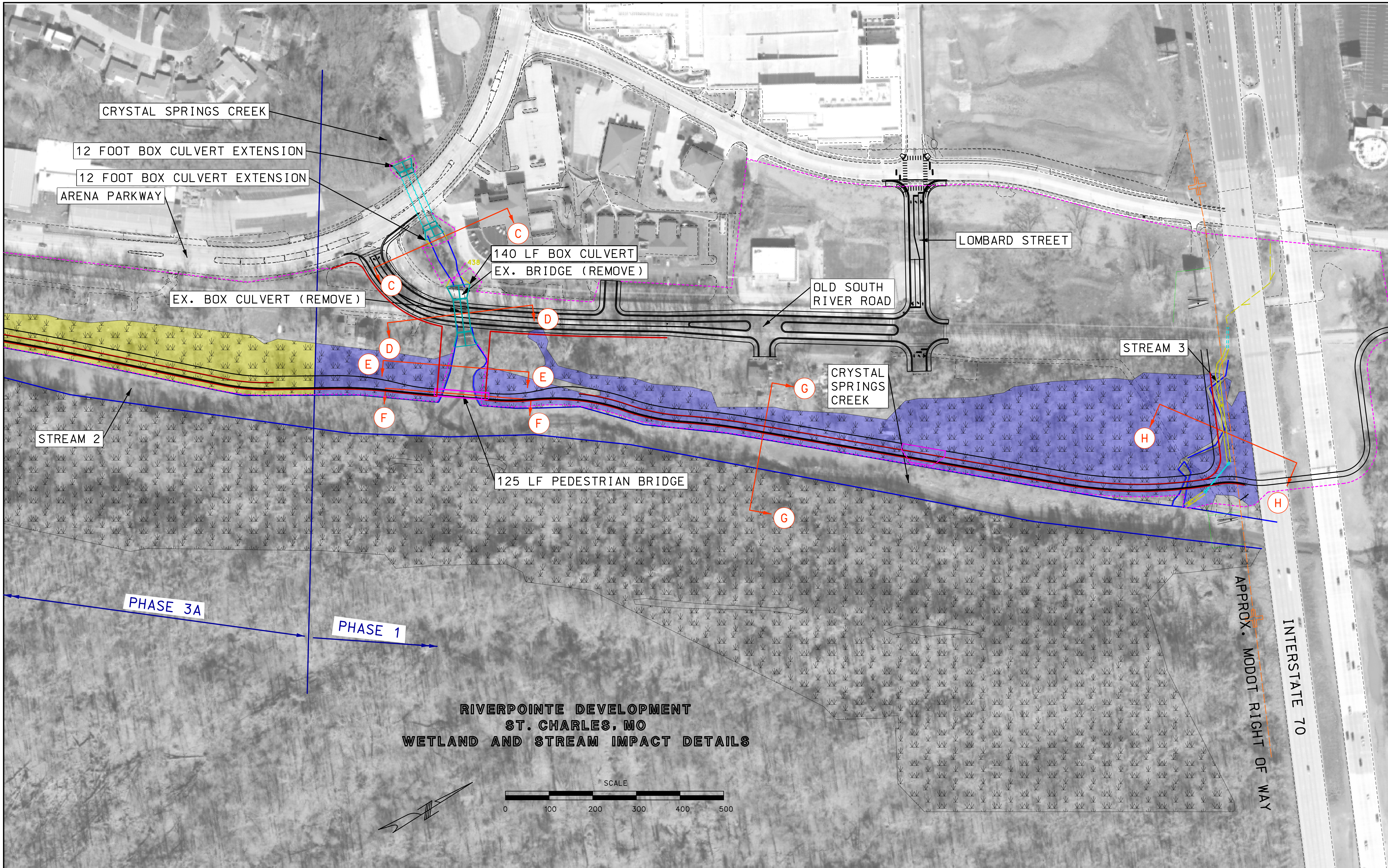

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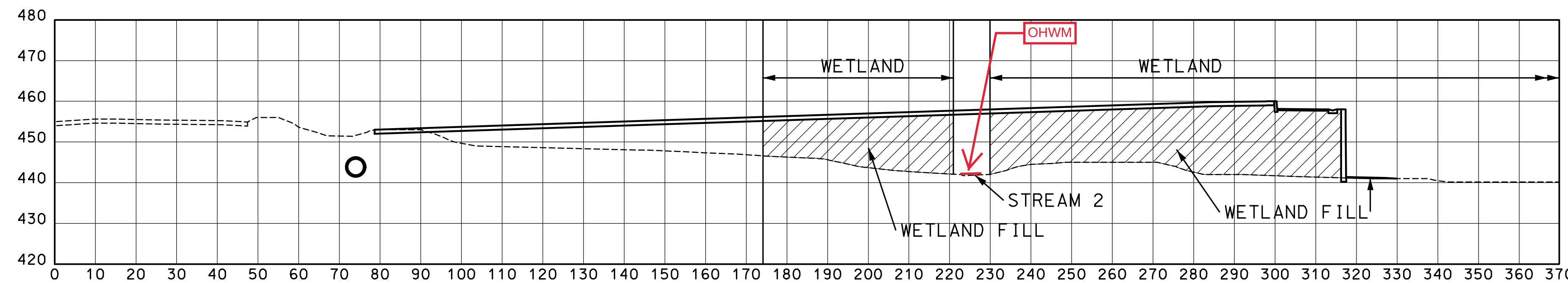

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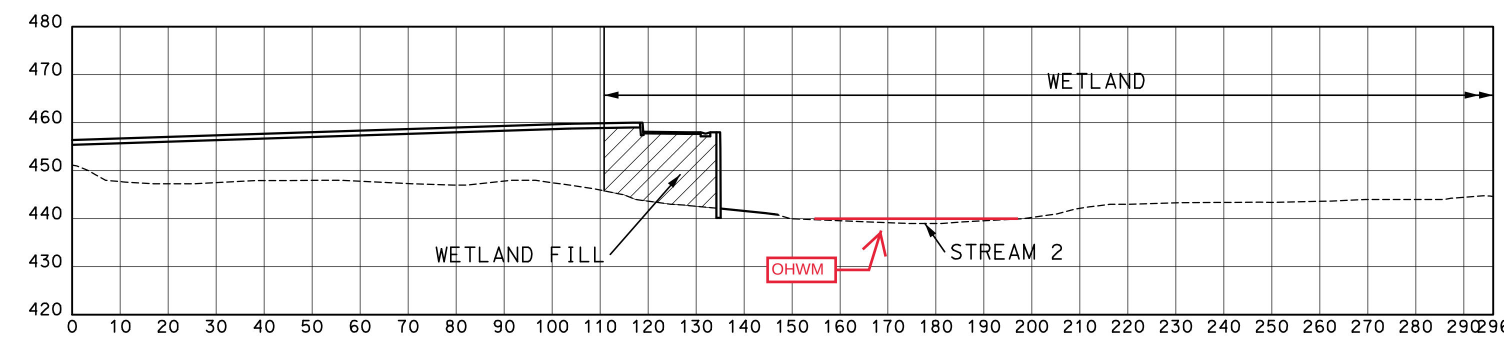

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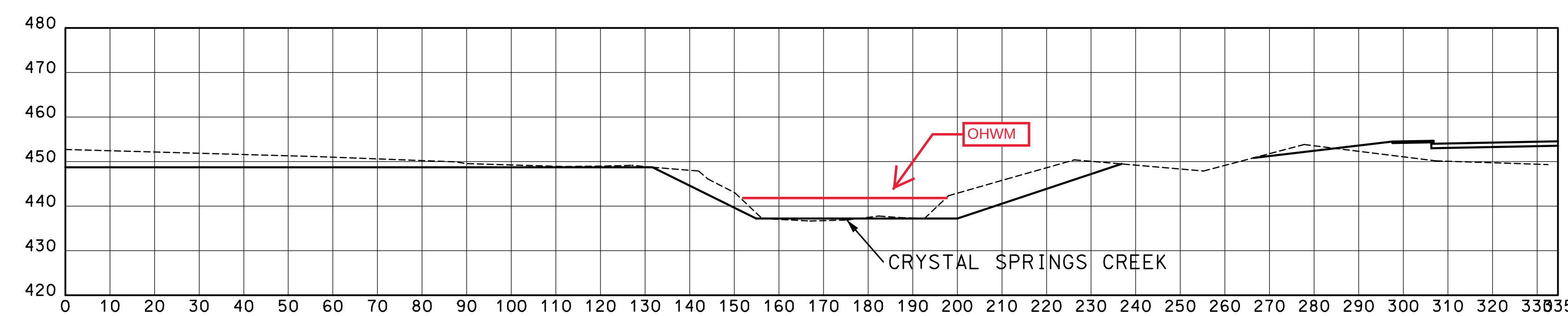

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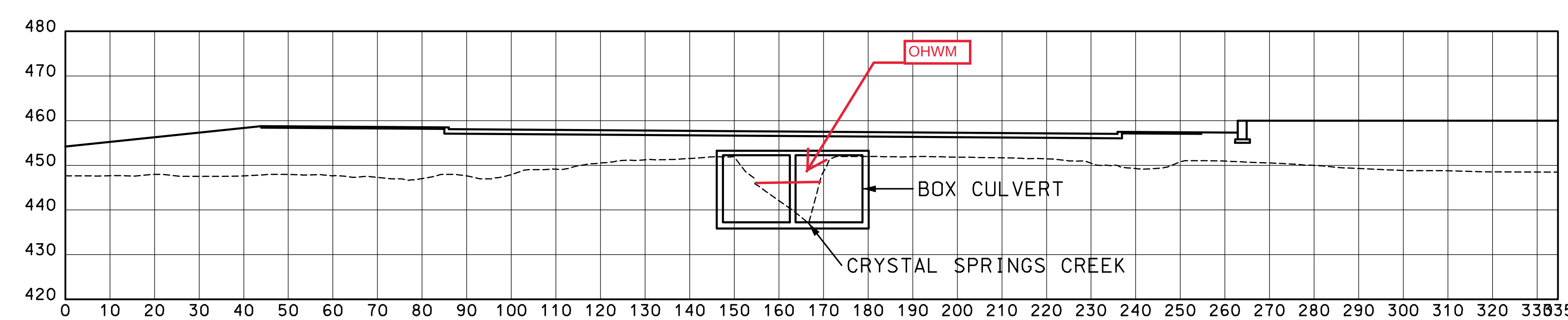

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RIVERPOINTE DEVELOPMENT
STREAM & WETLAND IMPACT PROFILES
SHEET 1 OF 2

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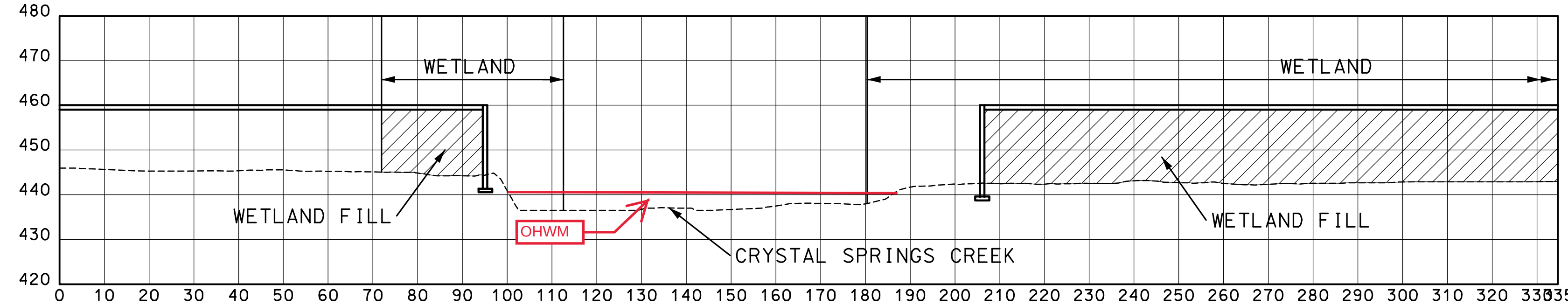

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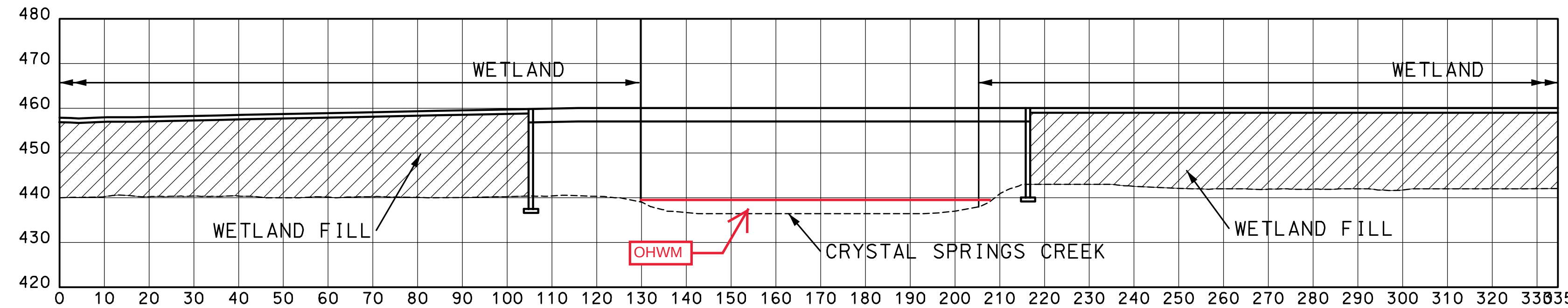

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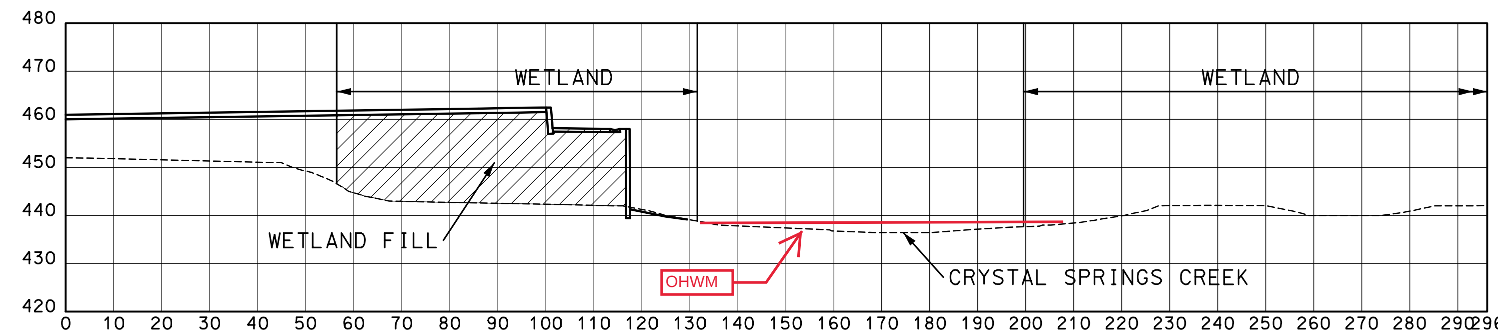

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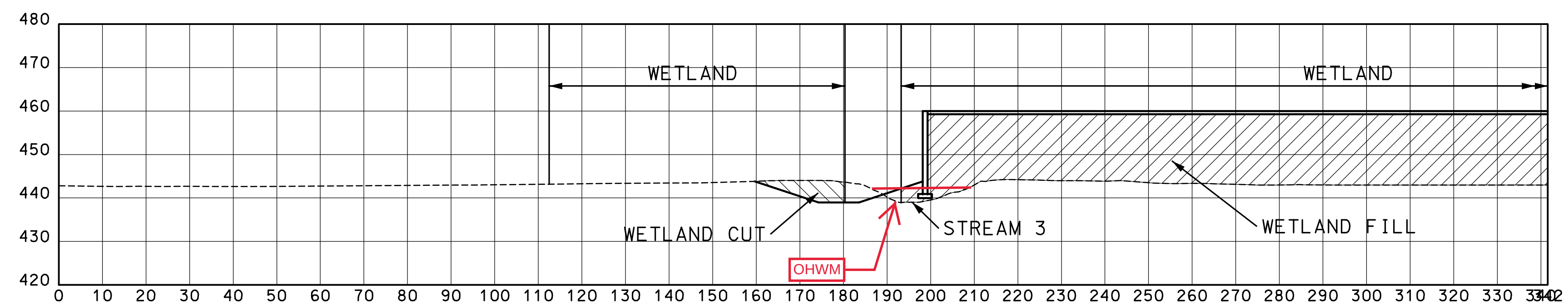

SECTION H-H

RIVERPOINTE DEVELOPMENT
STREAM & WETLAND IMPACT PROFILES
SHEET 2 OF 2

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Riverpointe Public Infrastructure Project

APPENDIX B: WETLAND DELINEATION REPORT

CMT

Wetlands and Other Waters of the United States Delineation Report

Riverpointe Public Infrastructure Project
St. Charles, St. Charles County, Missouri

CMT Job Number: 19043402-00

OCTOBER 16, 2020

PREPARED BY:

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TABLE OF CONTENTS

APPENDICES

1.0 SUMMARY

This water resource report has been prepared at the request of the City of St. Charles. The purpose of this report is to describe the wetlands and other regulated surface water resources located within the study area for the proposed Riverpoint Public Infrastructure Project in St. Charles, Missouri.

The Clean Water Act defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils.” Thus, in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the Midwest Regional Supplement, for an area to be considered a wetland, it must meet all of the following criteria, under normal circumstances: wetland hydrology, a dominance of hydrophytic vegetation and hydric soils.

As summarized in the table below, a total of four (4) streams, an approximately 76-acre forested wetland, and four (4) ponds were identified within the study area. These resources may be subject to regulation under the Clean Water Act and, therefore, impacts to these resources may require 404 authorization from the US Army Corps of Engineers and a 401 water quality certification from the Missouri Department of Natural Resources.

AQUATIC RESOURCES				
RESOURCE	TYPE	EXISTING CONDITION	PRELIMINARY JURISDICTIONAL STATUS	WITHIN STUDY AREA
Crystal Springs Creek	Perennial	Moderately Functional	Federally Jurisdictional (a)(2)	2,368 linear feet, 3.54 acres
Stream 2	Perennial	Moderately Functional	Federally Jurisdictional (a)(2)	3845 linear feet, 3.41 acres
Stream 3	Intermittent	Functionally Impaired	Federally Jurisdictional (a)(2)	408 linear feet, 0.13 acre
Stream 4	Ephemeral	Functionally Impaired	Non-Jurisdictional (b)(3)	551 linear feet
Wetland	Forested	Type A; wooded wetland	Federally Jurisdictional (a)(4)	76.3 acres
Pond 1	Man-made impoundment of former river channel	--	Non-Jurisdictional (b)(8)	1.39 acres
Pond 2	Man-made impoundment of former river channel	--	Non-Jurisdictional (b)(8)	5.65 acres
Pond 3	Man-made stormwater pond	--	Non-Jurisdictional (b)(10)	0.44 acre
Pond 4	Ephemeral Pond	--	Non-Jurisdictional (b)(3)	0.60 acre

2.0 METHODOLOGY

2.1 WETLANDS

The on-site evaluation of the approximately 195-acre study area was conducted during site visits on May 20-21, and June 26, 2020. When evaluating for the presence of wetlands, CMT personnel used the routine method for areas greater than 5 acres in size presented in the 1987 Corps of Engineers Wetlands Delineation Manual and the Midwest Regional Supplement. Routine Wetland Determination Data Forms were completed at points along the established transects at changes in inundation depth and/or vegetation community (Appendix A, Exhibit I). Additional data forms were completed in areas off the transects to classify areas of similar inundations depths. Consultant HDR prepared mapping documenting inundation depths for a typical year within the study area (Appendix A, Exhibit J). The mapped inundation is based on the median value from annual USGS gage 06935965 data. Inundation depths for a typical year are separated into six classes: 0-2, 2-5, 5-10, 10-15, 15-20, and >20 feet; the changes in inundation depths were used to inform decisions on where to complete the wetland data form.

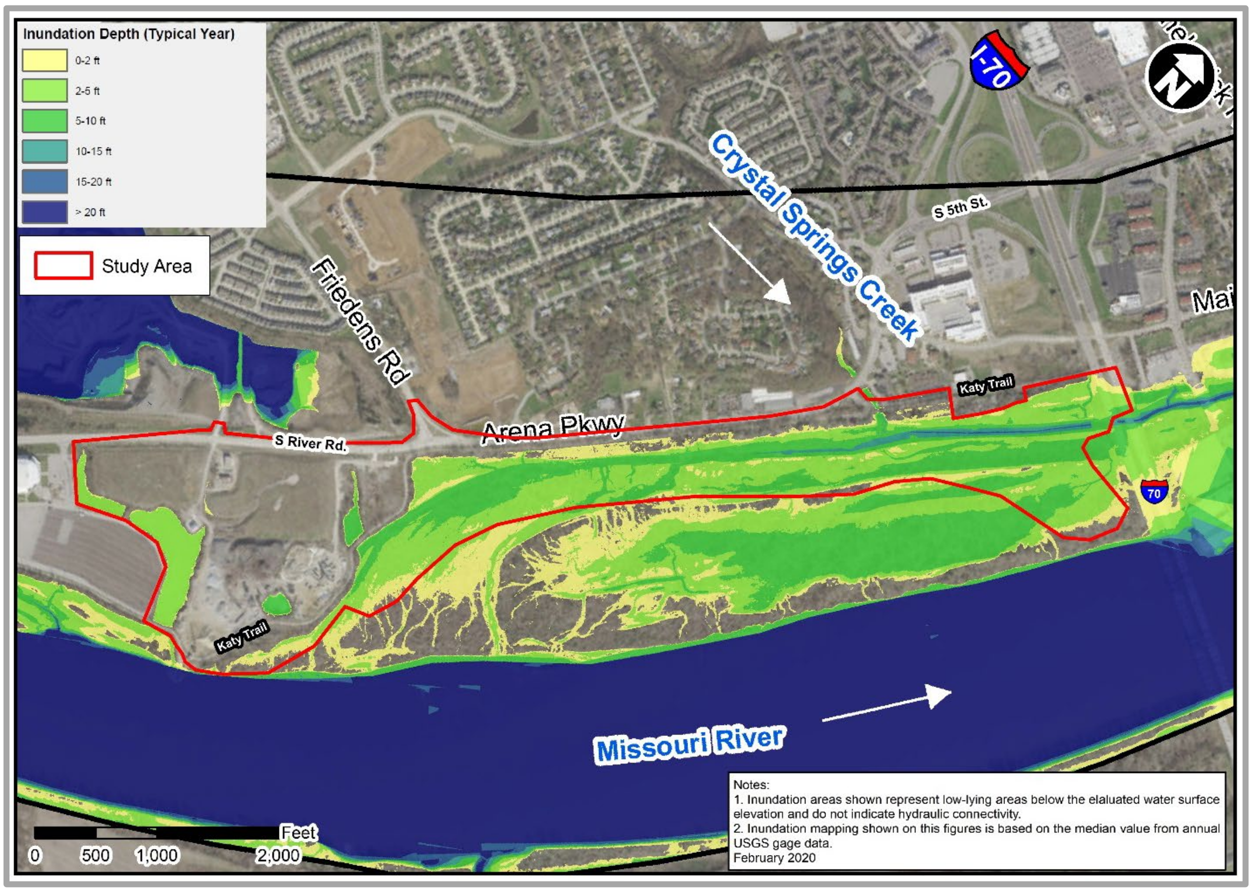

FIGURE 1 – INUNDATION DEPTH TYPICAL YEAR

In order for an area to be classified as a jurisdictional wetland, the area has to have a dominance of hydrophytic vegetation, hydric soils, and wetland hydrology and be an adjacent wetland as defined by the 2020 Navigable Waters Protection Rule. The specific indicators used for each of the three parameters are noted in the following paragraphs. The completed Routine Wetland Determination Data Forms are included in Appendix B.

2.1.1 HYDROPHYTIC VEGETATION

According to Tiner (2012), a hydrophyte is a vascular plant that grows in water or on a substrate that is saturated at a frequency and duration during the growing period sufficient to affect plant occurrence. Using this definition, the U.S. Fish and Wildlife Service released the National Wetland Plant List. This list categorizes species according to their probability of occurrence in wetlands based on the ecological region. The list identifies five general plant indicator status categories:

- Obligate (OBL): almost always is a hydrophyte, rarely in uplands
- Facultative Wetland (FACW): Usually is a hydrophyte but occasionally found in uplands
- Facultative (FAC): Commonly occurs as either a hydrophyte or non-hydrophyte
- Facultative Upland (FACU): Occasionally is a hydrophyte but usually occurs in uplands
- Obligate Upland (UPL): Rarely is a hydrophyte, almost always in uplands

In order to satisfy the hydrophytic vegetation criteria required for a jurisdictional wetland, the area had to be dominated (over 50 percent) by obligate wetland plants, facultative wetland plants, and facultative plants.

The method used during this survey for determining vegetation dominance was the 50/20 method. Using this method, plant species in each stratum are ranked according to their percent aerial cover and then cumulatively summed until 50 percent of the total dominance measure is exceeded. All species contributing to that cumulative total plus any additional species that have at least 20 percent of the total dominance measure are considered dominants in their respective stratum.

2.1.2 HYDRIC SOIL

Hydric soil is soil formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Hydric soil indicators include the presence of histosols, histic epipedons, reducing conditions, gleyed or low chroma soil colors and high organic content or organic streaking in sandy soil. An additional hydric soil indicator used was if the mapped and confirmed soil type appears on the local or national hydric soils list.

2.1.3 WETLAND HYDROLOGY

Wetland hydrology is defined as an area that is inundated or saturated at or near the surface for at least five percent of the growing season in most years. This can include areas that are ponded, flooded or those areas that have a water table at or near the surface. Indications of wetland hydrology included surface water, saturation, evidence of drift deposits, iron deposits or drainage patterns, and inundation. Water-stained leaves, oxidized root channels within 12 inches below ground surface on living plants, the FAC neutral test and local soil survey data were also used to indicate wetland hydrology.

2.1.4 WETLAND LOCATION

The wetland boundary was determined using the draft map of inundation depths for a typical year produced by consultant HDR. The wetland or upland determinations at the field-collected data points informed the wetland or upland determination of the similar inundation areas within the study area. The wetland boundary with the field-collected data point locations are found on the wetland delineation map in Appendix A. All additional wetland mapping and physical data is also provided in Appendix A.

2.1.5 WETLAND QUALITATIVE ASSESSMENT

The wetland plant community was evaluated using the Floristic Quality Index (FQI).

The FQI is an index derived from floristic inventory data and is calculated from the number of species that occur in the plant community, as well as the species coefficient of conservatism (C) values. C-values are assigned to individual plant species. The higher the C-value is, the more likely a plant is from a minimally altered landscape. Low C-values are assigned to weeds, or species that can exist in a wide range of conditions. An area of high natural quality would include conservative native plants that are adapted to a specialized community context and would have a mean C-value of 5 or greater. The aggregate conservatism of all the plants inhabiting a site is used to determine its FQI.

The general classifications of the vegetative communities are made based on the FQI scores.

FQI	Classification
0-5	severely degraded
5-10	degraded
10-20	moderately degraded
20 +	high quality

2.2 STREAMS

Streams were evaluated for their jurisdictional status based on the 2020 Navigable Waters Protection Rule definition of waters of the United States, which requires the presence of an ordinary high water mark (OHWM) and be a perennial or intermittent tributary with ultimate connection to downstream Section 10 Traditional Navigable Waters (TNW).

The following USACE definitions for the three streams types were used:

> **Ephemeral streams** have flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
>
> **Intermittent streams** have flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.
>
> **Perennial Streams** have flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

The determination of stream designation is based on an evaluation of the size of the watershed for each stream, the presence of flow during the on-site evaluation and the evidence observed of the frequency of flow, and the presence of aquatic life. In addition to flow regime, streams were also classified according to existing conditions and rated either functional, moderately functional, or functionally impaired, based on the definitions in the State of Missouri Stream Mitigation Method (MSMM).

3.0 BACKGROUND INFORMATION

3.1 PROJECT DESCRIPTION

The City of St. Charles is proposing a new, multi-phase riverfront development project along South River Road located south of Interstate 70 (I-70) to the Family Arena within the City of St. Charles. The project consists of three phases of development along Bangert Island and the Missouri River.

Phase 1 of the project consists of an approximately 22-acre mixed-use development located adjacent to I-70 and South Main Street. Phase 2 of the project consists of an approximately 80-acre mixed-use and office space development near the Family Arena. Phase 3 of the project consists of an approximately 20-acre development along South River Road connecting Phases 1 and 2.

The development will provide recreational, employment, entertainment, and retail opportunities along approximately 1.6 miles of riverfront.

Portions of the project are currently in the preliminary design phase. Phased construction is anticipated to begin in Fall 2020 and be completed in Fall 2022.

FIGURE 2 – STUDY AREA

3.2 PROJECT LOCATION

The proposed project is located along South River Road between I-70 and the Family Arena within the City of St. Charles in St. Charles County, Missouri. The project is within Sections 5 and 8, Township 46 North, Range 5 East of the U.S. Geological Survey (USGS) St. Charles, Kampville, Chesterfield, and Creve Coeur, Missouri Quadrangles. The project location is in a relatively developed area with Bangert Island and the Missouri River to the east, I-70 to the north, and residential and commercial development to the west and south.

The study area includes portions of Bangert Island, which was once an island separated from the bluff at St. Charles by a side channel. However, river channel structures built on the Missouri River in the 1930s and 1940s have gradually silted in the channel separating Bangert Island from the shoreline. The deposition chocked the original side channel entrance at the Missouri River to the point of closure by 1980 and effectively reattached Bangert Island to the bluff.

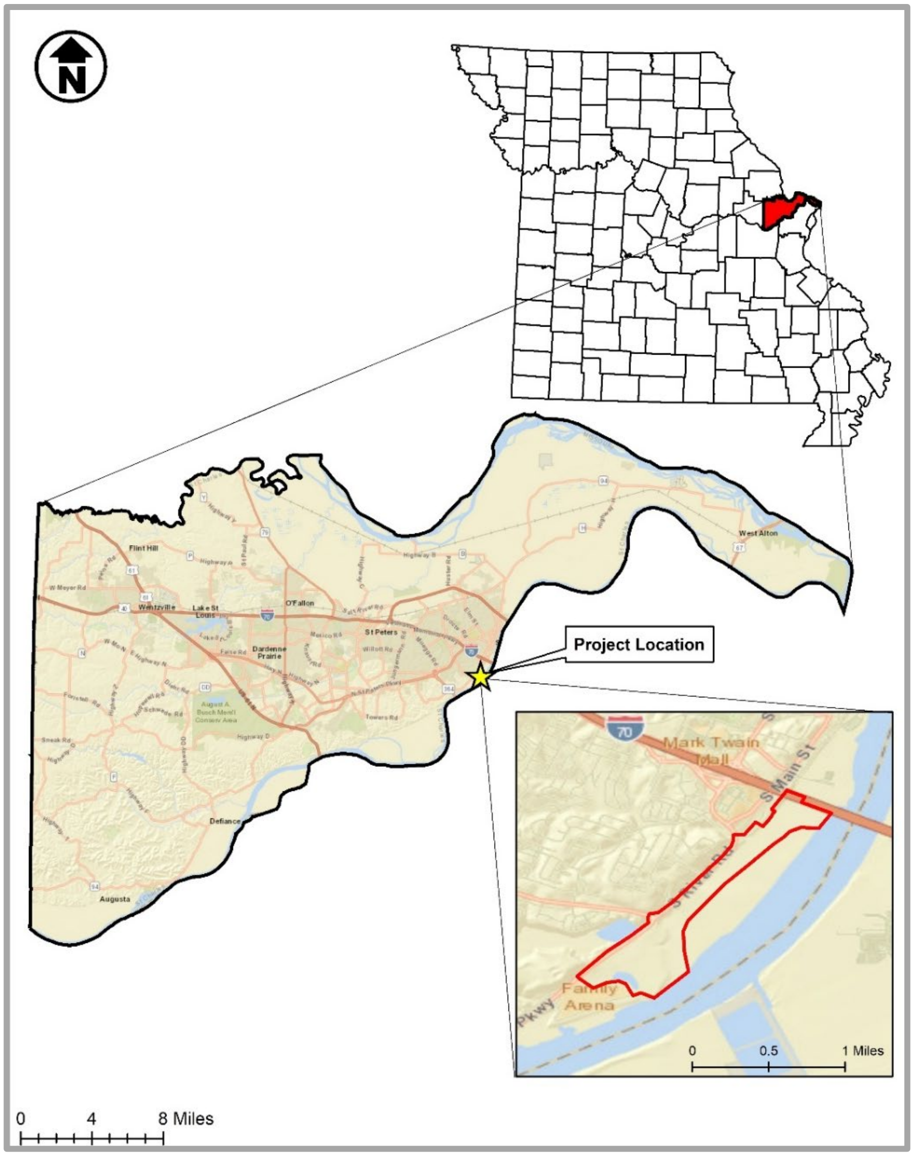

FIGURE 3 – COUNTY LOCATION MAP

Bangert Island, which was purchased by St. Charles County from the Missouri Department of Natural Resources in 2014, is currently being utilized as a park and recreation area. Within the park, there are approximately four miles of natural surfaced trails utilized for hiking, biking, bird watching, etc. The remainder of the land is maintained as a natural area comprised of habitats that primarily consist of bottomland hardwood forest. The Katy Trail State Park is located adjacent to the northwest boundary of the project and crosses through the southern portion of the study area.

3.3 HISTORICAL OR PUBLISHED INFORMATION

The study area is located within the Cowmire Creek-Missouri River (12 digit HUC 103002000801) and Duckett Creek-Missouri River (12 digit HUC 103002000704) watershed of the Lower Missouri watershed (8 digit HUC 10300200). The reach of the Missouri River located adjacent to the study area is listed on Missouri's 2018 303(d) listed waters as impaired for E. coli. The Missouri River is classified as a TNW.

The St. Charles County Soil Survey indicates the following soils are present within the study area.

- 60003 – Menfro silt loam, 9 to 14 percent slopes, eroded
- 60125 – Harvester-Urban land complex, 9 to 14 percent slopes
- 66092 – Fishpot-Urban land complex, 0 to 5 percent slopes, rarely flooded
- 66126* – Haynie-Treloar-Blake complex, 0 to 2 percent slopes, frequently flooded
- 99000 – Pits, quarry
- 99001 – Water

According to the St. Charles County Hydric Soils List, the soils marked with an asterisk are hydric.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the study area is located within FEMA Flood Zone AE, which corresponds to 1% annual chance of a flood hazard and the regulatory floodway of the Missouri River and Crystal Springs Creek.

The National Wetlands Inventory (NWI) map indicates that forested wetlands are located throughout the study area; riverine and emergent wetlands are also located within the study area.

According to the National Hydrography Dataset (NHD), NWI, and USGS topographic maps, streams are located within the study area.

Copies of the USGS topographic map, NWI map, NHD map, FEMA flood zone map, NRCS soils map, and the relevant portions of the St. Charles County Soil Survey are included in Appendix A (Exhibits C-H).

Biologists from the Kansas City District U.S. Army Corp of Engineers performed an initial wetlands field review of Bangert Island and portions of the study area in February 2016. The Initial Field Wetland/Habitat Summary for Bangert Island is provided in Appendix D.

4.0 RESULTS

A total of four (4) streams, an approximately 76-acre forested wetland, and four (4) ponds were identified in the study area during the onsite investigations on May 20-21 and June 26, 2020. The Water Resources Maps provided in Appendix A depict the locations of these resources on an aerial photograph and the inundation depths for a typical year. Data forms and the Floristic Quality Index (FQI) result are provided in Appendix B. Representative photographs of the identified features are provided in Appendix C.

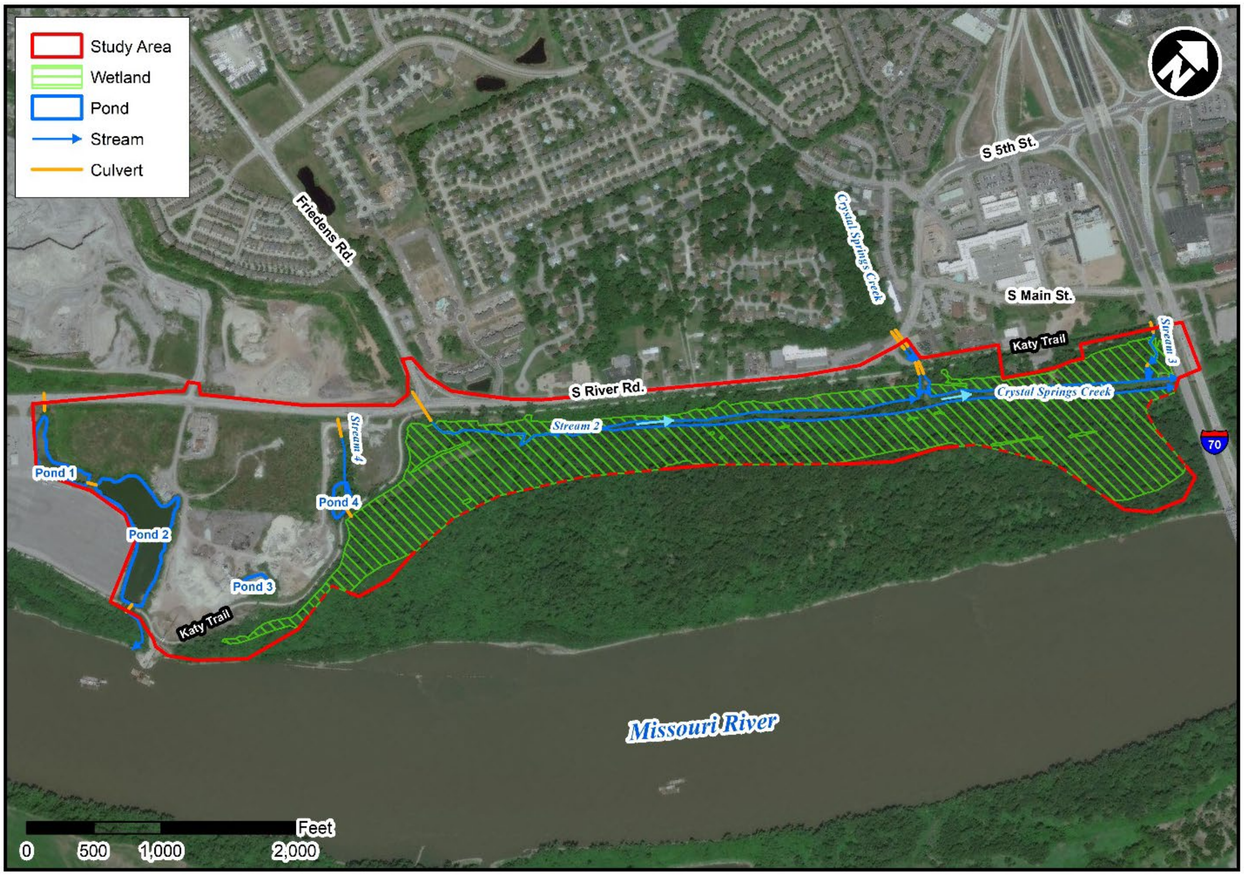

FIGURE 4 – WATER RESOURCES MAP

4.1 WETLANDS

Thirty-two (32) data points were assessed in the study area; twenty (20) data points were identified as exhibiting all three wetland characteristics. A summary of the wetland data points is provided in the table below. Based on the results of the data points within inundation depths of 2-5 feet and greater, these areas met the three parameters of a wetland and were delineated as a wetland. Approximately half of the data points collected within inundation depths of 0-2 feet met the three parameters of a wetland; therefore, these areas within the study area have been classified as transitional areas between wetlands and uplands and approximately half of the area has been delineated as a wetland.

DELINEATION DATA POINT SUMMARY					
DATA POINT	WETLAND INDICATOR PRESENT?			SAMPLED AREA WITHIN WETLAND?	INUNDATION DEPTH (TYPICAL YEAR), feet
	HYDROPHYTIC VEGETATION	HYDRIC SOIL	HYDROLOGY		
A	yes	yes	yes	yes	2-5
B	yes	no	yes	no	0-2
C	yes	yes	yes	yes	2-5
D	yes	yes	yes	yes	2-5 / 5-10
E	yes	no	yes	no	0-2
F	yes	yes	yes	yes	0-2
G	no	no	yes	no	none
H	yes	yes	yes	yes	2-5
I	yes	yes	no	no	none
J	yes	yes	yes	yes	0-2
K	yes	yes	yes	yes	5-10
L	yes	no	no	no	0-2
M	yes	yes	no	no	none / 0-2
N	yes	yes	yes	yes	2-5
O	yes	no	yes	no	0-2
P	yes	yes	yes	yes	2-5 / 5-10
Q	yes	no	yes	no	0-2
R	yes	yes	yes	yes	2-5
S	yes	yes	yes	yes	0-2
T	yes	yes	yes	yes	2-5
U	yes	yes	yes	yes	2-5
V	yes	no	yes	no	0-2
W	yes	no	yes	no	none
X	yes	yes	yes	yes	2-5
Y	yes	yes	yes	yes	0-2
Z	yes	no	yes	no	none
AA	yes	yes	yes	yes	0-2
BB	yes	yes	yes	yes	2-5
CC	yes	yes	yes	yes	2-5
DD	yes	yes	yes	yes	0-2
EE	yes	yes	yes	yes	0-2
FF	yes	no	yes	no	5-10

The study area contains approximately 76 acres of continuous forested wetlands. The wetland area abuts and is inundated by flooding from Crystal Springs Creek and Stream 2, which are perennial tributaries to the Missouri River, a TNW, and is likely federally jurisdictional as defined by (a)(4) of the 2020 Navigable Waters Rule. The wetland area is also inundated by flooding from the Missouri River during a typical year.

Based on the Missouri Wetland Mitigation Method (MWMM), the wetland area is aquatic resource type A: wooded wetland with canopy height greater than 6 meters. A Floristic Quality Index (FQI) was completed for the continuous wetland area. The native mean C-value is 2.6, indicating that the plant community is considered low quality. The native FQI is 10.4, indicating that the plant community is moderately degraded.

Throughout the study area, the wetland vegetation was dominated by ash-leaf maple (*Acer negundo*, FAC), silver maple (*Acer saccharinum*, FACW), Eastern cottonwood (*Populus deltoides*, FAC), and American sycamore (*Platanus occidentalis*, FACW) in the tree layer, ash-leaf maple (*Acer negundo*, FAC), silver maple (*Acer saccharinum*, FACW) and common hackberry (*Celtis occidentalis*, FAC) in the sapling/shrub layer, and cress-leaf groundsel (*Packera glabella*, FACW), spotted touch-me-not (*Impatiens capensis*, FACW), Eastern poison ivy (*Toxicodendron radicans*, FAC), in the herbaceous layer. The wetland soils typically met the redox dark surface or depleted matrix hydric soil indicators. The primary hydrology indicators saturation, water marks, drift deposits, sparsely vegetation concave surface, and water-stained leaves, and the secondary hydrology indicators surface soil cracks, drainage patterns, geomorphic position, and FAC-neutral test were typically present throughout the wetland data points.

Details on the soil, hydrology and dominant vegetation for at each data point are provided on the Routine Wetland Determination Data Forms included in Appendix B. Photographs at each data point are provided in Appendix C.

4.2 STREAMS

A total of four (4) streams were identified within the study area. A summary of these streams is provided in the table below.

STREAM SUMMARY								
STREAM NAME	RECEIVING WATERS	PRELIMINARY USACE JURISDICTIONAL STATUS	STREAM TYPE	DRAINAGE AREA (SQ MI)*	PRIORITY WATERS	EXISTING CONDITION	LINEAR FEET WITHIN STUDY AREA	ACRES WITHIN STUDY AREA
Crystal Springs Creek (Stream 1)	Missouri River	Jurisdictional (a)(2)	Perennial	2.23	Secondary Priority	Moderately Functional	2,337	3.54
Stream 2	Crystal Springs Creek > Missouri River	Jurisdictional (a)(2)	Perennial	0.36	Secondary Priority	Moderately Functional	3,859	3.41
Stream 3	Crystal Springs Creek > Missouri River	Jurisdictional (a)(2)	Intermittent	0.06	Secondary Priority	Functionally Impaired	419	0.13
Stream 4	Pond 4 > culvert > undefined channel/swale > Stream 2 > Crystal Springs Creek > Missouri River	Non-Jurisdictional (b)(3)	Ephemeral	0.32	Tertiary Priority	Functionally Impaired	551	--

* As calculated by USGS Stream Stats at most downstream location within the study area.

As indicated in the table, Crystal Springs Creek, Stream 2, and Stream 3 are perennial or intermittent tributaries to the Missouri River, a TNW, and are likely federally jurisdictional as defined by (a)(2) of the 2020 Navigable Waters Rule.

The Water Resources Maps in Appendix A show the locations of these streams in the study area. The Stream Stats reports for each stream are in Appendix B. Representative photographs of each stream are provided in Appendix C.

4.3 LAKES/PONDS

Within the study area, a total of four (4) ponds were identified during the onsite investigation. The Water Resources Map in Appendix A shows the location of these ponds within the study area. Photographs of the ponds are provided in Appendix C. Based on historical imagery, Ponds 1 and 2 were once directly connected to the Missouri River as side channels; as development and upland were constructed around the ponds, they were cut off from the Missouri River in the early 1970s and appear to currently function as stormwater collection basins for the surrounding developments and upland areas. Pond 4 appears to be created from the backing up of Stream 4 at partially blocked culverts located under the Katy Trail.

POND SUMMARY					
POND NAME	CONNECTION TO DOWNSTREAM TNW	TYPE	PRELIMINARY USACE JURISDICTIONAL STATUS	AQUATIC RESOURCE TYPE*	ACRES WITHIN STUDY AREA
Pond 1	culvert > Pond 2 > culvert > unnamed tributary > Missouri River	Man-made impoundment of former river channel	Non-Jurisdictional (b)(8)	Type C	1.39
Pond 2	culvert > unnamed tributary > Missouri River	Man-made impoundment of former river channel	Non-Jurisdictional (b)(8)	Type C	5.65
Pond 3	None - Isolated	Man-made stormwater pond	Non-Jurisdictional (b)(10)	Type C	0.44
Pond 4	culvert > undefined channel > Stream 2 > Crystal Springs Creek > Missouri River	Ephemeral pond	Non-Jurisdictional (b)(3)	Type C	0.60
				TOTAL	**8.08**

*Based on MWMM

5.0 REFERENCES

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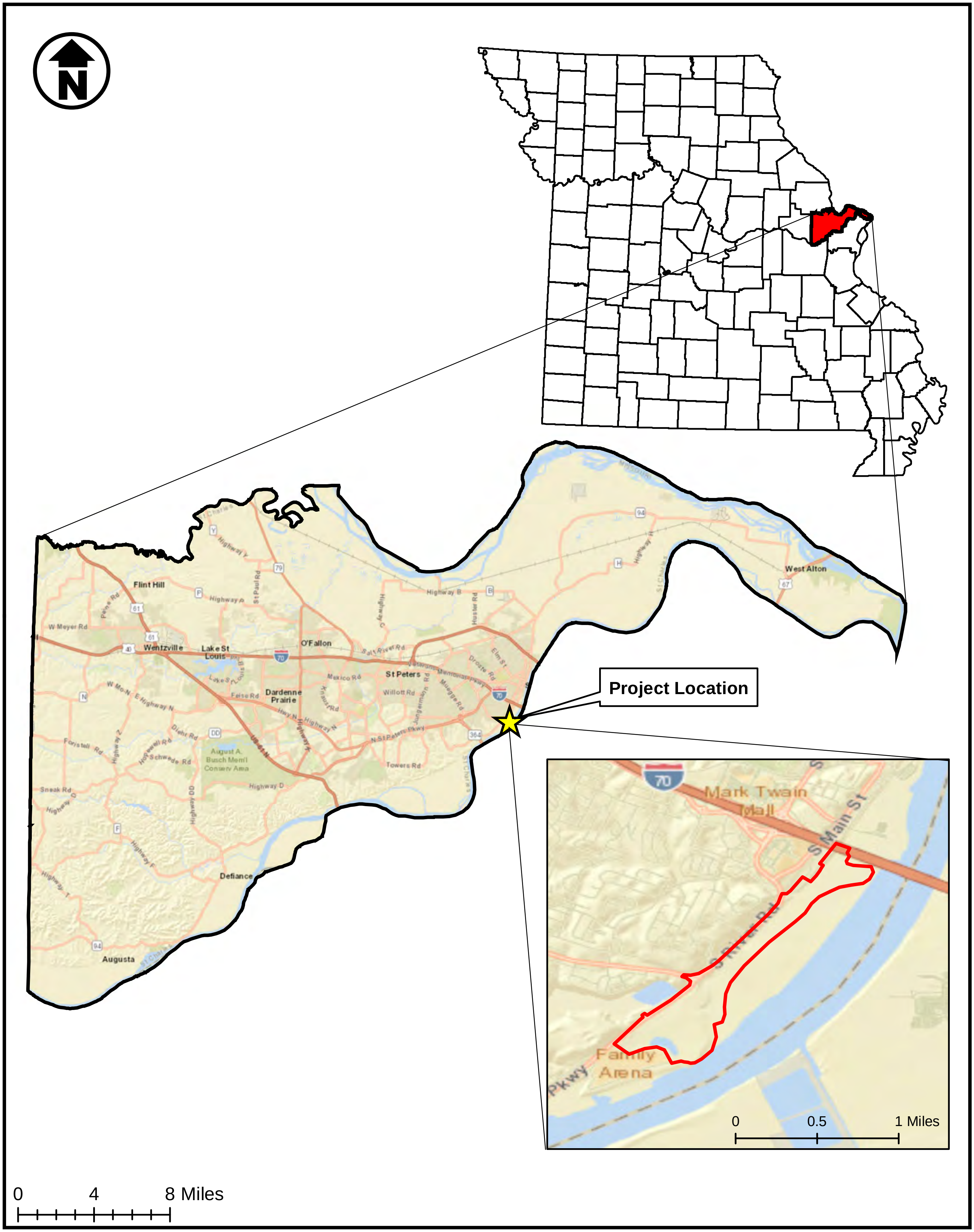
Wetland and Other Waters of the United States Delineation Report

APPENDIX A: PROJECT MAPPING

CMT

Exhibit A



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

Riverpointe Public Infrastructure Project
Location Map - St. Charles County, MO

CMT
Crawford, Murphy & Tilly

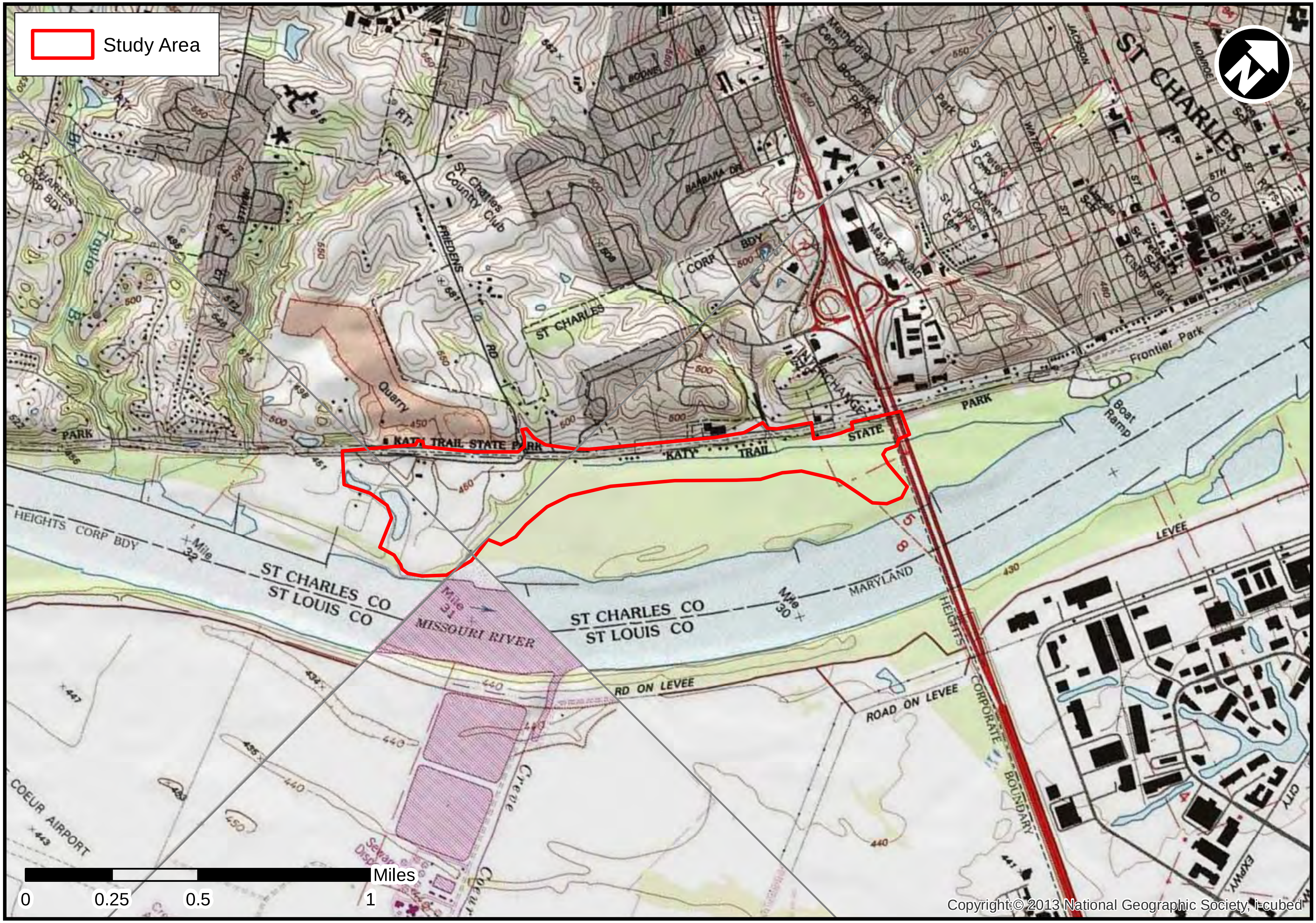
Exhibit B

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Aerial

CMT
Crawford, Murphy & Tilly

Exhibit C

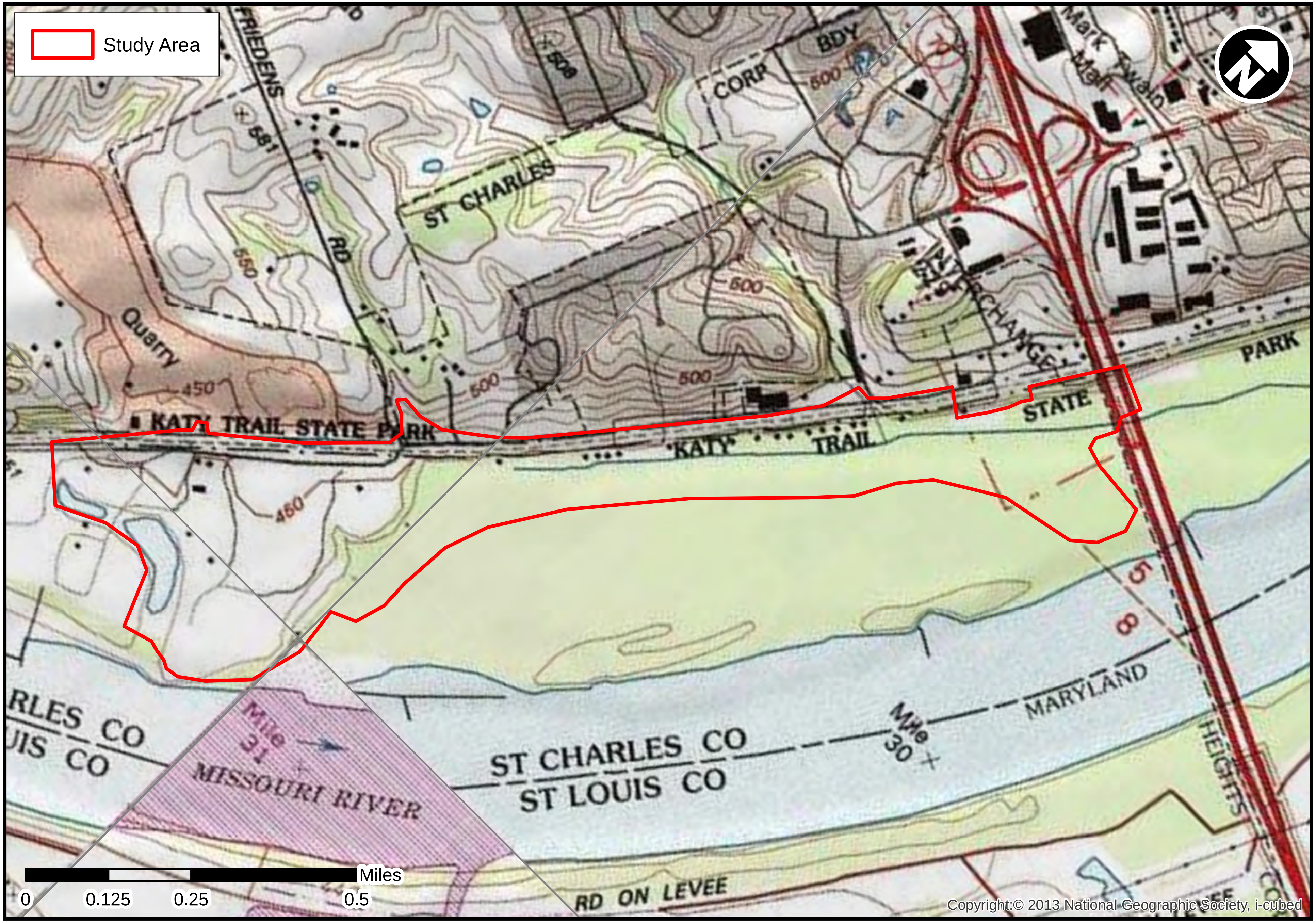


Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

USGS Topographic Map - St. Charles, Kampville, Chesterfield, and Creve Coeur, MO Quadrangles

CMT Crawford, Murphy & Tilly

Exhibit D

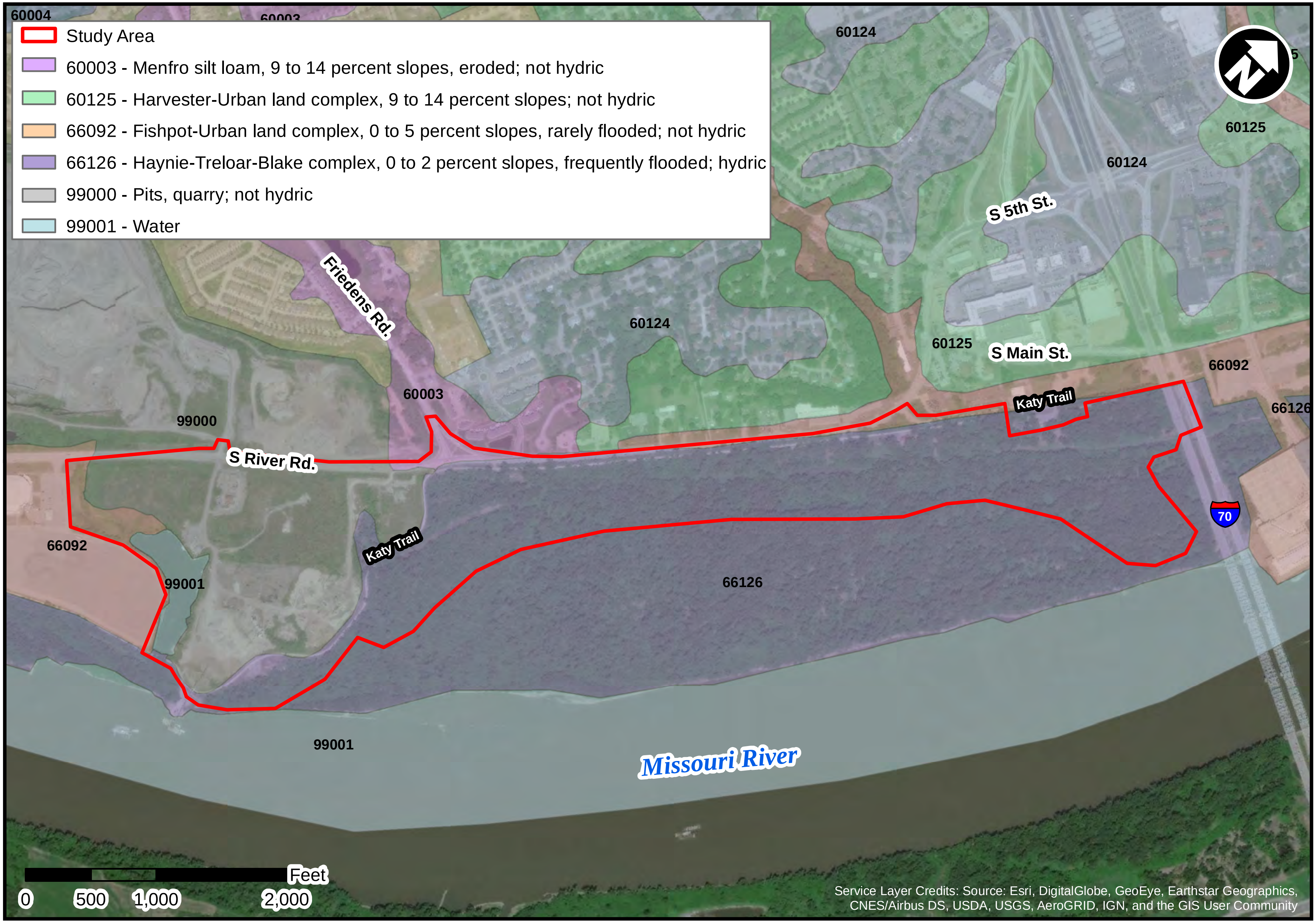


Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

USGS Topographic Map - St. Charles, Kampville, Chesterfield, and Creve Coeur, MO Quadrangles

CMT
Crawford, Murphy & Tilly

Exhibit E



Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

NRCS Soil Survey Map

CMT Crawford, Murphy & Tilly

Map Unit Description (Brief, Generated)

St. Charles County, Missouri

[Minor map unit components are excluded from this report]

Map unit: 60003 - Menfro silt loam, 9 to 14 percent slopes, eroded

Component: Menfro (85%)

The Menfro component makes up 85 percent of the map unit. Slopes are 9 to 14 percent. This component is on hills, hillslopes. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the F115BY001MO Deep Loess Upland Woodland ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: 60125 - Harvester-Urban land complex, 9 to 14 percent slopes

Component: Harvester (70%)

The Harvester component makes up 70 percent of the map unit. Slopes are 9 to 14 percent. This component is on hills, hillslopes. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 34 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 0 percent. This component is in the F115BY001MO Deep Loess Upland Woodland ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Urban land (20%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 66092 - Fishpot-Urban land complex, 0 to 5 percent slopes, rarely flooded

Component: Fishpot (50%)

The Fishpot component makes up 50 percent of the map unit. Slopes are 0 to 5 percent. This component is on stream terraces, river valleys. The parent material consists of mine spoil or earthy fill. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 20 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map Unit Description (Brief, Generated)

St. Charles County, Missouri

Map unit: 66126 - Haynie-Treloar-Blake complex, 0 to 2 percent slopes, frequently flooded

Component: Haynie (45%)

The Haynie component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, river valleys. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the F115BY015MO Sandy/loamy Floodplain Forest ecological site. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent.

Component: Treloar (25%)

The Treloar component makes up 25 percent of the map unit. Slopes are 0 to 2 percent. This component is on river valleys, flood-plain steps. The parent material consists of sandy alluvium over loamy alluvium. Depth to a root restrictive layer, strongly contrasting textural stratification, is 16 to 39 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 28 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F115BY015MO Sandy/loamy Floodplain Forest ecological site. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Component: Blake (20%)

The Blake component makes up 20 percent of the map unit. Slopes are 0 to 2 percent. This component is on river valleys, flood plains. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 14 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 3 percent. This component is in the F115BY031MO Loamy Floodplain Forest ecological site. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent.

Map unit: 99000 - Pits, quarry

Component: Pits (100%)

Generated brief soil descriptions are created for major soil components. The Pits is a miscellaneous area.

Map unit: 99001 - Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Hydric Soils

St. Charles County, Missouri

[This report lists only those map unit components that are rated as hydric. Dashes (---) in any column indicate that the data were not included in the database. Definitions of hydric criteria codes are included at the end of the report]

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
66126:					
Haynie-Treloar-Blake complex, 0 to 2 percent slopes, frequently flooded	Haynie	45	Flood plains	Yes	4
	Treloar	25	Flood-plain steps	Yes	4
	Blake	20	Flood plains	Yes	4
	SansDessein	5	Flood-plain steps	Yes	2, 4
	Sarpy	5	Flood-plain steps	Yes	4

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
    - B. are poorly drained or very poorly drained and have either:
        - 1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
        - 2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
        - 3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

References:
Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
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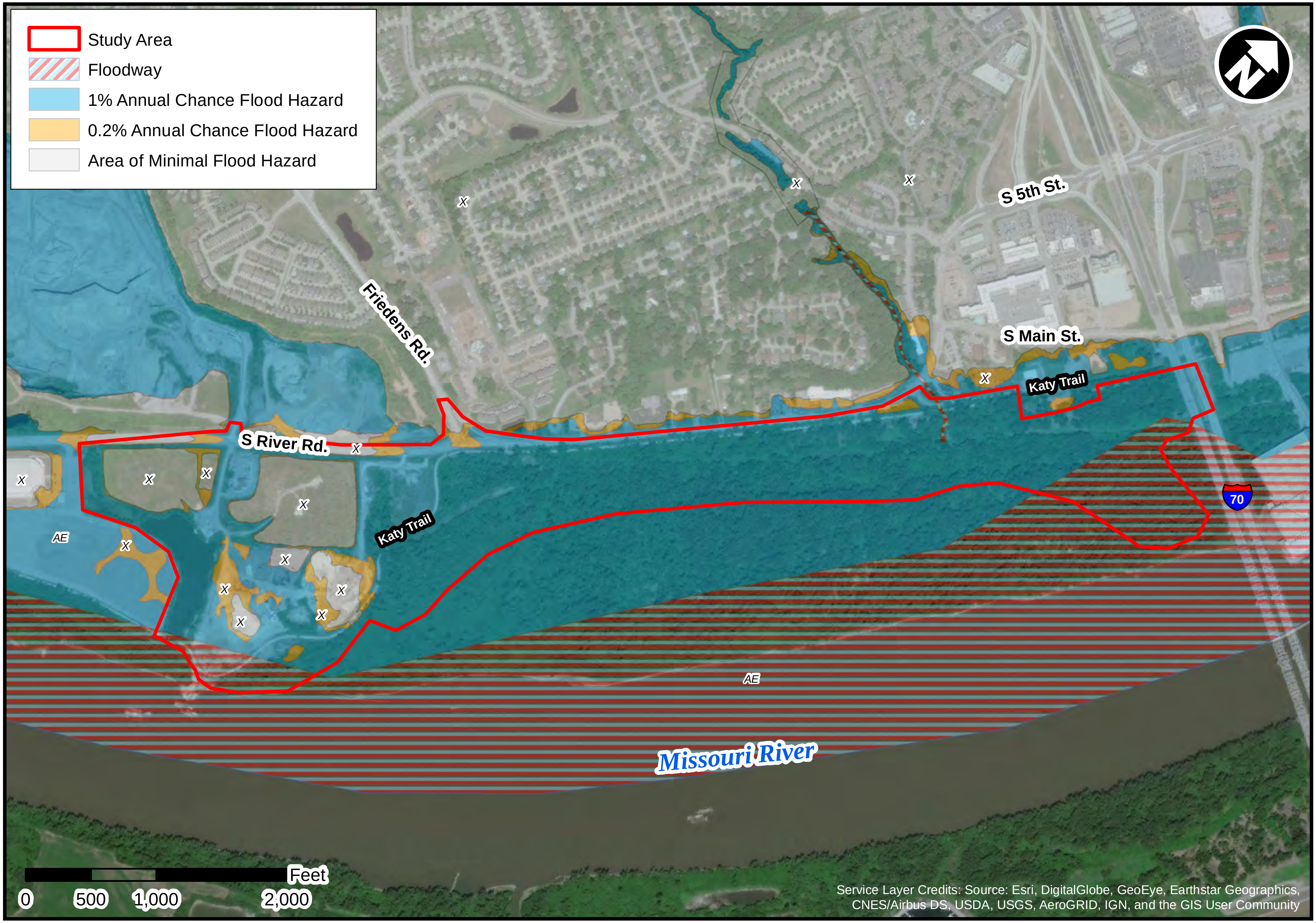
United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

Exhibit F



Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

FEMA National Flood Hazard Map

Crawford, Murphy & Tilly

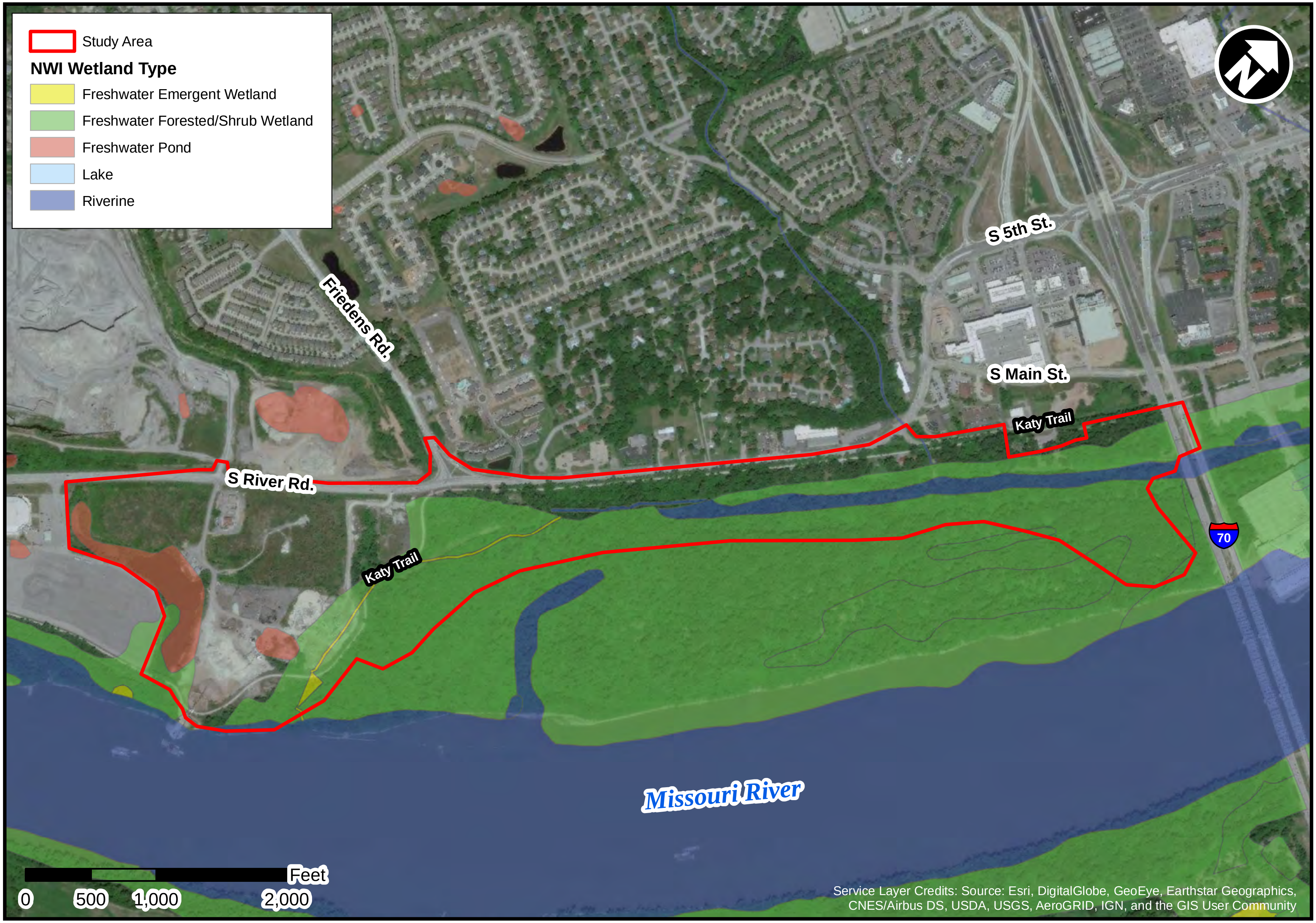
Exhibit G

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

National Hydrography Dataset Map

CMT
Crawford, Murphy & Tilly

Exhibit H

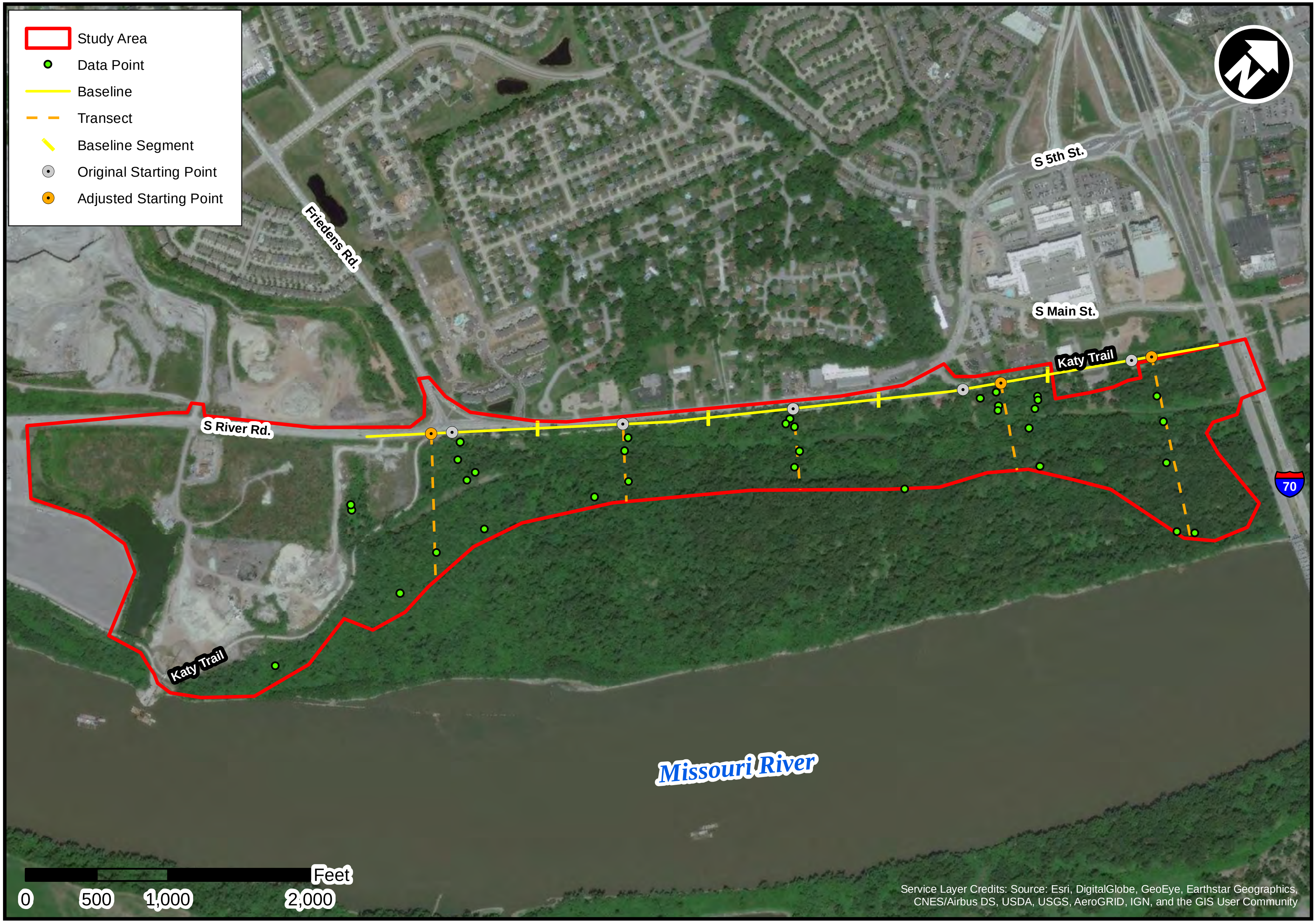


Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

National Wetland Inventory Map

CMT Crawford, Murphy & Tilly

Exhibit I

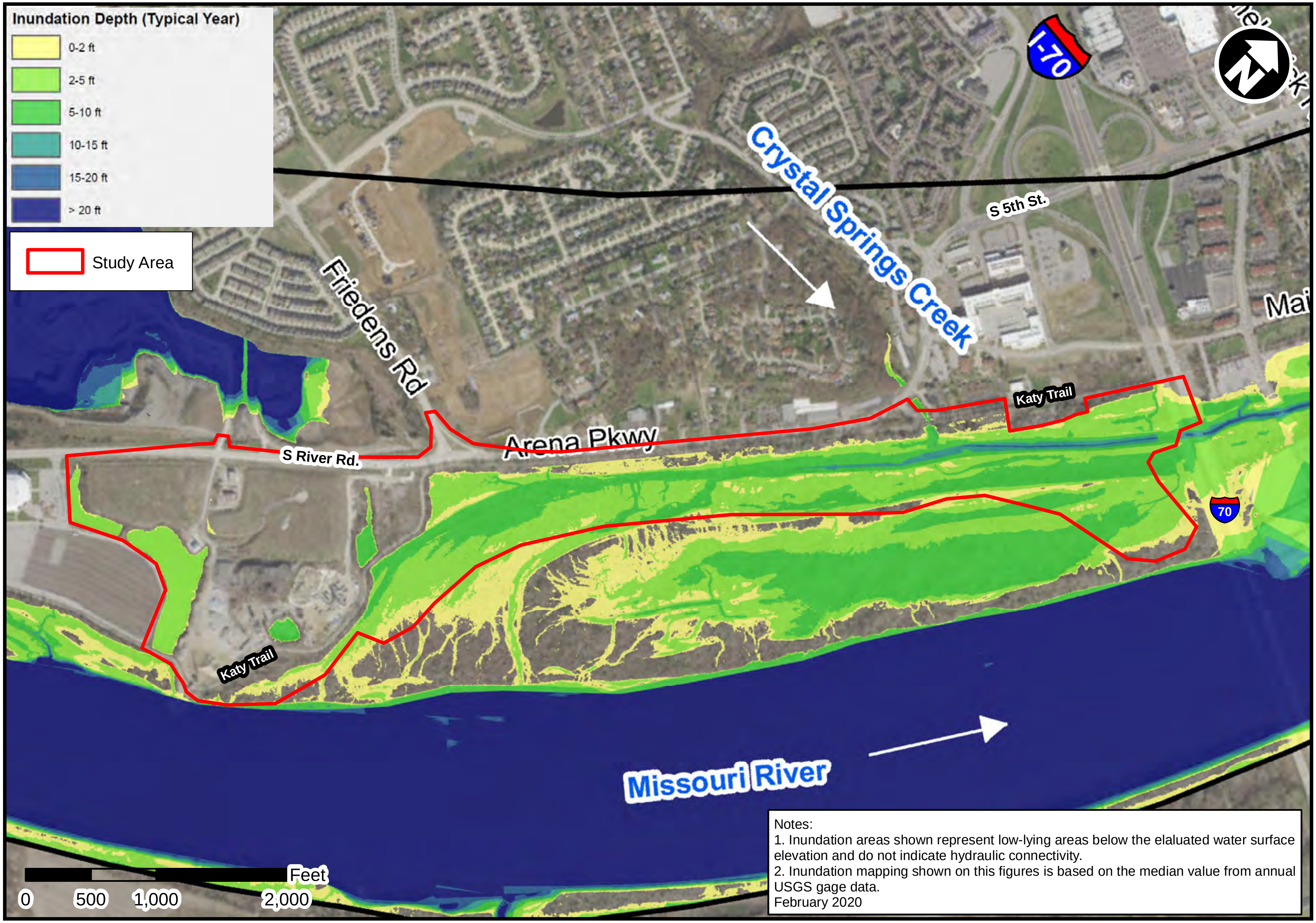


Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Wetland Delineation Protocol

CMT
Crawford, Murphy & Tilly

Exhibit J



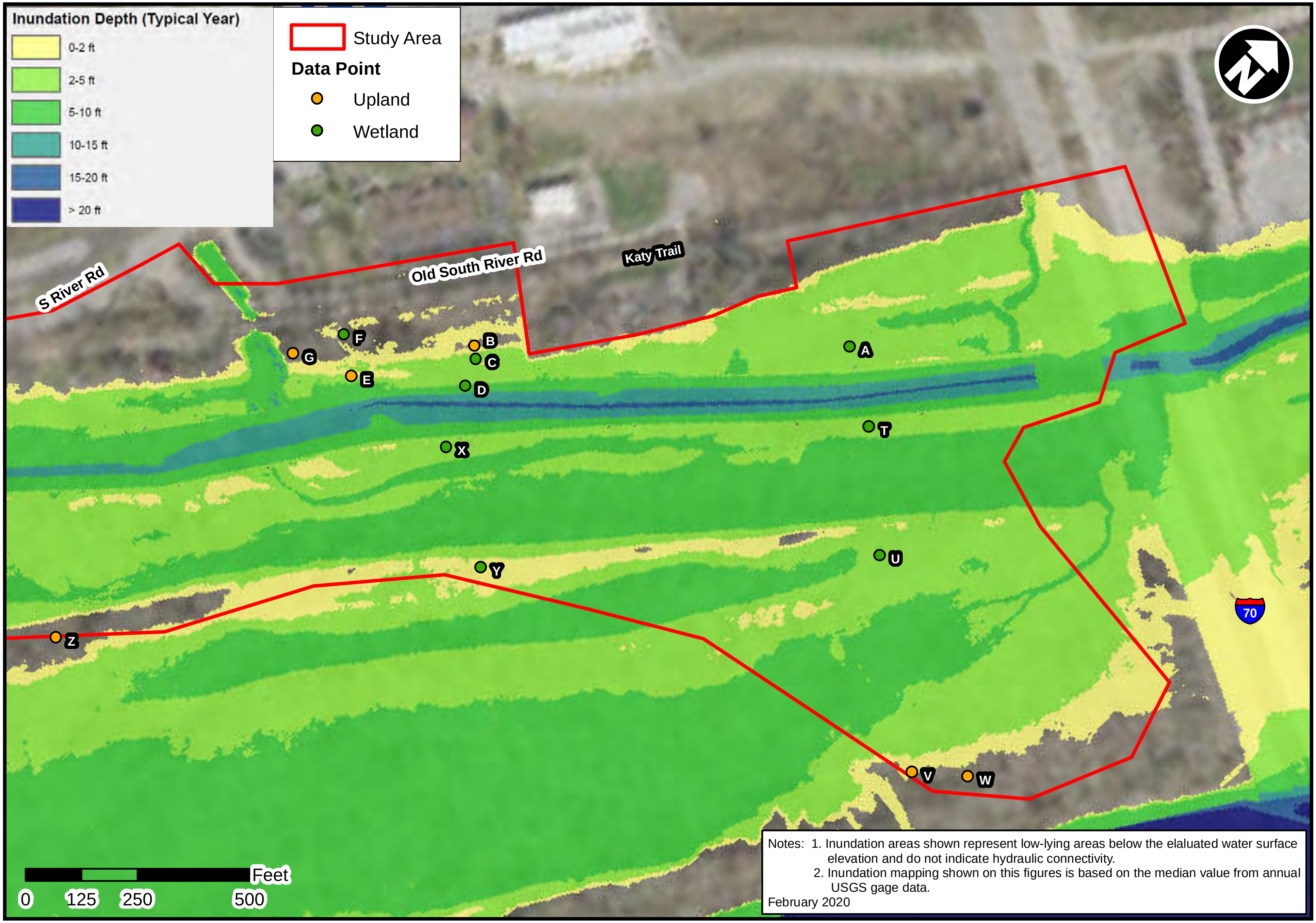
Notes:
1. Inundation areas shown represent low-lying areas below the elaluated water surface elevation and do not indicate hydraulic connectivity.
2. Inundation mapping shown on this figures is based on the median value from annual USGS gage data.
February 2020

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Inundation Depth Typical Year

CMT
Crawford, Murphy & Tilly

Exhibit K



Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Inundation Depth Typical Year - North

CMT Crawford, Murphy & Tilly

Exhibit L

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - North

CMT
Crawford, Murphy & Tilly

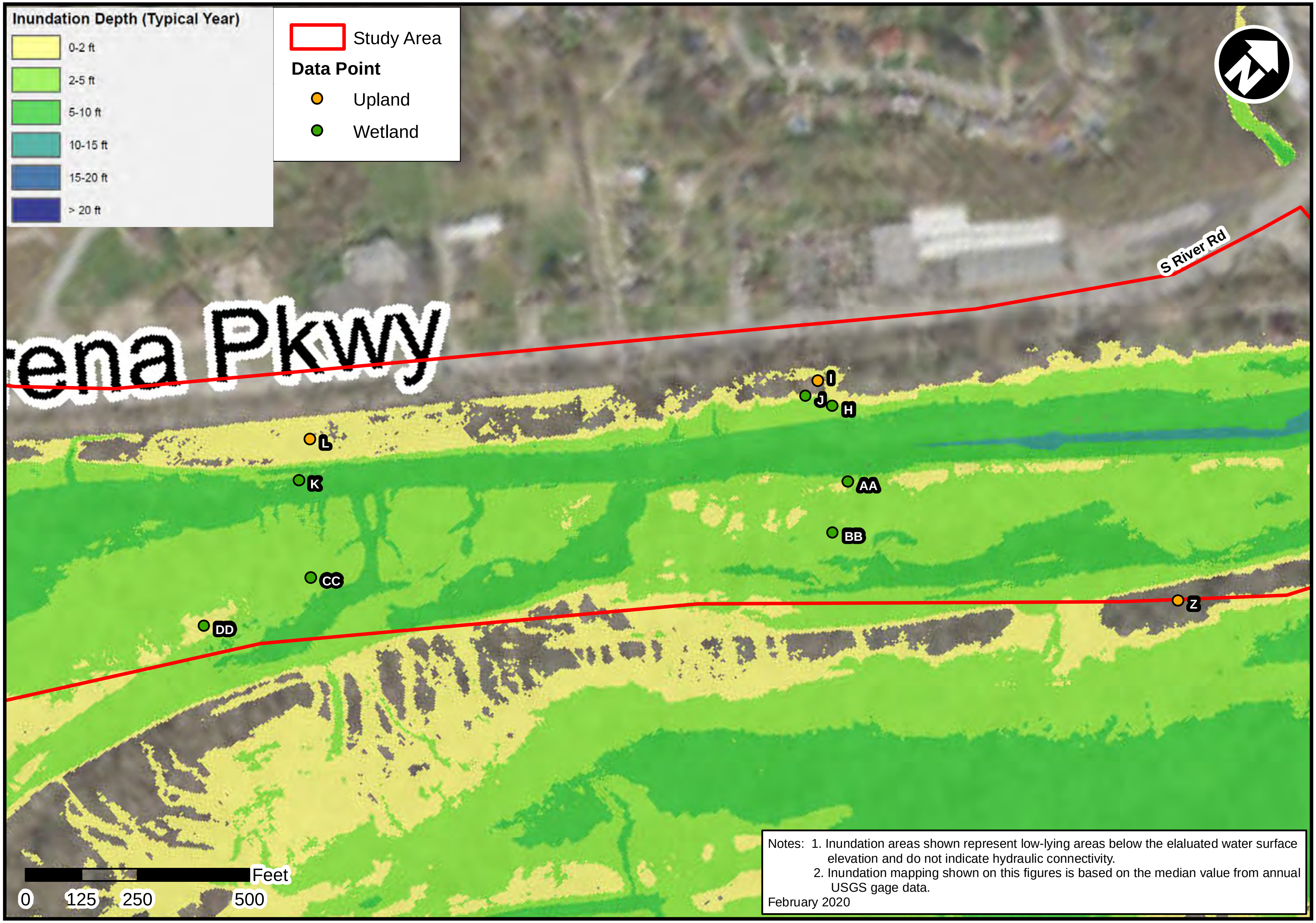
Exhibit M

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - North

CMT
Crawford, Murphy & Tilly

Exhibit N



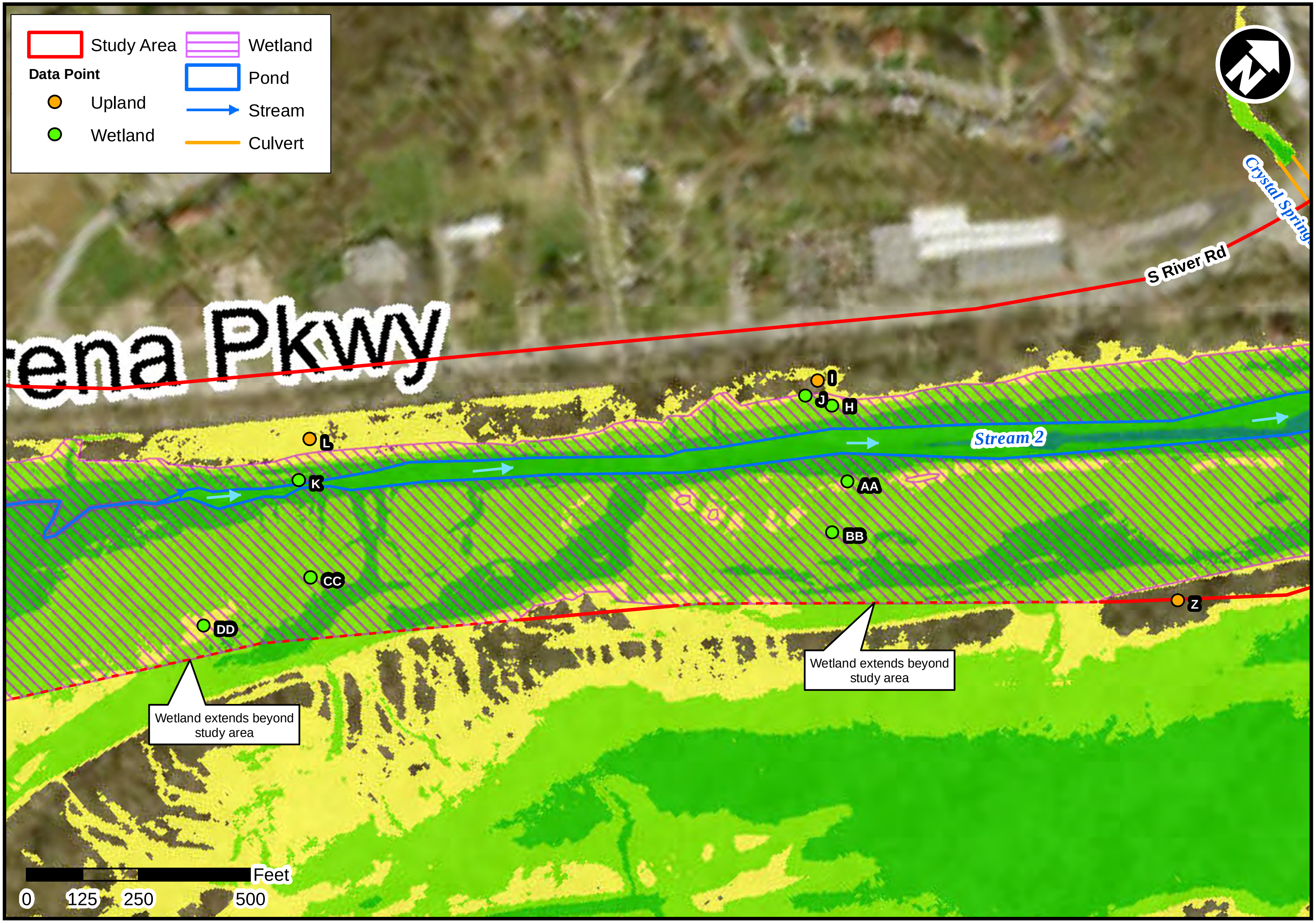
Notes: 1. Inundation areas shown represent low-lying areas below the elaluated water surface elevation and do not indicate hydraulic connectivity.
2. Inundation mapping shown on this figures is based on the median value from annual USGS gage data.
February 2020

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Inundation Depth Typical Year - Central

CMT Crawford, Murphy & Tilly

Exhibit O

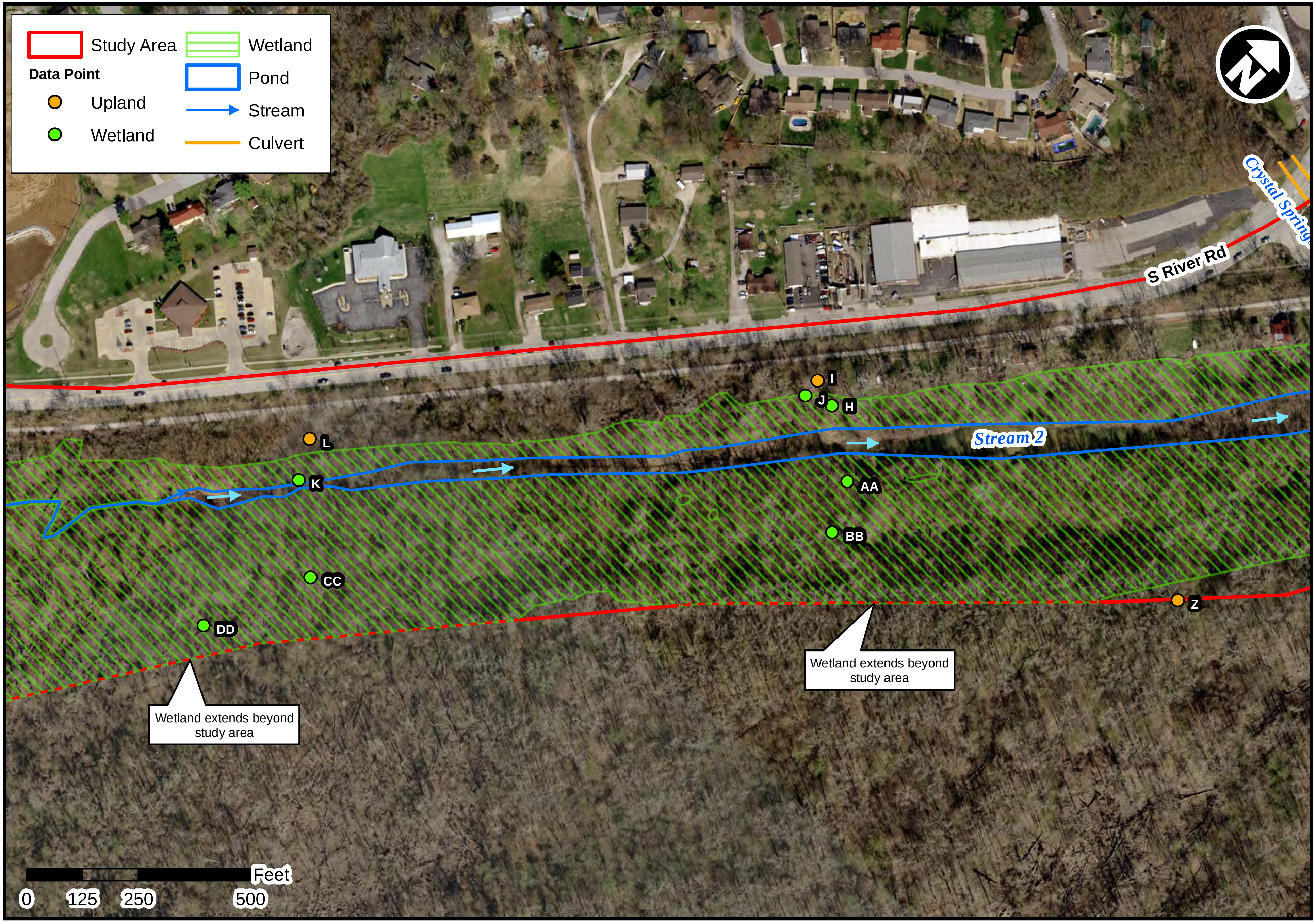


Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - Central

CMT
Crawford, Murphy & Tilly

Exhibit P



Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - Central

CMT
Crawford, Murphy & Tilly

Exhibit Q

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Inundation Depth Typical Year - South

CMT Crawford, Murphy & Tilly

Exhibit R

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - South

CMT
Crawford, Murphy & Tilly

Exhibit S

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - South

CMT
Crawford, Murphy & Tilly

Exhibit T

Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Water Resources Map - Overall

CMT
Crawford, Murphy & Tilly

Wetland and Other Waters of the United States Delineation Report

APPENDIX B: DATA FORMS AND FQI

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: A

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): floodplain depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.765003 Long: -90.489648 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer saccharinum*	40	Y	FACW
2. *Acer negundo*	15	Y	FAC
3. *Salix nigra*	5	N	OBL
4. *Morus alba*	5	N	FAC
5.			
	65 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2. *Acer saccharinum*	1	Y	FACW
3. *Packera glabella*	1	Y	FACW
4. *Impatiens capensis*	1	Y	FACW
5. *Toxicodendron radicans*	1	Y	FAC
6.			
7.			
8.			
9.			
10.			
	4 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	43	x 2 = 86
FAC species	21	x 3 = 63
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	69 (A)	154 (B)

Prevalence Index = B/A = 2.23

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2	80	10YR 4/6	20	C	M	not sand	loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)	X		surface

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet; inundation present within larger area

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: B

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none

Slope (%): 1 Lat: 38.763380 Long: -90.491729 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?	X	
Is the Sampled Area within a Wetland?		X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	40	Y	FAC
2. *Celtis occidentalis*	20	Y	FAC
3. *Acer saccharinum*	5	N	FACW
4.			
5.			
	65 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	40	Y	UPL
2. *Acer negundo*	15	Y	FAC
3.			
4.			
5.			
	55 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	5	x 2 = 10
FAC species	80	x 3 = 240
FACU species	0	x 4 = 0
UPL species	40	x 5 = 200
Column Totals:	125 (A)	450 (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Distinct change in vegetation with presence of dead/live honeysuckle

SOIL

Sampling Point: B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	99	10YR 5/6	1		M	not sand	clay loam
3-15	10YR 4/2	99	10YR 5/6	1		M	sand	sand loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Area not inundated long enough to sustain prominent, abundant redox concentrations.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
X Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______
Water Table Present? Yes ___ No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): border of none and 0-2 feet; hydrology indicators not as prominent

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/50/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: C

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38.763331 Long: -90.491649 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

Transitional boundary area between upland and wetland areas.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	40	Y	FAC
2. *Acer saccharinum*	10	Y	FACW
3.			
4.			
5.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Acer negundo*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	___ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	10	x 2 = 20
FAC species	45	x 3 = 135
FACU species	0	x 4 = 0
UPL species	10	x 5 = 50
Column Totals:	65 (A)	205 (B)

Prevalence Index = B/A = 3.15

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Transition area of honeysuckle becoming less abundant.

SOIL

Sampling Point: C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	95	10YR 3/6	5	C	M	not sand	clay silt

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
X Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
X Sparsely Vegetated Concave Surface (B8)
X Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

X Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______
Water Table Present? Yes ___ No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: D

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge adjacent stream Local relief (concave, convex, none): none

Slope (%): 3 Lat: 38.763168 Long: -90.491556 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	30	Y	FAC
2. *Acer saccharinum*	20	Y	FACW
3. *Populus deltoides*	5	N	FAC
4.			
5.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer saccharinum*	10	Y	FACW
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Acer negundo*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	10	Y	FACW
2.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	40	x 2 = 80
FAC species	40	x 3 = 120
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	80 (A)	200 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	85	10YR 3/6	15	C	M	not sand	clay silt

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ______ Depth (inches): 1

Water Table Present? Yes X No ______ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): surface

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): border 2-5 and 5-10 feet

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: E

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge/terrace Local relief (concave, convex, none): convex

Slope (%): 1 Lat: 38.762715 Long: -90.492246 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Populus deltoides*	10	Y	FAC
2. *Acer saccharinum*	10	Y	FACW
3. *Ulmus americana*	5	Y	FACW
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	30	Y	UPL
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	5	Y	FACW
2.			
	5 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	20	x 2 = 40
FAC species	15	x 3 = 45
FACU species	0	x 4 = 0
UPL species	30	x 5 = 150
Column Totals:	65 (A)	235 (B)

Prevalence Index = B/A = 3.62

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Distinct difference in vegetation with presence of dead/live honeysuckle

SOIL

Sampling Point: E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	99	10YR 3/6	1		M	not sand	clay loam, redox not prominent
2-16	10YR 3/2	99	10YR 3/6	1		M	sand	with clay inclusions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: F

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.762863 Long: -90.492516 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:

Transitional area between upland and wetland areas.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	20	Y	FAC
2. *Populus deltoides*	5	Y	FAC
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	10	Y	FAC
2. *Lonicera maackii*	10	Y	UPL
3. *Morus alba*	5	Y	FAC
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Euonymus fortunei*	30	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	40	x 3 = 120
FACU species	0	x 4 = 0
UPL species	40	x 5 = 200
Column Totals:	80 (A)	320 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Distinct difference in vegetation with presence of winter creeper in herb layer and dead/live honeysuckle in shrub layer

SOIL

Sampling Point: F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	95	7.5YR 4/6	5	C	M	not sand	silty clay
8-16	10YR 3/2	100					sand	with clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: G

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none

Slope (%): 2 Lat: 38.762561 Long: -90.492693 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	15	Y	FAC
2. *Celtis occidentalis*	10	Y	FAC
3. *Acer saccharinum*	5	N	FACW
4. *Juglans nigra*	5	N	FACU
5.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	30	Y	UPL
2. *Cornus drummondii*	5	N	FAC
3.			
4.			
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Euonymus fortunei*	5	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	5	x 2 = 10
FAC species	30	x 3 = 90
FACU species	5	x 4 = 20
UPL species	35	x 5 = 175
Column Totals:	75 (A)	295 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	100					not sand	clay loam
10-16	10YR 4/2	100					sand	with clay inclusions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): none

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: H

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none

Slope (%): 2 Lat: 38.759648 Long: -90.495424 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	20	Y	FAC
2. *Ulmus americana*	15	Y	FACW
3. *Acer negundo*	10	N	FAC
4. *Acer saccharinum*	5	N	FACW
5. *Populus deltoides*	5	N	FAC
	55 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Ulmus americana*	10	Y	FACW
2. *Celtis occidentalis*	10	Y	FAC
3. *Acer negundo*	5	Y	FAC
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	30	x 2 = 60
FAC species	55	x 3 = 165
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	85 (A)	225 (B)

Prevalence Index = B/A = 2.65

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: H

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	93	7.5YR 3/4	7	C	PL	not sand	silty clay
2-16	10YR 4/2	85	7.5YR 5/6	15	C	M	not sand	clay silt

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

previously disturbed area; concrete and railroad ties present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No X	Depth (inches): ______
Water Table Present?	Yes X	No ______	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes X	No ______	Depth (inches): surface

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: I

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex

Slope (%): 1 Lat: 38.759693 Long: -90.495644 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	15	Y	FAC
2. *Platanus occidentalis*	10	Y	FACW
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Ulmus americana*	10	Y	FACW
2. *Cornus drummondii*	5	Y	FAC
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Viola sororia*	10	Y	FAC
2. *Alliaria petiolata*	2	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	12 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	20	x 2 = 40
FAC species	32	x 3 = 96
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	52 (A)	136 (B)

Prevalence Index = B/A = 2.62

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: I

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/1	100					not sand	loam
9-16	10YR 4/2	95	7.5YR 4/6	5	C	M	not sand	silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): none; site not inundated long enough for hydrology indicators to be prominent

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: J

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.759575 Long: -90.495628 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Based on field observations, this is a boundary between wetland and upland area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	40	Y	FAC
2. *Ulmus americana*	15	Y	FACW
3. *Platanus occidentalis*	5	N	FACW
4. *Acer saccharinum*	5	N	FACW
5.			
	65	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	15	Y	UPL
2.			
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1.			NI
2. *Toxicodendron radicans*	2	Y	FAC
3. *Ulmus americana*	2	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	4	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	27	x 2 = 54
FAC species	42	x 3 = 126
FACU species	0	x 4 = 0
UPL species	15	x 5 = 75
Column Totals:	84 (A)	255 (B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Presence of dead honeysuckle.

SOIL

Sampling Point: J

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	95	7.5 YR 4/6	5	C	M	not sand	clay loam
11-16	10YR 4/2	95	10YR 5/6	5	C	M	not sand	silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
X Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: K

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge adjacent stream Local relief (concave, convex, none): none

Slope (%): 3 Lat: 38.757013 Long: -90.497967 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: R5UBH adjacent

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer saccharinum*	30	Y	FACW
2. *Fraxinus pennsylvanica*	10	Y	FACW
3. *Acer negundo*	5	N	FAC
4.			
5.			
	45 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Fraxinus pennsylvanica*	5	Y	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2. *Packera glabella*	3	Y	FACW
3. *Carex sp.*	3	Y	FACW
4. *Fraxinus pennsylvanica*	3	Y	FACW
5. *Acer negundo*	3	Y	FAC
6. *Symphyotrichum sp.*	2	N	FAC
7. *Bidens sp.*	2	N	FACW
8.			
9.			
10.			
	16 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	10	Y	FACW
2.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	66	x 2 = 132
FAC species	10	x 3 = 30
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	76 (A)	162 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Area lacks live/dead honeysuckle.

SOIL

Sampling Point: K

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	75	5YR 4/6	25	C	M	not sand	clay silt

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

Redox much more prominant.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ______ Depth (inches): 1

Water Table Present? Yes X No ______ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): surface

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 5-10 feet

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: L

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace, ridge Local relief (concave, convex, none): none

Slope (%): 0 Lat: 38.757240 Long: -90.498134 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Platanus occidentalis*	15	Y	FACW
3.			NI
4.			
5.			
= Total Cover	35		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	20	Y	UPL
2. *Acer negundo*	10	Y	FAC
3. *Cornus drummondii*	5	N	FAC
4.			
5.			
= Total Cover	35		
Herb Stratum (Plot size: 5' radius)			
1.			
2. *Toxicodendron radicans*	3	Y	FAC
3. *Cornus drummondii*	3	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	6		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
= Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	15	x 2 = 30
FAC species	41	x 3 = 123
FACU species	0	x 4 = 0
UPL species	20	x 5 = 100
Column Totals:	76 (A)	253 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Presence of live/dead honeysuckle.

SOIL

Sampling Point: L

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	97	10YR 4/6	3		M	not sand	loam
4-16	10YR 4/1	99	10YR 4/6	1		M	not sand	silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

Redox features present but not distinct/prominent in soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project   City/County: St. Charles, St. Charles County   Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles   State: MO   Sampling Point: M

Investigator(s): AMZ, ELH   Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace, ridge   Local relief (concave, convex, none): convex

Slope (%): 2   Lat: 38.754886   Long: -90.500982   Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric   NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Acer saccharinum*	5	Y	FACW
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	30	Y	UPL
2. *Morus rubra*	10	Y	FACU
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2. *Acer rubrum*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	10	Y	FACW
2.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.43 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	15	x 2 = 30
FAC species	30	x 3 = 90
FACU species	10	x 4 = 40
UPL species	30	x 5 = 150
Column Totals:	85 (A)	310 (B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: M

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	95	5YR 4/6	5	C	PL	not sand	loam clay
11-16	10YR 3/2	100					sand	sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No X	Depth (inches): ______
Water Table Present?	Yes ______	No X	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No X	Depth (inches): ______

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): border of none and 0-2 feet

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: N

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): large depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.754618 Long: -90.500709 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	40	Y	FAC
2. *Acer saccharinum*	20	Y	FACW
3. *Salix nigra*	5	N	OBL
4.			
5.			
	65 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	15	Y	FAC
2. *Fraxinus pennsylvanica*	5	Y	FACW
3. *Acer saccharinum*	5	Y	FACW
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			NI
2. *Packera glabella*	3	Y	FACW
3. *Toxicodendron radicans*	3	Y	FAC
4. *Fraxinus pennsylvanica*	3	Y	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	9 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	36	x 2 = 72
FAC species	58	x 3 = 174
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	99 (A)	251 (B)

Prevalence Index = B/A = 2.54

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	75	10YR 5/6	25	C	M	not sand	silty clay
4-16	10YR 4/2	50	7.5YR 4/6	5	C	M	not sand	silty clay
	10YR 5/6	45						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No X	Depth (inches): ______
Water Table Present?	Yes X	No ______	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes X	No ______	Depth (inches): surface

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: O

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge Local relief (concave, convex, none): convex

Slope (%): 1 Lat: 38.754676 Long: -90.500187 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	20	Y	FAC
2. *Acer saccharinum*	15	Y	FACW
3. *Acer negundo*	5	N	FAC
4. *Celtis occidentalis*	5	N	FAC
5.			
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	20	Y	UPL
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1.			
2. *Euonymus fortunei*	1	Y	UPL
3. *Fraxinus pennsylvanica*	1	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	2	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	16	x 2 = 32
FAC species	30	x 3 = 90
FACU species	0	x 4 = 0
UPL species	21	x 5 = 105
Column Totals:	67 (A)	227 (B)

Prevalence Index = B/A = 3.39

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Distinct difference in vegetation community with presence of honeysuckle.

SOIL

Sampling Point: O

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	97	7.5YR 3/4	3	C	PL	not sand	silty clay
3-16	10YR 3/2	99	7.5YR 3/4	1		M	not sand	loam, redox features not prominent

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes ___ **No** X

Remarks:

Top 3 inches of soil wetter than below. Redox features in 3-16 inches are not distinct/prominent

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: P

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.754461 Long: -90.500194 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	15	Y	FACW
2. *Acer negundo*	15	Y	FAC
3. *Morus alba*	5	N	FAC
4.			
5.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Cephalanthus occidentalis*	15	Y	OBL
2. *Salix nigra*	5	Y	OBL
3. *Fraxinus pennsylvanica*	5	Y	FACW
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Hibiscus laevis*	15	Y	OBL
2. *Packera glabella*	5	Y	FACW
3. *Fraxinus pennsylvanica*	5	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	35	x 1 = 35
FACW species	30	x 2 = 60
FAC species	20	x 3 = 60
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	85 (A)	155 (B)

Prevalence Index = B/A = 1.82

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	5Y 4/1	90	10YR 4/6	10	C	PL	not sand	silt with clay
5-16	10YR 3/2	90	2.5YR 3/6	10	C	PL/M	not sand	silt with clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ______ Depth (inches): 7

Water Table Present? Yes X No ______ Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): surface

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): border of 2-5 and 5-10 feet; stream backwater area, water is not flowing but generally drains to the north/ northeast during normal conditions.

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: Q

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex

Slope (%): 1 Lat: 38.75401 Long: -90.499057 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

Dense understory of downed trees.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	70	Y	FACW
2.			
3.			
4.			
5.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	15	Y	FAC
2. *Fraxinus pennsylvanica*	10	Y	FACW
3. *Lonicera maackii*	10	Y	UPL
4.			
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Packera glabella*	5	Y	FACW
2. *Impatiens capensis*	5	Y	FACW
3. *Viola sororia*	5	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	90	x 2 = 180
FAC species	20	x 3 = 60
FACU species	0	x 4 = 0
UPL species	10	x 5 = 50
Column Totals:	120 (A)	290 (B)

Prevalence Index = B/A = 2.42

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Presence of dead/live honeysuckle indicates change in veg community.

SOIL

Sampling Point: Q

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	98	7/5YR 4/6	2		M	not sand	silty with clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

Uniform throughout, redox not prominent/distinct

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: R

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none

Slope (%): 2 Lat: 38.753061 Long: 90.499460 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	30	Y	FAC
2. *Acer saccharinum*	30	Y	FACW
3.			
4.			
5.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	20	Y	FAC
2. *Acer saccharinum*	20	Y	FACW
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	5	Y	FACW
2. *Symphyotrichum sp.*	5	Y	FAC
3. *Toxicodendron radicans*	2	N	FAC
4. *Packera glabella*	2	N	FACW
5. *Urtica dioica*	2	N	FACW
6.			
7.			
8.			
9.			
10.			
	16 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	59	x 2 = 118
FAC species	57	x 3 = 171
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	116 (A)	289 (B)

Prevalence Index = B/A = 2.49

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- __ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: R

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	90	5YR 4/6	10	C	PL	not sand	silty clay
5-16	10YR 4/2	90	10YR 4/6	10	C	PL	not sand	silty clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/20/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: S

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none

Slope (%): 2 Lat: 38.752013 Long: -90.499397 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Characterize area as wetland to upland transition area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	25	Y	FAC
2. *Morus rubra*	25	Y	FACU
3. *Populus deltoides*	15	Y	FAC
4.			
5.			
	65 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	10	Y	FAC
2. *Morus rubra*	10	Y	FACU
3. *Lonica maackii*	5	Y	UPL
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Alliaria petiolata*	5	Y	FAC
2. *Urtica dioica*	3	Y	FACW
3. *Toxicodendron radicans*	3	Y	FAC
4. *Symphyotrichum sp.*	3	Y	FAC
5. *Impatiens capensis*	3	Y	FACW
6. *Campsis radicans*	3	Y	FACU
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 12 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	6	x 2 = 12
FAC species	61	x 3 = 183
FACU species	38	x 4 = 152
UPL species	5	x 5 = 25
Column Totals:	110 (A)	372 (B)

Prevalence Index = B/A = 3.38

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Presence of dead/alive honeysuckle.

SOIL

Sampling Point: S

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	95	7.5YR 4/6	5	C	PL	not sand	silty clay
6-16	10YR 3/2	97	7.5YR 4/6	3	C	PL	sand	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: T

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge adjacent river Local relief (concave, convex, none): convex

Slope (%): 1 Lat: 38.764741 Long: -90.489098 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: R2UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present? Yes X No ___	
Wetland Hydrology Present? Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	30	Y	FAC
2. Acer saccharinum	10	Y	FACW
3. Platanus occidentalis	5	N	FACW
4.			
5.			
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Acer negundo	15	Y	FAC
2.			
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Packera glabella	10	Y	FACW
2. Toxicodendron radicans	5	Y	FAC
3. Humulus japonicus	5	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1. Vitis riparia	10	Y	FACW
2.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	35	x 2 = 70
FAC species	50	x 3 = 150
FACU species	5	x 4 = 20
UPL species	0	x 5 = 0
Column Totals:	90 (A)	240 (B)

Prevalence Index = B/A = 2.67

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: T

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	90	7.5YR 3/4	10	C	M/PL	not sand	loam
5-14	10YR 4/2	90	10YR 5/6	10	C	M	not sand	loam
14-20	10YR 4/2	85	10YR 5/6	15	C	M	not sand	loam with clay inclusions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): surface

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: U

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.764229 Long: -90.488327 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	15	Y	FAC
2. *Acer saccharinum*	15	Y	FACW
3. *Acer negundo*	10	Y	FAC
4.			
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Celtis occidentalis*	5	Y	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	5	Y	FACW
2. *Packera glabella*	3	Y	FACW
3. *Toxicodendron radicans*	2	N	FAC
4. *Carex sp.*	1	N	FACW
5. *Humulus japonicus*	1	N	FACU
6.			
7.			
8.			
9.			
10.			
	12	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	24	x 2 =	48
FAC species	32	x 3 =	96
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	57 (A)		148 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	80	7.5YR 4/6	20	C	M	not sand	clay silt
5-16	10YR 4/2	90	10YR 5/6	10	C	M	nost sand	clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): surface

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: V

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 38.763430 Long: -90.486946 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

wetland to upland transition area; close to Missouri River

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	20	Y	FACW
2. *Acer negundo*	15	Y	FAC
3.			
4.			
5.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1.			NI
2. *Ambrosia artemisiifolia*	2	Y	FACU
3. *Symphyotrichum sp.*	2	Y	FAC
4. *Solidago sp.*	2	Y	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	6	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	5	Y	FACW
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	25	x 2 = 50
FAC species	19	x 3 = 57
FACU species	2	x 4 = 8
UPL species	0	x 5 = 0
Column Totals:	46 (A)	115 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: V

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1.5	10YR 5/1	95	10YR 5/6	5	C	PL	sand	sand with clay
1.5-6	10YR 5/3	100					sand	
6-13	10YR 4/2	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

Organic matter present within top layer, indicating layering and deposition. Redox not present throughout soil profile. Possible depositional influence from proximity to Missouri River.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: W

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): sandy ridge Local relief (concave, convex, none): none

Slope (%): 1 Lat: 38.763653 Long: -90.486615 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	15	Y	FAC
2. *Acer saccharinum*	15	Y	FACW
3. *Populus deltoides*	5	N	FAC
4.			
5.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	5	Y	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			NI
2. *Alliaria petiolata*	3	Y	FAC
3. *Toxicodendron radicans*	1	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	4 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	15	x 2 = 30
FAC species	29	x 3 = 87
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	44 (A)	117 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 5/3	100					sand	
5-8	10YR 4/2	100					sand	sand and silt
8-16	10YR 5/2	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: __________

Depth (inches): __________

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

Possible depositional influence from proximity to Missouri River.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
X Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
X Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ______
Water Table Present? Yes ____ No ____ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ______

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): none; sediment deposit ring around trees

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: X

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge adjacent stream Local relief (concave, convex, none): convex

Slope (%): 2 Lat: 38.762819 Long: -90.491327 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: R2UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	30	Y	FAC
2. *Populus deltoides*	10	Y	FAC
3. *Salix nigra*	10	Y	OBL
4.			
5.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer saccharinum*	5	Y	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	5	Y	FACW
2. *Packera glabella*	3	Y	FACW
3. *Toxicodendron radicans*	3	Y	FAC
4. *Euonymus fortunei*	1	N	UPL
5. *Carex sp.*	1	N	FACW
6.			
7.			
8.			
9.			
10.			
	13 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	14	x 2 = 28
FAC species	43	x 3 = 129
FACU species	0	x 4 = 0
UPL species	1	x 5 = 5
Column Totals:	68 (A)	172 (B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: X

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	90	5YR 4/6	10	C	PL	not sand	silty clay
2-16	10YR 3/1	90	5YR 4/6	10	C	PL	not sand	silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 10

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: Y

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none

Slope (%): 1 Lat: 38.762448 Long: -90.490469 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Much less hydrology indicators present in comparison to other areas; transitional areas between wetland and upland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Acer saccharinum*	15	Y	FACW
3.			
4.			
5.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Celtis occidentalis*	15	Y	FAC
2.			
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Packera glabella*	5	Y	FACW
2. *Humulus japonicus*	5	Y	FACU
3. *Impatiens capensis*	5	Y	FACW
4. *Toxicodendron radicans*	5	Y	FAC
5. *Acer saccharinum*	1	N	FACW
6.			
7.			
8.			
9.			
10.			
	21 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	26	x 2 =	52
FAC species	40	x 3 =	120
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	71 (A)		192 (B)

Prevalence Index = B/A = 2.70

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Y

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	90	7.5YR 4/6	10	C	PL	not sand	clay loam; redox more prominent
5-16	10YR 4/2	60	10YR 6/4	1		M	not sand	silt loam; redox not prominent
	10YR 3/2	39						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ____________

Water Table Present? Yes ______ No X Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ____________

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet; hydrology indicators not as prominent in wide, less inundated area.

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: Z

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none

Slope (%): 0 Lat: 38.760303 Long: -90.492432 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	40	Y	FAC
2. *Populus deltoides*	20	Y	FAC
3. *Morus rubra*	5	N	FACU
4. *Celtis occidentalis*	5	N	FAC
5.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Celtis occidentalis*	10	Y	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Alliaria petiolata*	40	Y	FAC
2. *Toxicodendron radicans*	5	N	FAC
3. *Viola sororia*	3	N	FAC
4. *Impatiens capensis*	1	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	49	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	1	x 2 = 2
FAC species	123	x 3 = 369
FACU species	5	x 4 = 20
UPL species	0	x 5 = 0
Column Totals:	129 (A)	391 (B)

Prevalence Index = B/A = 3.03

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Distinct difference in vegetation; less FACW species seen in other areas present.

SOIL

Sampling Point: Z

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	95	10YR 4/6	5		M	not sand	clay silt; redox not prominent
8-16	10YR 4/2	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

buried organic matter in layers; redox present but not prominent/distinct

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
X Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): none; hydrology indicators not as prominent in this wide, less inundated area.

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: AA

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): ridge Local relief (concave, convex, none): none

Slope (%): 0 Lat: 38.759387 Long: -90.494919 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: R2UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	50	Y	FAC
2. *Platanus occidentalis*	10	N	FACW
3.			
4.			
5.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	5	Y	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2. *Acer negundo*	3	Y	FAC
3. *Impatiens capensis*	3	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	6 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	13	x 2 = 26
FAC species	58	x 3 = 174
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	71 (A)	200 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: AA

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	90	7.5YR 4/6	10	C	PL	not sand	clay loam
6-16	10YR 4/2	95	10YR 4/6	5	C	PL	not sand	clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet; hydrology indicators not as prominent

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: BB

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): wide depression Local relief (concave, convex, none): concave

Slope (%): 2 Lat: 38.759102 Long: -90.494721 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	50	Y	FAC
2. *Populus deltoides*	20	Y	FAC
3. *Platanus occidentalis*	10	N	FACW
4.			
5.			
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2. *Campsis radicans*	3	Y	FACU
3. *Toxicodendron radicans*	3	Y	FAC
4. *Packera glabella*	2	Y	FACW
5. *Impatiens capensis*	2	Y	FACW
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	14	x 2 = 28
FAC species	73	x 3 = 219
FACU species	3	x 4 = 12
UPL species	0	x 5 = 0
Column Totals:	90 (A)	259 (B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: BB

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 4/1	90	7.5YR 4/6	10	C	PL	not sand	clay loam
15-20	10YR 4/1	90	10YR 6/4	10	C	M	not sand	silty loam
20-24	10YR 5/3	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): surface

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: CC

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): wide floodplain Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.756642 Long: -90.497364 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Acer saccharinum*	15	Y	FACW
3. *Platanus occidentalis*	10	N	FACW
4. *Populus deltoides*	10	N	FAC
5.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	5	Y	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Packera glabella*	10	Y	FACW
2. *Symphyotrichum sp.*	10	Y	FAC
3. *Impatiens capensis*	5	N	FACW
4. *Toxicodendron radicans*	1	N	FAC
5. *Urtica dioica*	1	N	FACW
6. *Humulus japonicus*	1	N	FACU
7.			
8.			
9.			
10.			
	28	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	5	Y	FACW
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	46	x 2 = 92
FAC species	46	x 3 = 138
FACU species	1	x 4 = 4
UPL species	0	x 5 = 0
Column Totals:	93 (A)	234 (B)

Prevalence Index = B/A = 2.52

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: CC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/2	85	7.5YR 4/6	15	C	PL/M	not sand	silty clay
16-20+	10YR 5/2	90	7.5YR 4/6	10	C	PL	not sand	silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 2-5 feet

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: DD

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): small ridge Local relief (concave, convex, none): none

Slope (%): 0 Lat: 38.755970 Long: -90.497687 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

numerous downed trees surrounding data point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	50	Y	FAC
2. *Morus rubra*	10	N	FACU
3.			
4.			
5.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer negundo*	5	Y	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	10	Y	FACW
2. *Toxicodendron radicans*	3	N	FAC
3. *Alliaria petiolata*	3	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	16 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
	___ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	10	x 2 = 20
FAC species	61	x 3 = 183
FACU species	10	x 4 = 40
UPL species	0	x 5 = 0
Column Totals:	81 (A)	243 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DD

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/1	93	10YR 5/6	7	C	M	not sand	silt loam
10-16	10YR 4/2	95	10YR 5/6	5	C	M	not sand	silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet; hydrology indicators not as prominent

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: EE

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): slight hillslope Local relief (concave, convex, none): none

Slope (%): 2 Lat: 38.749325 Long: -90.500302 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer negundo*	20	Y	FAC
2. *Morus rubra*	20	Y	FACU
3. *Acer saccharinum*	10	Y	FACW
4.			
5.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Morus rubra*	10	Y	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2. *Toxicodendron radicans*	2	Y	FAC
3. *Alliaria petiolata*	2	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	4 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	10	Y	FACW
2.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.43 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	20	x 2 = 40
FAC species	24	x 3 = 72
FACU species	30	x 4 = 120
UPL species	0	x 5 = 0
Column Totals:	74 (A)	232 (B)

Prevalence Index = B/A = 3.14

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: EE

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/2	95	10YR 4/6	5	C	PL	not sand	silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 0-2 feet; hydrology indicators not as prominent

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Riverpointe Public Infrastructure Project City/County: St. Charles, St. Charles County Sampling Date: 5/21/2020

Applicant/Owner: City of St. Charles State: MO Sampling Point: FF

Investigator(s): AMZ, ELH Section, Township, Range: Section 08, Township 46 N, Range 5 E

Landform (hillslope, terrace, etc.): stream bank, depression Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 38.752484 Long: -90.501681 Datum: NAD 83

Soil Map Unit Name: 66126: Haynie-Treloar-Blake complex, 0-2 % slopes, frequently flooded; hydric NWI or WWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Stream adjacent to quarry drains into wide depression with standing water due to poor drainage from culverts at downstream end. Flow through culverts only during higher flow events.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. *Acer saccharinum*	10	Y	FACW
2. *Populus deltoides*	10	Y	FAC
3. *Salix nigra*	5	Y	OBL
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			NI
2. *Salix nigra*	3	Y	OBL
3.			
4.			
5.			
	3 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Packera glabella*	7	Y	FACW
2. *Acer saccharinum*	3	Y	FACW
3. *Ambrosia artemisiifolia*	3	Y	FACU
4. *Campsis radicans*	3	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	16 = Total Cover		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Vitis riparia*	5	Y	FACW
2.			
	5 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 77.78 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	8	x 1 = 8
FACW species	25	x 2 = 50
FAC species	10	x 3 = 30
FACU species	6	x 4 = 24
UPL species	0	x 5 = 0
Column Totals:	49 (A)	112 (B)

Prevalence Index = B/A = 2.29

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: FF

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 5/3	100					sand	sandy silt with organic material
4-16	10YR 6/3	100					sand	sand/fine gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

Heavy sand/gravel deposits likely from upstream developed areas. Potentially problematic

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
X Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
X Algal Mat or Crust (B4)
___ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
X Sparsely Vegetated Concave Surface (B8)
X Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
X Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
X Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ______ Depth (inches): 12

Water Table Present? Yes X No ______ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): surface

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Inundation depth (typical year): 5-10 feet

Floristic Quality Assessement
Riverpointe Public Infrastructure Project, St. Charles County, Missouri

Resource: Wetland B

Field Assessment:	May 20-21, 2020	Practitioner: AMZ, ELH	Community Type:	forested wetland
FQA DB Region:	Missouri			
FQA Publication:	Ladd, D. and J.R. Thomas. 2015. Ecological Checklist of the Missouri Flora for Floristic Quality Assessment. Phytoneuron 2015-12: 1-274			

FQA DB Description:

Conservatism-Based Metrics:

Total Mean C:	2	% C value 1-3:	57.1
Native Mean C:	2.6	% C value 4-6:	19
Total FQI:	9.2	% C value 7-10:	0
Native FQI:	10.4	Native Tree Mean C:	2.6
Adjusted FQI:	22.7	Native Shrub Mean C:	3
% C value 0:	23.8	Native Herbaceous Mean C:	2.7

Species Richness:			Species Wetness:	
Total Species:	21		Mean Wetness:	-0.6
Native Species:	16	76.20%	Native Mean Wetness:	-1.7
Non-native Species:	5	23.80%		

Physiognomy Metrics:			Duration Metrics:		
Tree:	10	47.60%	Annual:	3	14.30%
Shrub:	2	9.50%	Perennial:	17	81%
Vine:	3	14.30%	Biennial:	1	4.80%
Forb:	6	28.60%	Native Annual:	2	9.50%
Grass:	0	0%	Native Perennial:	14	66.70%
Sedge:	0	0%	Native Biennial:	0	0%
Rush:	0	0%			
Fern:	0	0%			
Bryophyte:	0	0%			

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Acer negundo	Sapindaceae	ACENEG	native	1	0	tree	perennial	box elder
Acer saccharinum	Sapindaceae	ACESIL	native	2	-3	tree	perennial	silver maple
Alliaria petiolata	Brassicaceae	ALLPET	non-native	0	3	forb	biennial	garlic mustard
Campsis radicans	Bignoniaceae	CAMRAD	native	3	0	vine	perennial	trumpet creeper
Celtis occidentalis	Ulmaceae	CELOCC	native	3	3	tree	perennial	hackberry
Cephalanthus occidentalis	Rubiaceae	CEPOCC	native	3	-5	shrub	perennial	buttonbush
Fraxinus pennsylvanica var. subintegerrima	Oleaceae	FRAPES	native	2	-3	tree	perennial	green ash
Hibiscus laevis	Malvaceae	HIBLAE	native	4	-5	forb	perennial	halberd-leaved rose mallow
Humulus japonicus	Cannabaceae	HUMJAP	non-native	0	3	forb	annual	japanese hop
Impatiens capensis	Balsaminaceae	IMPCAP	native	3	-3	forb	annual	orange jewelweed
Lonicera maackii	Caprifoliaceae	LONMAA	non-native	0	5	shrub	perennial	amur honeysuckle
Morus alba	Moraceae	MORALB	non-native	0	3	tree	perennial	white mulberry
Morus rubra	Moraceae	MORRUB	native	4	3	tree	perennial	red mulberry
Packera glabella	Asteraceae	PACGLA	native	1	-3	forb	annual	butterweed
Platanus occidentalis	Platanaceae	PLAOCC	native	3	-3	tree	perennial	sycamore
Populus deltoides	Salicaceae	POPDEL	native	2	0	tree	perennial	cottonwood
Salix nigra	Salicaceae	SALNIG	native	2	-5	tree	perennial	black willow
Toxicodendron radicans	Anacardiaceae	TOXRAD	native	1	0	vine	perennial	poison ivy
Ulmus americana	Ulmaceae	ULMAME	native	4	0	tree	perennial	american elm
Urtica dioica subsp. dioica	Urticaceae	URTDID	non-native	0	0	forb	perennial	european nettle
Vitis riparia	Vitaceae	VITRIP	native	4	-3	vine	perennial	riverbank grape

CMT

Wetland and Other Waters of the United States Delineation Report

APPENDIX C: PHOTOGRAPHS

CMT

1. Overall view at wetland data point A.

2. View of surface water near wetland data point A.

3. Overall view at upland data point B.

4. Overall view at wetland data point C, a transitional area between wetlands and uplands.

5. Overall view at wetland data point D, adjacent to Crystal Springs Creek.

6. Overall view at upland data point E.

7. Overall view at wetland data point F.

8. Overall view at upland data point G.

9. Overall view at wetland data point H.

10. View at upland data point I.

11. Overall view at wetland data point J, a transitional area between wetlands and uplands.

12. Overall view at wetland data point K, adjacent to Stream 2.

13. Overall view at upland data point L.

14. View of upland area near upland data point L.

15. Overall view at upland data point M.

16. Overall view at wetland data point N.

17. View of soil cracks near wetland data point N.

18. View of wetland area near wetland data point N.

19. Overall view at upland data point O.

20. Overall view at wetland data point P.

21. Overall view at upland data point Q.

22. Overall view at wetland data point R.

23. Overall view at wetland data point S, a transitional area between wetlands and uplands.

24. Overall view at wetland data point T.

25. Overall view of surface water between wetland data points T and U.

26. Overall view and visible water marks at wetland data point U.

27. Overall view at upland data point V.

28. Overall view at upland data point W.

29. Overall view at wetland data point X.

30. Overall view at wetland data point Y, a transitional area between wetlands and uplands.

31. Overall view at wetland data point AA.

32. Overall view at wetland data point BB.

33. Overall view at wetland data point CC.

34. Overall view at wetland data point DD.

35. Overall view at wetland data point EE, a transitional area between wetlands and uplands.

36. Overall view at upland data point FF.

37. View of Crystal Springs Creek looking downstream.

38. View of Crystal Springs Creek looking downstream.

39. View of Crystal Springs Creek looking upstream.

40. View of Crystal Springs Creek looking downstream towards confluence with Stream 2.

41. View of Crystal Springs Creek looking downstream towards culvert under Old South River Rd.

42. View of Stream 2 looking upstream.

43. View of Stream 2 looking downstream.

44. View of Stream 2 looking upstream.

45. View of Stream 2 looking downstream.

46. View of Stream 2 looking downstream.

47. View of Stream 2 looking downstream.

48. View of Stream 2 looking downstream.

49. View of Stream 2 looking downstream.

50. View of Stream 2 looking upstream towards culvert outlet under South River Road.

51. View of Stream 3 at confluence with Crystal Springs Creek.

52. View of Stream 3 looking downstream towards confluence with Crystal Springs Creek.

53. View of Stream 3 looking downstream towards culvert under access road.

54. View of Stream 3 looking downstream.

55. View of Stream 3 looking upstream towards culvert outlet under the Katy Trail.

56. View of Stream 4 looking upstream towards outlet into standing water.

57. View of Stream 4 looking upstream.

58. View of Stream 4 looking upstream.

59. View of Stream 4 looking upstream.

60. View of Stream 4 looking upstream towards silted-in culvert outlet.

61. View of Pond 1 looking south from northwestern shore.

62. View of culvert and drainage swale looking north at the northern shore of Pond 1.

63. View of Pond 1 looking north from southern shore.

64. View of Pond 1 looking southwest from eastern shore.

65. View of pipe connection from Pond 1 to Pond 2.

66. View of Pond 2 looking northeast from western shore.

67. View of Pond 2 looking south from northern shore.

68. View of Pond 2 looking southeast from northern shore.

69. View of Pond 2 looking north from southern shore.

70. View of culvert outlet under the Katy Trail at the southern shore of Pond 2.

71. View of culvert outlet from Pond 2 and unnamed tributary (outside study area) to the Missouri River.

72. View of Pond 3 looking northeast from western shore.

73. View of Pond 3 looking southeast from northern shore.

74. View of Pond 3 looking north from southern shore.

75. View of Pond 4 looking southwest.

76. View of Pond 4 looking southeast.

77. View of Pond 4 looking east.

78. View of culvert inlet from Pond 4 under the Katy Trail.

79. View of culvert outlet from Pond 4 under the Katy Trail.

80. View of second culvert outlet from Pond 4 under the Katy Trail.

81. View of drainage from Pond 4 in undefined channel/swale within the larger forested wetland area.

Wetland and Other Waters of the United States Delineation Report

APPENDIX D: INITIAL WETLAND/HABITAT SUMMARY (2016)

CMT

Initial Field Wetland/Habitat Summery for Bangert Island:

On February 25-26, 2016 USACE biologists performed an initial wetlands field review at Bangert Island and located two separate potential wetlands that had all three wetland characteristics (soil, hydrology, & plants). Roughly 3% of the approximately 195 acres could be wetland. (About 5-7 acres along the ditch that flows along the northern boundary & roughly 1.0 acres within the interior.) Additional observations include, multiple marked bike/running trails that spider web the sites interior and they seem to have frequent use. Also, much of the habitat within the interior seems to have excellent Indiana &/or northern long-eared bat habitat. Old growth cottonwood & black willow as well as large silver maples are scatted throughout. Large standing dead trees (snags) are also prevalent with most having loose bark intact. Overall the tree canopy is fairly dense, 60-90% closer. With the size, species, and amount of shaggy bark living and dead standing trees, it is likely that a majority of the property is habitat that would be conducive to Indiana &/or northern long-eared bats. See GPS photos DSCN1049-1090 for wetland photos.

Other Observations:

Approximately half or more of the properties interior is large, mature sized trees. Living black willows and snags range between 15-20 inches in diameter. Living cottonwoods and snags range from 15-36 inches in diameter. There are patches of natural succession where large trees have fallen from flooding or wind actions resulting in open areas with many standing snags and a few 3-10 inch diameter trees have starting growing. Other areas with dense canopies and large mature trees have little to no mid or understory vegetation. See GPS photos DSCN1091-1145 for habitat photos.

Fish and wildlife observations include small fish or minnows, evidence of crayfish borrows, beaver and/or muskrat signs within the flowing ditch along the north boundary. Other beaver signs can also be seen along the banks of the Missouri River. Plentiful whitetail deer signs and game trail were seen throughout and well as active small mammal signs; likely raccoon, opossum, squirrel, and groundhogs/woodchuck. Many various song birds were also observed.

Besides the network of labeled running and biking trails for recreation, numerous portable hunting stands were observed as well. Most of these hunting stands seem to fairly new and likely from the previous winters hunting seasons.

KC DISTRICT WETLAND INVESTIGATION FEBRUARY 2016

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WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016
Applicant/Owner: USACE KCD State: MO Sampling Point: 1-A
Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave
Slope (%): 3 Lat: 38°45'9.73"N Long: 90°30'2.17"W Datum: ______
Soil Map Unit Name: ______ NWI or WWI classification: PFOE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland?	Yes X No ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks:

Historic Channel Scar/Drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	5	Y	OBL
2. *Populus deltoids*	2	Y	FAC
3. *Platanus occidentalis*	2	Y	FACW
4.			
5.			
	9	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer negundo*	15	Y	FAC
2. *Salix nigra*	5	Y	OBL
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *carex*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	2	x 2 = 4
FAC species	22	x 3 = 66
FACU species	5	x 4 = 20
UPL species	0	x 5 = 0
Column Totals:	39 (A)	100 (B)

Prevalence Index = B/A = 2.56

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photo 1049-1053

SOIL

Sampling Point: 1-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/1	70					SiCl	
	10YR3/2	10						
	10YR2/2	10						
6-18	10YR3/1	70	10YR3/6	25	D	M	SiCl	Organic Material
			10YR5/6	5				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 1-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 15 Lat: 38°45'10.19"N Long: 90°30'1.65"W Datum: ____

Soil Map Unit Name: ____ NWI or WWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Edge of a historic channel scar/drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	5	Y	FACW
2. *Morus alba*	5	Y	FAC
3. *Platanus occidentalis*	25	Y	FACW
4. *Populus deltoids*	5	N	FAC
5.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. *Salix nigra*	5	Y	OBL
2. *Acer negundo*	10	Y	FAC
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: ____)			
1. *polgonum*	10	Y	FAC
2. *cares*	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	30	x 2 = 60
FAC species	50	x 3 = 150
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	85 (A)	215 (B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photo 1049-1053

SOIL

Sampling Point: 1-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	90					SiCl	
10-18	10YR4/2	90					SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ___ No _X_

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- _X_ Water Marks (B1)
- ___ Sediment Deposits (B2)
- _X_ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- _X_ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _X_ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- _X_ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ______

Water Table Present? Yes ___ No ___ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ______

Wetland Hydrology Present? Yes _X_ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 2-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'14.71"N Long: 90°30'0.84"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Historic Channel Scar/Drainage

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1. *Acer saccharinum*	5	Y	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer negundo*	25	Y	FAC
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: ______)			
1. *carex*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	5	x 2 = 10
FAC species	30	x 3 = 90
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	35 (A)	100 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS photo 1054-1059

SOIL

Sampling Point: 2-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/1	80	10YR4/6	15	RM		SiCl	
6-10	10YR4/3	25	10YR5/6	40	RM		SSiCl	SANDY
			10YR4/6	30				
10-18	10YR4/1	90	10YR3/6	15	RM		SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- X Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- X Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): 0

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 2-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 10 Lat: 38°45'14.72"N Long: 90°30'0.50"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

Edge of drainage path

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	10	Y	FACW
2. *Acer saccharinum*	40	Y	FACW
3.			
4.			
5.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer saccharinum*	50	Y	FACW
2.			
3.			
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *carex*	5	Y	FAC
2. *polygonum*	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	100	x 2 = 200
FAC species	20	x 3 = 60
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	120 (A)	260 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS photos 1054-1059

SOIL

Sampling Point: 2-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/2						SiCl	
8-18	10YR4/2						SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ______

Water Table Present? Yes ___ No ___ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ______

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island   City/County: St. Charles   Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD   State: MO   Sampling Point: 3-A

Investigator(s): Chris Name, Rick Morrow   Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain   Local relief (concave, convex, none): concave

Slope (%): 3   Lat: 38°45'22.13"N   Long: 90°29'50.38"W   Datum: ______

Soil Map Unit Name: ______   NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

Drainage path

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	10	Y	FACW
2. *Acer negundo*	15	Y	FAC
3. *Salix nigra*	5	N	OBL
4. *Populus deltoids*	5	N	FAC
5.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ______)			
1. *polygonum*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	10	x 2 =	20
FAC species	45	x 3 =	135
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		160 (B)

Prevalence Index = B/A = 2.67

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/1	80	10YR3/6	15	RM		SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): __________

Water Table Present? Yes _____ No _____ Depth (inches): __________

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island , City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 3-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 10 Lat: 38°45'21.82"N Long: 90°29'49.97"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

Edge of a drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoids*	25	Y	FAC
2. *Morus alba*	5	N	FAC
3. *Acer saccharinum*	5	N	FACW
4.			
5.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ______)			
1. *polygonum*	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	45	x 3 =	135
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	55 (A)		165 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/2	90						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 3-C

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 5 Lat: 38°45'23.35"N Long: 90°29'50.45"W Datum: ____

Soil Map Unit Name: ____ NWI or WWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Edge of a drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	30	Y	FACW
2. *Populus deltoids*	10	Y	FAC
3.			
4.			
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. *Acer negundo*	10	Y	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: ____)			
1. *polygonum*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Vitis aestivalis*	10	Y	FACU
2.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	45	x 3 =	135
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	85 (A)		235 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2							
6-12	10YR4/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): ____________

Water Table Present? Yes _____ No _____ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): ____________

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 3-C

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 5 Lat: 38°45'23.35"N Long: 90°29'50.45"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

Edge of a drainage

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1. *Platanus occidentalis*	30	Y	FACW
2. *Populus deltoids*	10	Y	FAC
3.			
4.			
5.			
= Total Cover	40		
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer negundo*	10	Y	FAC
2.			
3.			
4.			
5.			
= Total Cover	10		
Herb Stratum (Plot size: ______)			
1. *polygonum*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	25		
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	10	Y	FACU
2.			
= Total Cover	10		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	30	x 2 = 60
FAC species	45	x 3 = 135
FACU species	10	x 4 = 40
UPL species	0	x 5 = 0
Column Totals:	85 (A)	235 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2							
6-12	10YR4/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ______

Water Table Present? Yes ___ No ___ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ______

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 4-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'50.93"N Long: 90°29'19.93"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

Floodplain depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	25	Y	OBL
2. *Acer saccharinum*	5	N	FACW
3.			
4.			
5.			
	30 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	25	x 1 = 25
FACW species	5	x 2 = 10
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	30 (A)	35 (B)

Prevalence Index = B/A = 1.17

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1069,1071-1075

SOIL

Sampling Point: 4-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR2/1	90	10YR3/6	10	RM		SiCl	
12-18	10YR3/2	60	10YR3/6	5	RM		SiCl	
	10YR3/1	30						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 4-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range:

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 10 Lat: 38°45'51.25"N Long: 90°29'19.99"W Datum:

Soil Map Unit Name: NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

Edge of a floodplain depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	20	Y	OBL
2. *Acer saccharinum*	20	Y	FACW
3.			
4.			
5.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1. *Acer saccharinum*	15	Y	FACW
2.			
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	35	x 2 = 70
FAC species	0	x 3 = 0
FACU species	5	x 4 = 20
UPL species	0	x 5 = 0
Column Totals:	60 (A)	110 (B)

Prevalence Index = B/A = 1.83

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1069,1071-1075

SOIL

Sampling Point: 4-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	90						
10-18	10YR4/2	80						
	10YR3/1	30						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 5-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'43.06"N Long: 90°29'17.29"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

GPS Photo 1080-1090

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	20	Y	OBL
2. *Populus deltoids*	5	Y	FAC
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	0	x 2 = 0
FAC species	5	x 3 = 15
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	25 (A)	35 (B)

Prevalence Index = B/A = 1.4

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Trees of 15-20"
GPS Photo 1080-1090

SOIL

Sampling Point: 5-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR2/1	90					SiCl	
6-18	10YR4/2	70	10YR3/6	10	D	M	SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 5-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 38°45'43.34"N Long: 90°29'17.87"W Datum: ____

Soil Map Unit Name: ____ NWI or WWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Edge of a floodplain depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoids*	10	Y	FAC
2. *Acer saccharinum*	10	Y	FACW
3. *Salix nigra*	5	Y	OBL
4.			
5.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	30 (A)		75 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Trees 15-20" diameter
GPS Photos 1080-1090

SOIL

Sampling Point: 5-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2							
6-12	10YR4/2							
12-18	10YR3/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No _X_

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- _X_ Water Marks (B1)
- _X_ Sediment Deposits (B2)
- _X_ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- _X_ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _X_ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- _X_ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ______

Water Table Present? Yes ___ No ___ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ______

Wetland Hydrology Present? Yes _X_ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Riverpointe Public Infrastructure Project

APPENDIX C: CULTURAL RESOURCES DOCUMENTATION

CMT

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF STATE PARKS
STATE HISTORIC PRESERVATION OFFICE
SECTION 106 PROJECT INFORMATION FORM (PAGE 1 OF 2)

Submission of a completed Project Information Form with adequate information and attachments constitutes a request for a review pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). We reserve the right to request more information. **Please refer to the CHECKLIST on Page 2 to ensure that all basic information relevant to the project has been included.** For further information, refer to our website at: http://dnr.mo.gov/shpo and follow the links to Section 106 Review.

NOTE: Section 106 regulations provide for a 30-day response time by the Missouri State Historic Preservation Office from the **date of receipt.**

PROJECT NAME
Riverpointe Public Infrastructure Project

FEDERAL AGENCY PROVIDING FUNDS, LICENSE, OR PERMIT	OTHER INVOLVED AGENCY
USACE	

CONTACT PERSON	TELEPHONE
Ellen Hogrebe	314-571-9103

CONTACT EMAIL – (this will be used for digital response regarding your project)
ehogrebe@cmtengr.com

CONTACT ADDRESS
One Memorial Drive, Suite 500

CITY	STATE	ZIP
St. Louis	MO	63102

LOCATION OF PROJECT

COUNTY	STREET ADDRESS	
St. Charles	N/A	
CITY	**LATITUDE/LONGITUDE**	**UTM – NORTHING/EASTING (include datum)**
St. Charles	38.752542, -90.502603	717020mE, 4292278mN NAD83, zone15

LEGAL DESCRIPTION OF PROJECT AREA (TOWNSHIP, RANGE, SECTION, ¼ SECTION)

TOWNSHIP	RANGE	SECTION
46 North	5 East	08/05

PROJECT INFORMATION CHECKLIST

TO THE BEST OF YOUR KNOWLEDGE, IS THE PROJECT LOCATED IN ANY OF THE FOLLOWING?

☐ AN AREA PREVIOUSLY SURVEYED FOR HISTORIC PROPERTIES ☐ A NATIONAL REGISTER DISTRICT ☐ A LOCAL HISTORIC DISTRICT

WHAT ARE THE DATES OF CONSTRUCTION OR DATES OF ADDITIONS FOR BUILDINGS OR STRUCTURES IN THE PROJECT AREA?
According to parcel search, residential structures: 1930, 1940, 1950, 1955, 1959; commercial warehouse: 1991

HAS THE GROUND INVOLVED BEEN GRADED, BUILT ON, BORROWED, OR OTHERWISE DISTURBED? ■ YES ☐ NO

WILL THE PROJECT REQUIRE FILL MATERIAL? ■ YES ☐ NO

IF YES, INDICATE PROPOSED BORROW AREAS (SOURCE OF FILL MATERIAL) ON PROJECT AREA MAP

Disturbed and undisturbed ground is present within the project study area.

As seen on the attached Riverpointe Phasing Map and aerial map, fill/borrow material is anticipated to come from the adjacent stream channel, which will provide stormwater storage and sediment reduction in a water quality basin once excavated.

ARE YOU AWARE OF ARCHAEOLOGICAL SITES ON OR ADJACENT TO PROJECT AREA? ☐ YES ■ NO

IF YES, IDENTIFY THEM ON THE TOPOGRAPHIC MAP (see additional requirements)

STATE HISTORIC PRESERVATION OFFICE
SECTION 106 PROJECT INFORMATION FORM (PAGE 2 OF 2)

PROJECT DESCRIPTION

DESCRIBE THE OVERALL PROJECT IN DETAIL. IF IT INVOLVES EXCAVATION, INDICATE HOW WIDE, HOW DEEP, ETC. IF THE PROJECT INVOLVES DEMOLITION OF EXISTING BUILDINGS, MAKE THAT CLEAR. IF THE PROJECT INVOLVES REHABILITATION, DESCRIBE THE PROPOSED WORK IN DETAIL. USE ADDITIONAL PAGES IF NECESSARY.

The City of St. Charles is proposing a new, multi-phase riverfront development project along South River Road located south of Interstate 70 (I-70) to the Family Arena within the City of St. Charles. The project consists of three phases of development along Bangert Island and the Missouri River (see attached project phasing map). Phase 1 of the project consists of a 22-acre mixed-use development located adjacent to I-70 and South Main St. Phase 2 of the project consists of an 80-acre mixed-use and office space development near the Family Arena. Phase 3 of the project consists of a 20-acre development along South River Rd. connecting Phases 1 and 2. The development will provide recreational, employment, entertainment, and retail opportunities along approximately 1.6 miles of riverfront. Additional information about the full project can be found at https://www.riverpointe-stc.com.

Extensive excavation and fill will be required throughout the project area to construct the proposed improvements. The width and depth of excavation will vary widely throughout the project area. Approximately five residences along South River Road and Arena Parkway will be demolished for the project; along with all of the structures at the aggregate materials plant at the southern end of the project area. Phased construction is anticipated to begin in Fall 2020 and be completed in Fall 2022.

An archaeology survey and magnetometer survey is underway for the portion of the project site planned for the water quality basin through a USACE Civil Works project. Correspondence for these surveys has begun between Dr. Gina Powell with Kansas City USACE and Amy Rubingh with MO SHPO. The reports documenting the results of these surveys are planned to be provided to MO SHPO for review and concurrence of findings.

ADDITIONAL REQUIREMENTS

Map Requirements: Attach a map depicting the project area, **and**, if necessary, a large scale project map. If project involves **ground disturbance**, the project footprint must be clearly delineated on the map. Please do not send an individual map with each structure or site. While a topographic map is preferred, a map from online map providers is acceptable. For a list of sites from which to order, download or print the required USGS 7.5 min. topographic maps at little or no cost, consult http://dnr.mo.gov/shpo/sectionrev.htm.

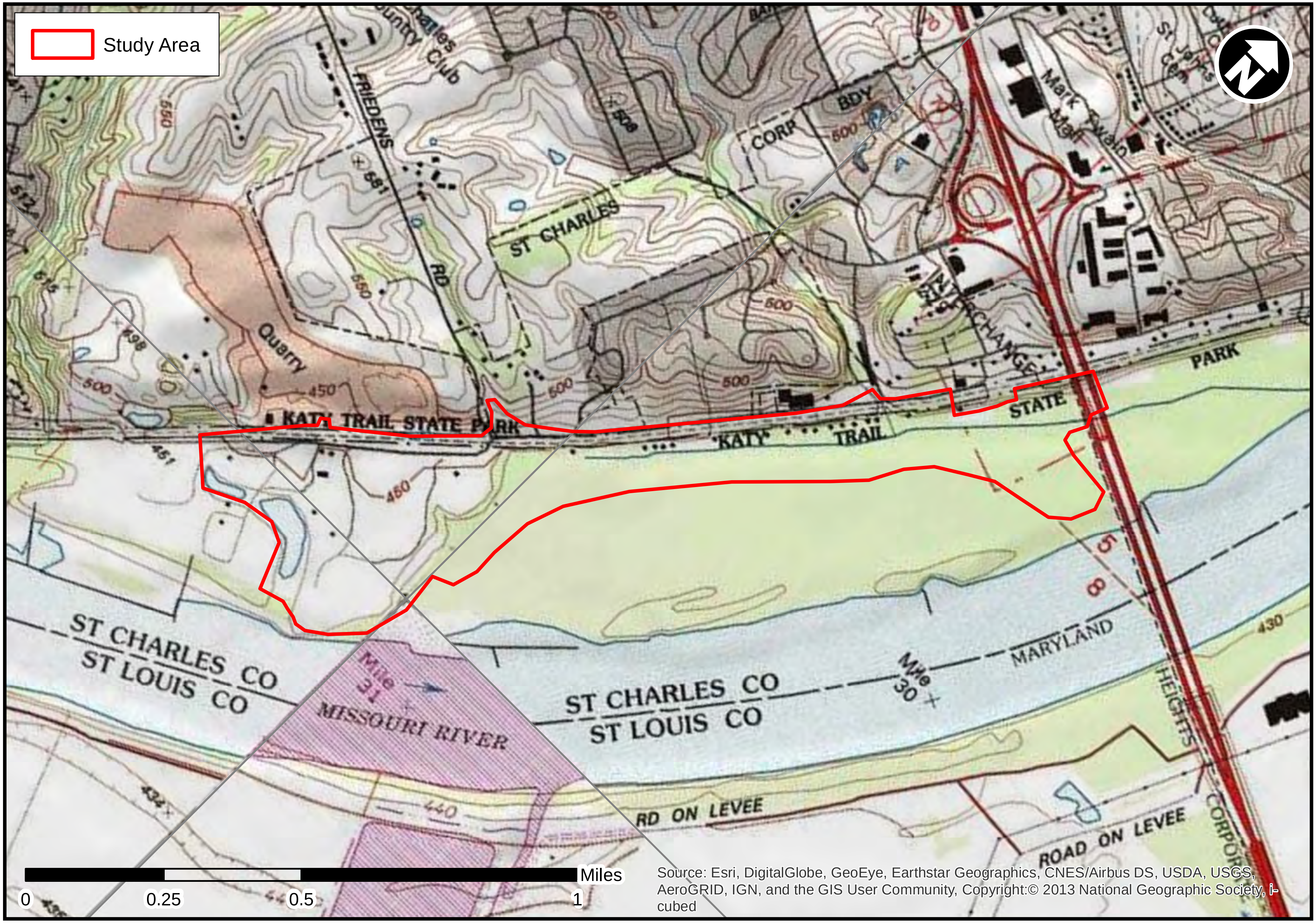
Photography Requirements: Clear black and white or color photographs (minimum 3" x 5") are acceptable. Polariods, photocopies, emailed or faxed photographs are not acceptable. Images do not need to be printed on photo paper, standard 8x11 paper is fine. **Clear and good quality photographs are important for expeditious project review.** Photographs of neighboring or nearby buildings are also helpful. All photographs should be labeled and keyed to one map of the project area. Images captured from Google Earth are not acceptable as they fail to provide the most current view of the area.

DID YOU PROVIDE THE FOLLOWING INFORMATION?

- [x] PROJECT AREA MAP (per project, not structure)
- [x] THOROUGH PROJECT DESCRIPTION (ALL PROJECTS)
- [ ] PHOTOGRAPHS OF ALL STRUCTURES AND OVERVIEW PHOTOGRAPHS FOR ARCHAEOLOGY
  NOTE: all photographs should be labeled and keyed to one map of the project area
- [x] OTHER SUPPORTING DOCUMENTS (If necessary to explain the project)
- [ ] FOR NEW CONSTRUCTION, REHABILITATIONS, ETC., ATTACH WORK WRITE-UPS, PLANS, DRAWINGS, ETC.
- [x] DATES OF CONSTRUCTION OF STRUCTURES IN THE PROJECT AREA

RETURN THIS FORM AND ATTACHMENTS TO:

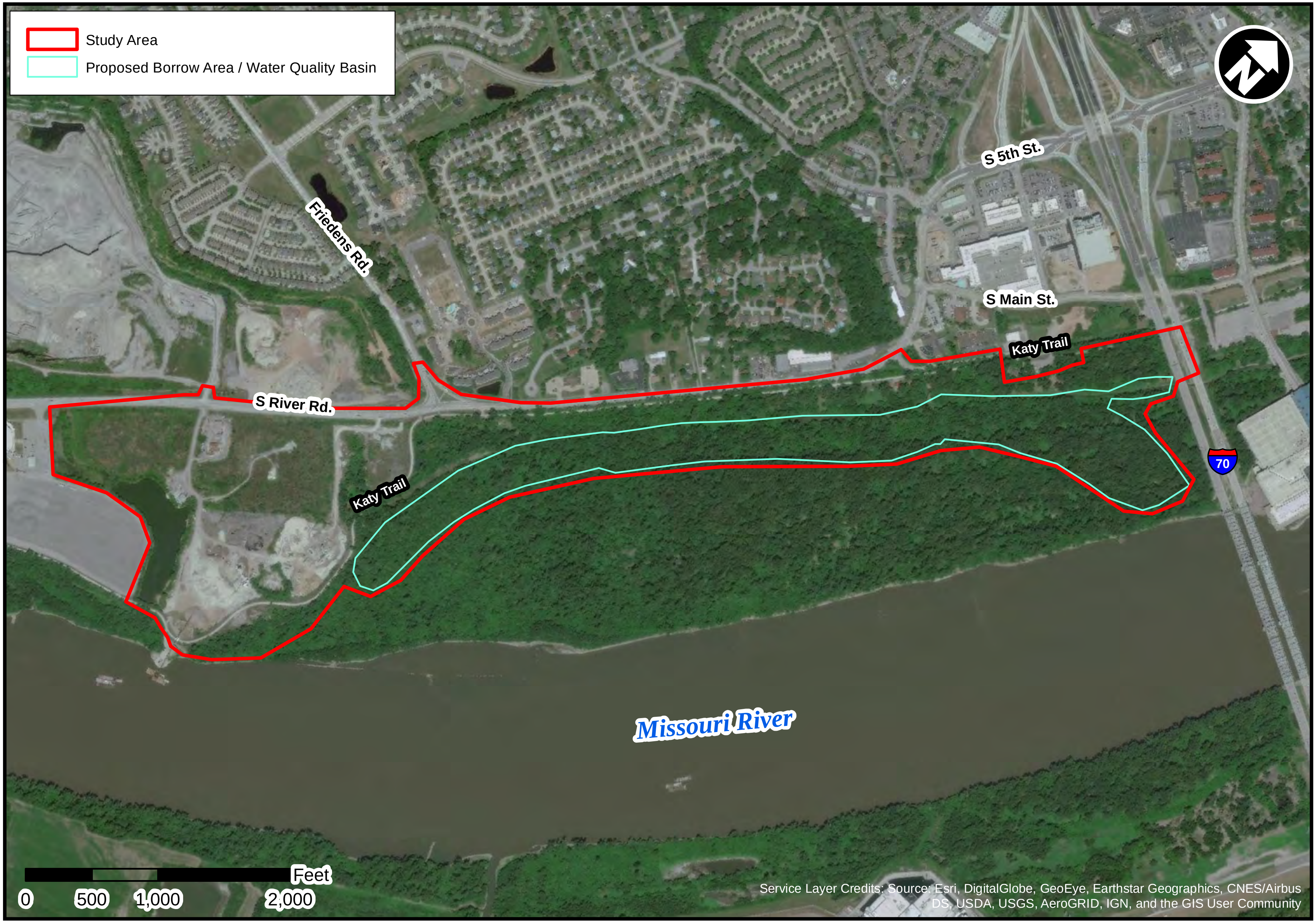
MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
Attn: Section 106 Review
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102-0176



Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

USGS Topographic Map - St. Charles, Kampville, Chesterfield, and Creve Coeur, MO Quadrangles

CMT
Crawford, Murphy & Tilly



Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Aerial

CMT
Crawford, Murphy & Tilly

SCHEDULE & PHASING ASSUMPTIONS
1. U.S. Army Corps of Engineers permitting on channel area not needed for phase 2 & 3 areas
2. Tree clearing allowed by U.S. Fish & Wildlife (100 acres)
3. Fill is suitable material (30% unsuitable material assumed)
4. River is low and de-watering is not needed during grading and construction operations
5. Funding is secured for each phase of work
6. State Parks permits Katy Trail relocation
7. Utilities (Ameren, AT&T, Charter, Cell Tower) are moved on time
8. County cooperates on utilization of Old South River Road
9. Property acquisition is achievable and on schedule
RIVERPOINTE
INTERSTATE 70
FIFTH ST.
PHASE 1
SOUTH MAIN ST.
PHASE 1A DEVELOPMENT-READY BY JULY 2020
PHASE 1C PARKING BY TBD
PHASE 1B DEVELOPMENT-READY BY SEPTEMBER 2021
PHASE 2
PHASE 3
ARENA PKWY.
PHASE 3B DEVELOPMENT-READY BY FEBRUARY 2021
PHASE 3A (10 ACRES) DEVELOPMENT-READY BY NOVEMBER 2020
PHASE 2 FILL MATERIAL 515,000 CY
WATER QUALITY BASIN
PHASE 1 FILL MATERIAL 450,000 CY
PHASE 3 FILL MATERIAL 400,000 CY
PHASE 2 DEVELOPMENT-READY BY APRIL 2022
BANGERT ISLAND
MISSOURI RIVER
CITY OF SAINT CHARLES EST 1809 MISSOURI

Missouri Department of
NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

July 30, 2020

Crawford, Murphy, and Tilly
Attn: Ellen Hogrebe
One Memorial Dr., Suite 500
St. Louis, MO 63102

RE: **SHPO Number: 093-SC-20** – Riverpointe Public Infrastructure Project Bangert Island, St. Charles County, Missouri

Dear Ellen Hogrebe:

Thank you for submitting information about the above-referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

The State Historic Preservation Office (SHPO) received the information submitted by your office on July 6, 2020. As stated in your information our office is working with Gina Powell with the US Army Corps of Engineers (USACE) regarding a survey and magnetometer survey of your project area. Based on a conference call between USACE and our office on July 17, 2020, the report is still being written and will then go to USACE for review, and then be submitted to our office for review. Upon receipt of this information the SHPO review of your project will proceed.

If you have any questions please write Missouri Department of Natural Resources, State Historic Preservation Office, Attn: Review and Compliance, P.O. Box 176, Jefferson City, Missouri 65102, or call Amy Rubingh (573) 751-4589. Please be sure to include the **SHPO Project Number (093-SC-20)** on all future correspondence relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Toni M. Prawl

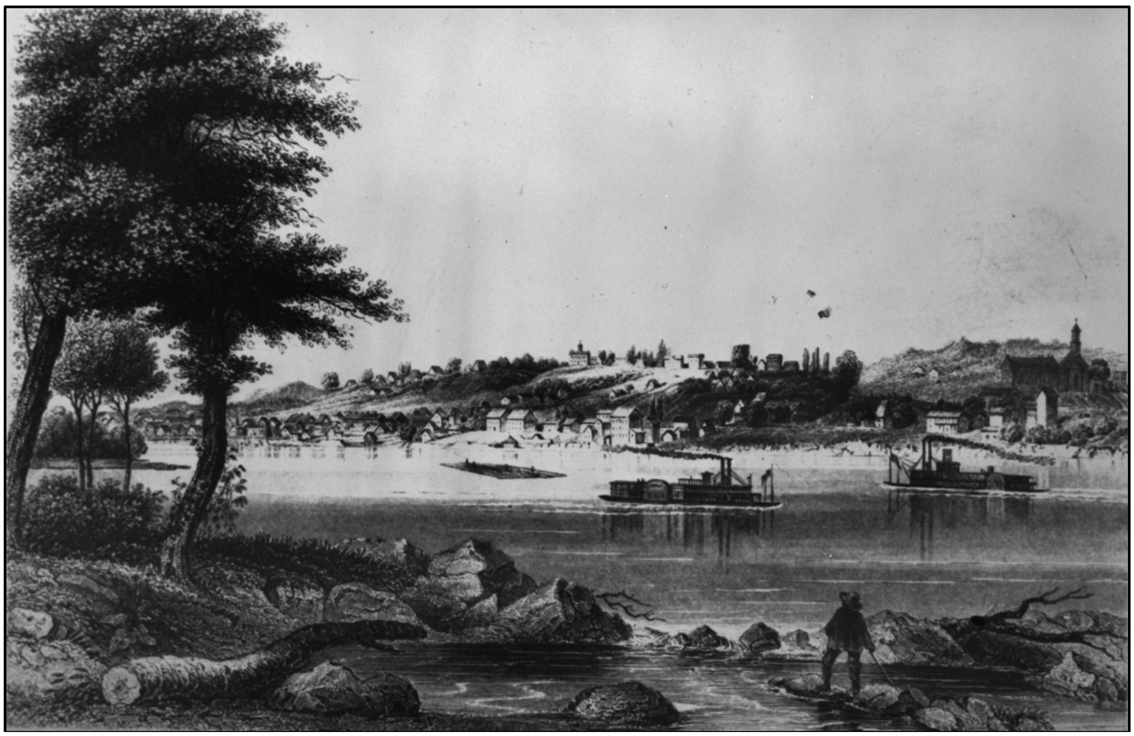
Toni M. Prawl, PhD
Director and Deputy
State Historic Preservation Officer

C: Gina Powell, USACE

A SHIPWRECK MAGNETOMETER SURVEY ON BANGERT ISLAND, ST. CHARLES, MISSOURI

by
Dustin A. Thompson, Neal H. Lopinot, and Sarah J. Reid

Prepared for
The Kansas City District
U.S. Army Corp of Engineers
&
HDR Engineering



Research Report No. 1690

Center for Archaeological Research
Missouri State University
901 South National
Springfield, Missouri 65897

August 2020

Missouri State
UNIVERSITY

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TABLE OF CONTENTS

Cover figure: Drawing of riverfront at St. Charles, Missouri (University of Wisconsin-La Crosse, Murphy Library, Special Collections; Image Negative No. 28996, available at https://digital.library.wisc.edu/1711.dl/ QRBEXINCUZIEG8V).

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

The Center for Archaeological Research, Missouri State University undertook background research and a magnetometer survey for the City of St. Charles and the Kansas City District, U.S. Army Corp of Engineers. The survey was undertaken under a contract with HDR Engineering with the purpose of determining if any buried steamboat wrecks would be disturbed as the result of the proposed re-excavation of a historic channel of the Missouri River. The channel once separated Bangert Island from the western shore of the Missouri River.

Based on a partial magnetometer survey, historic records about shipwrecks in the area, a large suite of historic maps and aerial photographs, and the geomorphological history of Bangert Island, it appears to be extremely unlikely that any buried steamboat wrecks dating to the nineteenth century are located within the project area. In fact, seven of the eight vessels of concern in this report were wrecked on or before 1879, or when an 1879 map and previous maps show the main river channel well to the east of the APE. Therefore, it seems impossible to expect the remains of any of these seven vessels to occur within or even near the Bangert Island APE. In addition, historical documentation indicates that the remaining vessel of concern, the *Ella Kimbrough*, was shipwrecked in 1884 downstream from the APE and appears to have been at least partially salvaged.

We believe that our report has sufficiently addressed the likelihood that buried steamboat wrecks are <u>not</u> located within the APE. Therefore, it is recommended that the proposed clearing of the former channel of the Missouri River on Bangert Island should be allowed to proceed as planned, provided that the following conditional stipulations are met. However, should a portion or portions of such vessel wreckage be encountered during the course of chute development, construction should cease immediately and the Kansas City District archaeologist and Missouri State Historic Preservation Office should be contacted.

ACKNOWLEDGMENTS

First and foremost, the authors of this report would like to express our deep gratitude to Dr. Gina Powell of the Kansas City District of USACE for overseeing our efforts throughout the course of this project. Charles Brown at the Herman T. Pott National Inland Waterways Library within the St. Louis Mercantile Library at the University of Missouri–St. Louis provided research assistance. We would also like to thank John Denlinger of HDR Engineering for his patience and assistance, along with that of Daniel Mann of the City of St. Charles. Jennifer Rideout assisted in the collection of historical information, as well as the conduct of the fieldwork. Dustin Thompson directed the magnetometer survey and was also assisted in the field by Brandon Ives, Alan O'Conner, and Grace Smith

Neal H. Lopinot
Principal Investigator

INTRODUCTION

The Center for Archaeological Research (CAR), as a consulting group working for HDR Engineering, undertook a steamboat wreck magnetometer survey for the Kansas City District, U.S. Army Corps of Engineers (USACE). The field survey was undertaken on November 18–21, 2019, supplemented by borings and test pits documented in early 2020 by Reitz & Jens, Inc. for HDR Engineering. CAR services were provided in accord with the tasks identified in the ACE Statement of Work titled *Bangert Island Flood Risk & Riverfront Transformation Project Section 22 of WRDA 1974 Planning Assistance to States*. The purpose of the survey was to determine if any buried steamboat wrecks would be disturbed as the result of the proposed re-excavation of the historic channel separating Bangert Island from the shoreline (Figure 1).

A Brief History of Steamboating on the Missouri River

River transportation opened the trans-Appalachian West to large-scale immigration and commercial development, particularly during the period of ca. 1820–1870 or prior to the development of an extensive network of railroads. During this period, the steamboat provided rapid transportation for products and people in a vast area that was characterized by a very poor, nascent road system. As Chittenden (1903:73) stated, “Then there were no railroads to speak of west of the Mississippi, nor, for that matter, any other roads worthy of mention. The river was the great, and almost the only, highway of travel and commerce.” Steamboat construction and traffic during this period grew exponentially, creating great labor demands involving both the construction and operation of steamboats. These jobs ranged from those for shipwrights, joiners, and glass suppliers to iron ore miners and foundry workers to woodcutters and lumbermen to steamboat clerks, agents, operators, and merchants to insurance agents (e.g., Hunter 1949:382–383; Kane 2004:19–22).

The first steamboat to ply the Missouri River was the *Independence*, which travelled up the Missouri from St. Louis to Franklin and Chariton, Missouri in late May and early June of 1819 (McDonald 1927a:218). It left St. Louis on May 13, 1819 and arrived in St. Charles two days later (Brink 1875:11). It carried passengers as well as cargo that included flour, whiskey, sugar, nails, castings, and other merchandise for local merchants (Gould 1889:114: Lass 2008:48). Within a few months, a government-sponsored expedition consisting of a flotilla of four steamboats and nine keelboats headed up the Missouri River with the Yellowstone as its destination (Gould 1889:114). Although some steamboats began plying the Missouri River shortly thereafter, “the first regular service between St. Louis and Fort Leavenworth, by packet, is said to have been introduced in 1829” (Hunter 1949:47), and the “flush times of Missouri River steamboating fell within the twenty-five-year period from 1845 to 1870” (Hunter 1949:48).

The life span for a steamboat was relatively short. The average life spans differ for the various river systems and the period of study, but most lasted no more than five years and nearly one-fourth of steamboats were irreparably damaged as the result of some disaster (Hunter 1949:101). The Missouri River was particularly treacherous at times, which varied seasonally and whether a vessel was moving upriver or downriver. Approximately 400 vessels were sunk or disabled on the Missouri River during the steamboating period (Lass 2008:32). Hunter (1949:101) notes:

> On the Missouri River, where conditions were particularly difficult, it was reported in 1849 that a good boat would not last over three years . . . The longevity of western steamboats improved materially in later years as the result of technical advances, river improvements, and the operation of the steamboat inspection system.

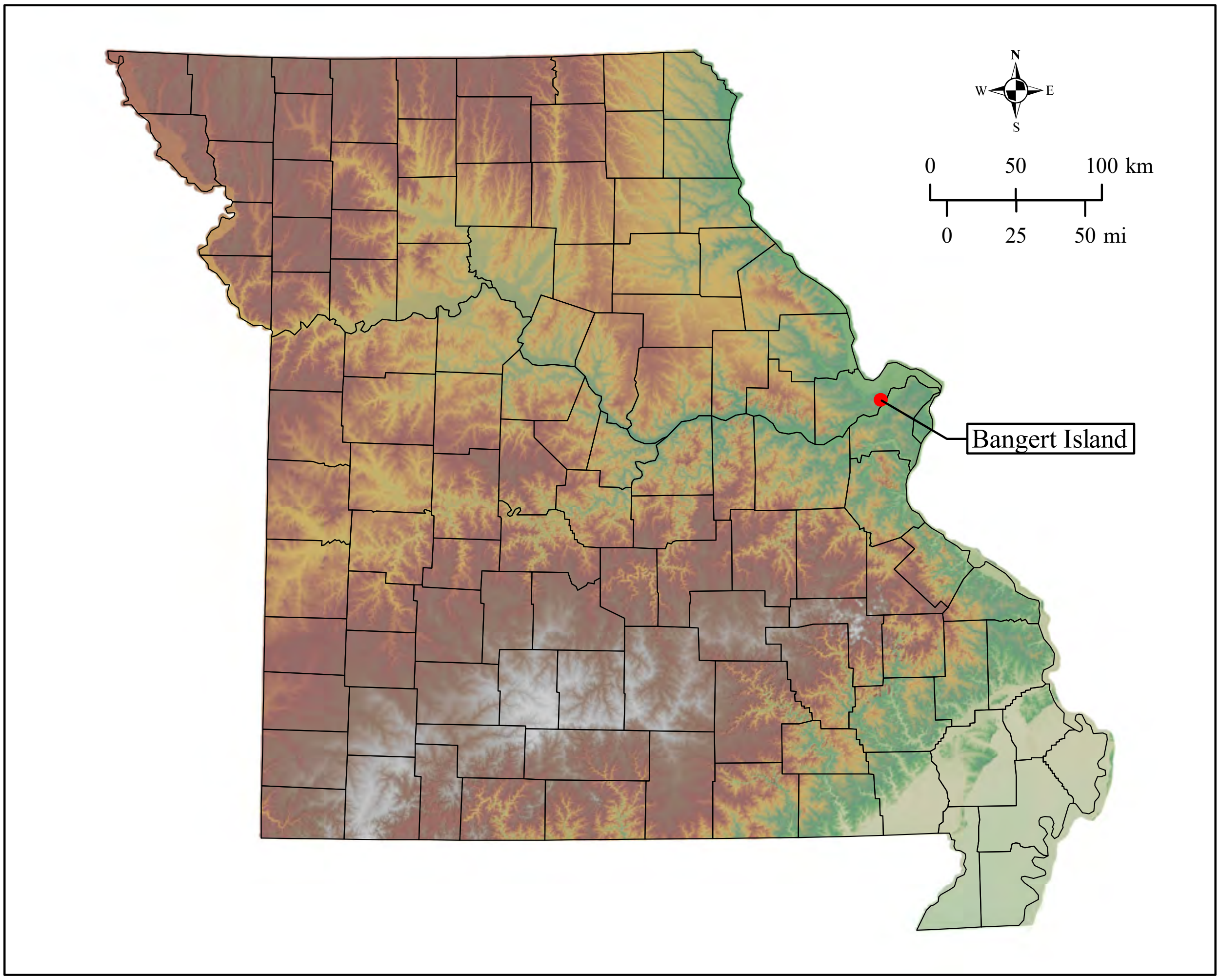

Figure 1. General location of Bangert Island in Missouri.

Hunter (1949:102) provides a good listing of the conditions that resulted in the short lifespan for western steamboats:

> Floating logs, driftwood and ice, raking snags, powerful engines operating at excessive pressures, direct landings at riverbanks, frequent groundings at low water, the strain of getting off and over bars, rot and deterioration from exposure to sun and air when stranded or beached during the low-water season—all these told heavily on lightly framed and planked hulls . . . Gross overloading, hard driving, carelessness in handling, and the widespread practice of undertaking and forcing through trips in disregard of low water and ice produced strain and distortion in hull members and intensified the wear of planking, engines, and machinery.

Snags were the most common reason for inland shipwrecks prior to the Civil War (Hunter 1949:272–289; Lass 2008:32). Of the 1,166 shipwrecks documented by Paskoff (2007) for the period of 1821–1860, snags were cited as the cause for 463 or nearly 40% (Table 1.1). Hunter (1949:Table 10) also noted that snags accounted for 576 or almost 58% of 995 steamboat accidents on the western waters during the period of 1811–1852. Paskoff (2007) presents additional shipwreck data to 1900. The data indicate a sharp decline in shipwrecks from 1871 to 1885. This is likely related to the increase in rail transportation and a concomitant decrease in steamboat transportation, although there was again a nearly fourfold increase in shipwrecks during 1886–1890. It is suspected that this coincides with a revival of river traffic involving a surge in the use of barges, principally for hauling grain and mining products (e.g., coal). By about 1890, gasoline power also began to replace steam power.

For the Missouri River itself, McDonald (1927c:607) documented 411 shipwrecks on the Missouri River, of which more than half (N=240) were caused by snags. The remaining causes consisted of ice (n=79), fire (n=49), bridges (n=17), explosion (n=10), and other (N=72). The Missouri River was notorious for snags.

> The conditions of the Missouri River bore many similarities to those of the lower Mississippi. Flowing through a bed of alluvial soils, it was prone to meander and became notorious for its many snags and obstructions. [Kane 2004:31]

Beginning in 1824, the federal government committed funding for snag removal along the Missouri and other rivers (Hunter 1949:192–193), but snags continued to be a major problem due to the meandering, erosive nature of the Missouri River. Steamboats were generally their own worst enemy since they burned immense amounts of wood fuel, obtained from wood sold by farmers periodically along the Missouri riverbanks. The clearance of the bottomland forests for agriculture in turn contributed to increased runoff and even greater erosion, particularly during the springtime when the Missouri River and its tributaries were fed by the most intense rainfall and melting snow and ice. As erosion occurred, large trees bordering the rivers were lost and new snags were created in addition sometimes to new channel segments.

Snags were of two types—*planters* and *sawyers*. Both involved large trees that lost most or all of their limbs and had become partially, if not entirely waterlogged. The massive rootwads of such trees would become embedded in the riverbed. A planter was regarded as a snag in a fixed position, whereas a sawyer would bob up and down. Since such snags would be pointed downriver, steamboats traveling upriver were more vulnerable than those traveling downriver. Lass (2008:21) provides an excellent description of snags:

> Sawyers—entire trees with soils still enclosing their roots—bobbed up and down near the bank. While aggravating to boats, they did not cause wrecks. But sometimes they blocked the most navigable channel and forced boats into shallow waters. Over time, water action and the annual ice-outs transformed some of the sawyers into [fixed] snags. Released from a collapsed bank and stripped of smaller branches, the base of a tree would become embedded in the streambed. All snags came from large trees, because only they had sufficient weight to cause their roots to become firmly fixed in the bottom. Snags stood alone or in clusters below timbered points. New snags often retained some large branches and, as the wood was bleached by sun and water, resembled an array of ghost trees.
>
> As they aged, snags became more dangerous. Everything above or slightly below the waterline was broken off, and the sharpened ends of the remnant trunks were often undetectable in the murky water. Pilots had to be constantly on the alert for small ripples, a telltale sign of snags just under the water.

The next most-common reason for steamboat wrecks during this period was simply burning as a result of boiler explosions, carelessness, or even arson. Of the 1,166 shipwrecks on the western waters documented by Paskoff (2007), 320 or 27.4% cases were due to burning. Given that steamboats were constructed largely of wood and given that torches and lamps (in addition to tobacco smoking) would have been common aboard such vessels, many steamboats were lost as the result of accidental fires. However, boiler explosions also were not uncommon. In addition, the burning of steamboats was enhanced by disasters. Of particular significance was the wind-driven 1849 St. Louis riverfront fire that destroyed 23 steamboats, three barges, a canal boat, and 500 buildings in a fifteen-square-block area (Lass 2001:7).

River transportation was the lifeblood of commerce and immigration during at least four to five decades of the nineteenth century, but this mode of transportation was rapidly eclipsed during the latter half of the nineteenth century by the growing network of relatively straight, overland railroads. According to Lass (2008:259), "From 1868 to 1873, rapidly advancing railroads drastically changed ... Missouri River steamboating and the scope of the St. Louis hinterland." Unlike the steamboat industry, the railroads benefitted greatly from free land grants and supplemental financing through the issuance of government bonds. Furthermore, railroad bridges provided major obstacles for steamboats, particularly when river levels were high and the water moved swiftly, making navigation more difficult. Hunter (1949:596) noted, "Hiram M. Chittenden, writing at the close of the [nineteenth] century, asserted that on the Missouri River bridges were more dreaded by pilots than all the other obstacles combined." Lass (2008:363) notes that the only "regular long-trade Packet" to ply the lower Missouri River in 1895 was the *Benton*.

BANGERT ISLAND HISTORICAL BACKGROUND

The Bangert Island project area is located in a silted-in channel separating Bangert Island from the shoreline along the west bank of the Missouri River in St. Charles, Missouri, just south of the Interstate 70 bridge. In fact, it will be shown that the entirety of Bangert Island is a relatively recent landform, created since the 1950s. As with much of the Missouri River, this stretch of the river has had a very active channel and a number of steamboat wrecks noted to occur within close proximity to Bangert Island. A series of maps and aerial photographs made between 1854 and 1955, after which the river settled into its current channel, illustrate just how much movement there has been.

The earliest historic maps dating to 1854, 1875, and 1879 clearly show the main channel of the Missouri River being situated well to the east of the Bangert Island APE (Figures 3–5). The earliest General Land Office (GLO) plat map dating to 1854 depicts the main channel of the river along the eastern side of the valley, not the western side of the valley where St. Charles is located (Figure 3). There is an island on the west side of the main channel with a slough on the west side of that island. The project area is located on land on the west bank of that slough. The 1875 and 1879 maps (Figures 4–5) also show the project area on land away from the river, although the slough or flood chute that created St. Charles Island occurred nearby. However, the island apparently was larger and extended further to the east than that depicted on the 1854 plat map. The 1879 map is a detailed river map that labels the island as St. Charles Island and the main channel to the east as St. Charles Bend, also called Penn's Bend after a landing on the east side of the river on Dr. Penn's land (Figure 6).

A major shift in the channel location is recorded on the 1894 Missouri River channel map (Figure 6). The channel apparently was deliberately shifted to the west side of the valley to protect the Wabash Railroad at the north end of St. Charles Bend. Structures were built in the river to force the channel to migrate west away from the east bank. This area subsequently silted in as the channel moved, leaving a large sand and silt flat behind. At the end of the nineteenth century, the river had not completely moved to the base of the bluff. A narrow strip of bottom land was still present. The north half of the APE would have been located on this strip of land, whereas the south half would have been mostly within the new river channel.

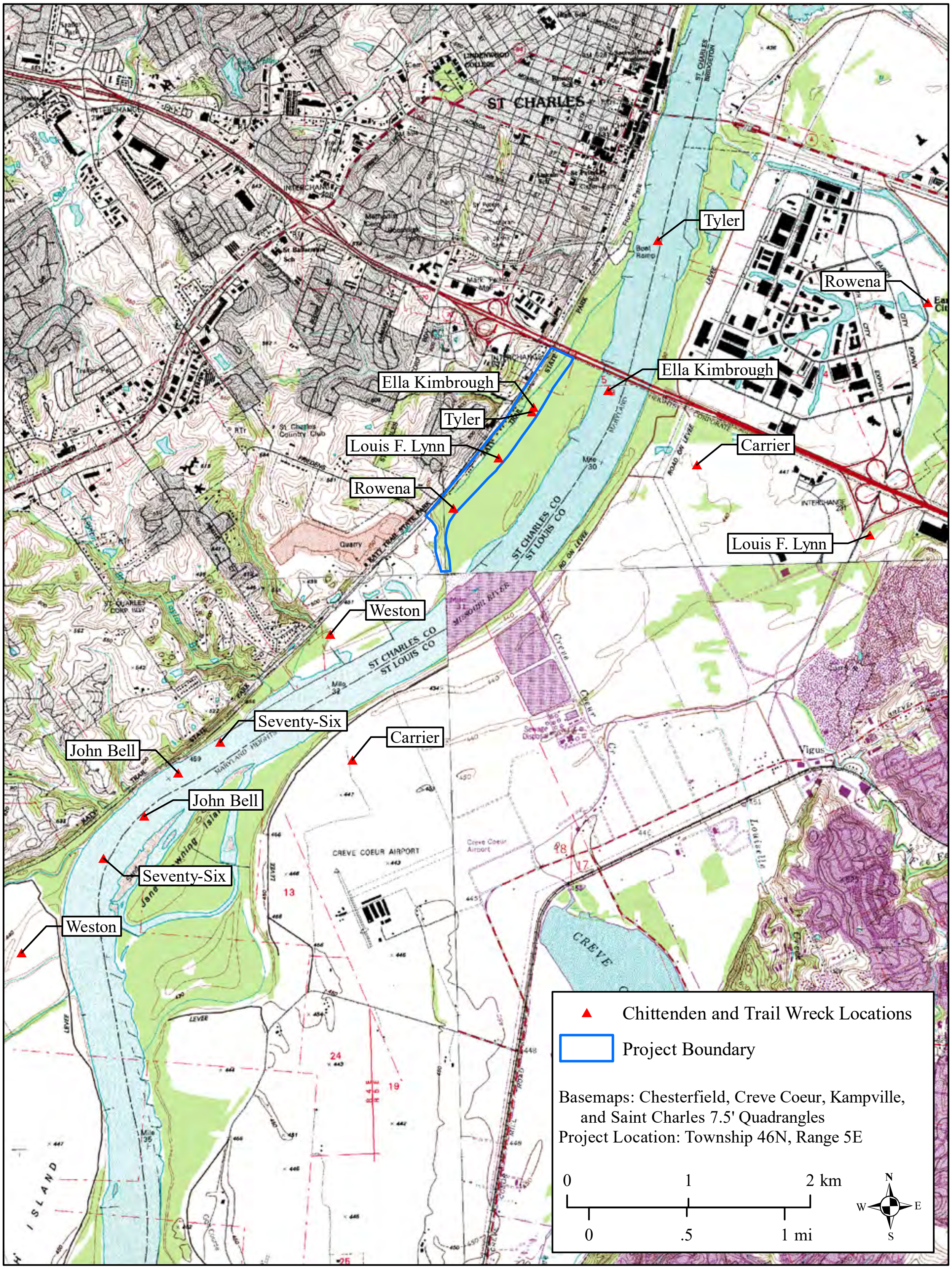

Figure 2. USGS map showing locations of shipwrecks plotted by Chittenden (1897) and Trail (n.d).

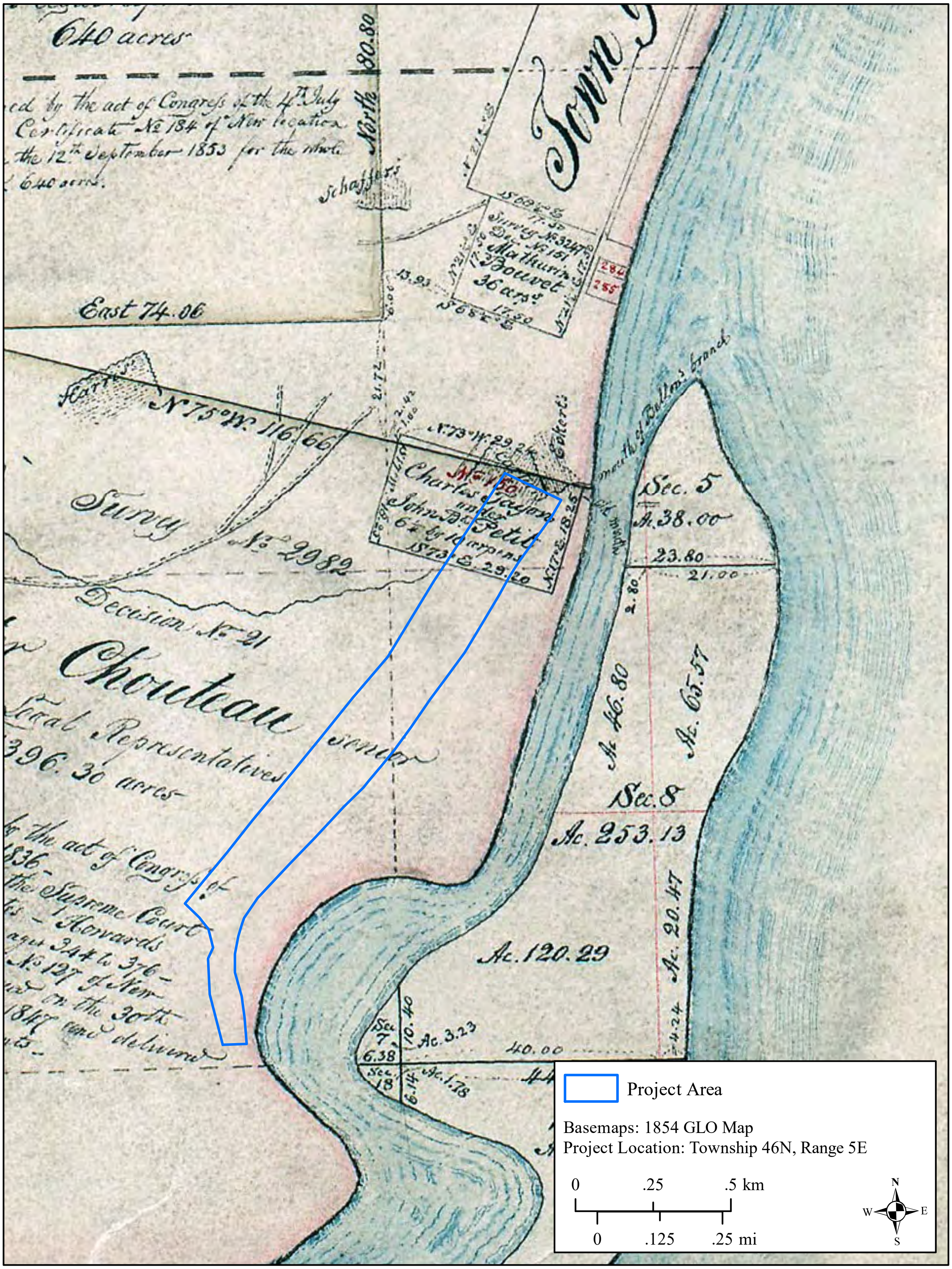

Figure 3. Excerpt from 1854 General Land Office (GLO) plat map showing APE and the Missouri River.

Figure 4. Excerpt from 1875 plat map showing APE relative to the Missouri River and St. Charles Island.

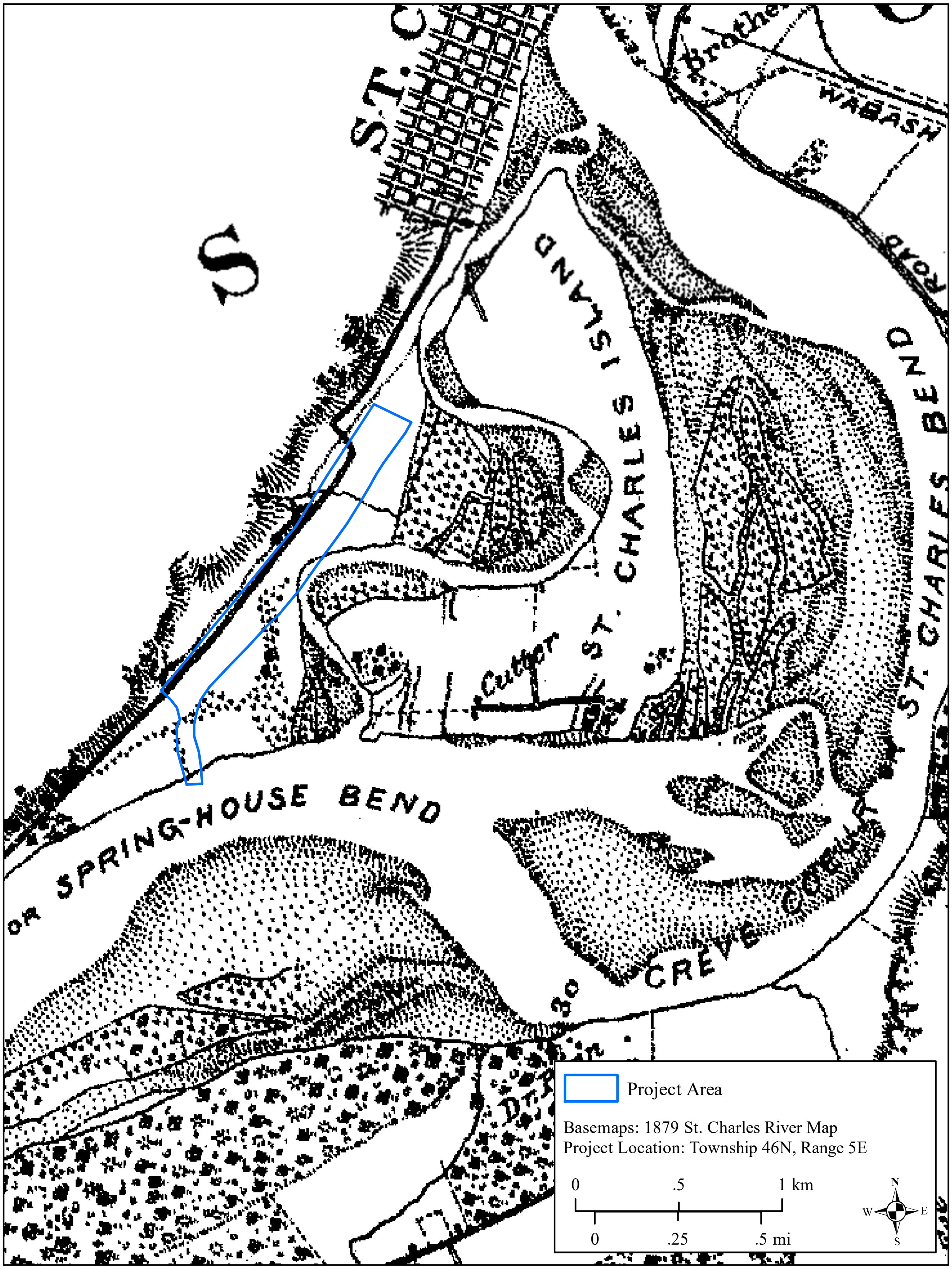

Figure 5. Location of APE in 1879 relative to the Missouri River and St. Charles Island.

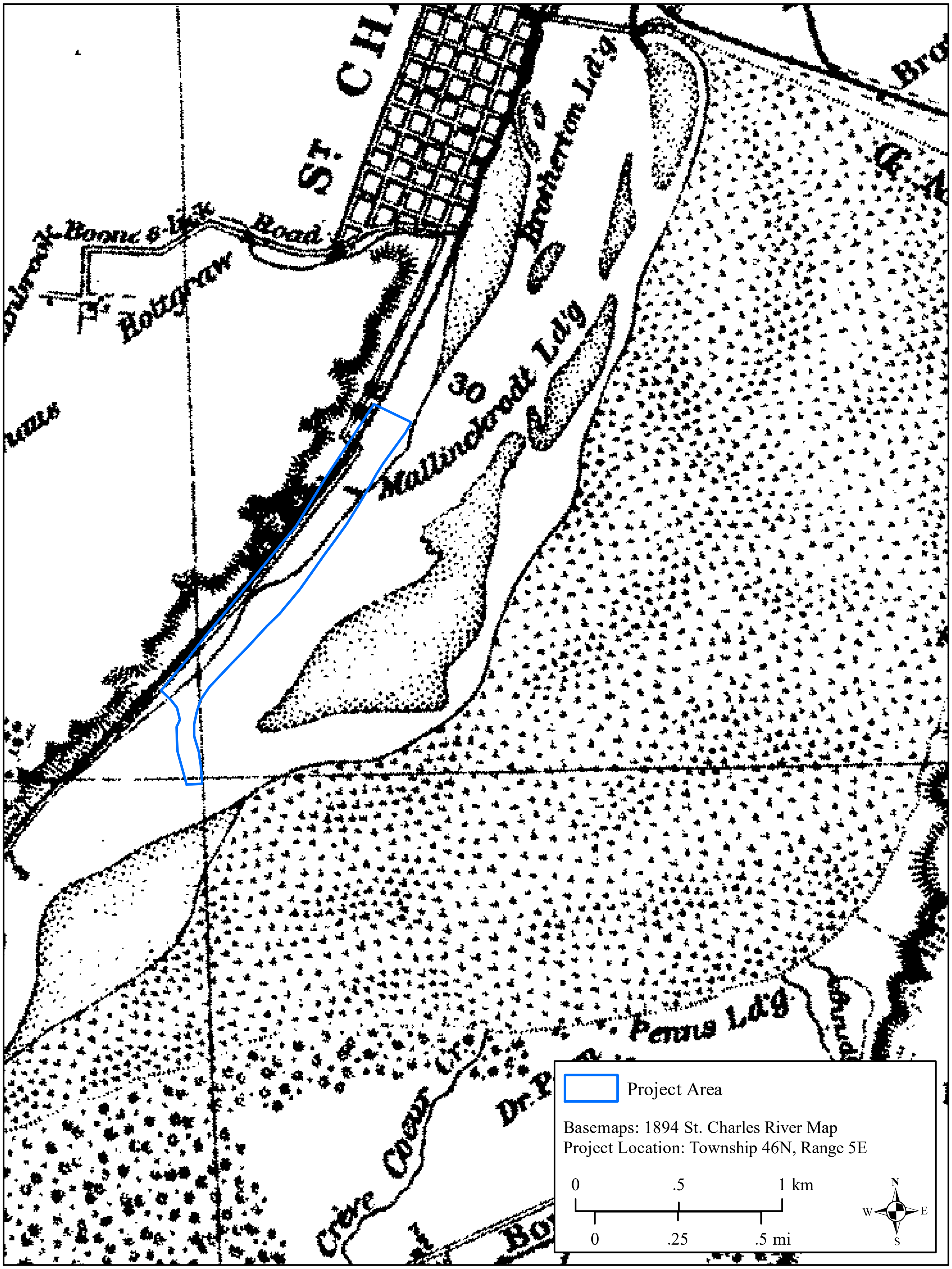

Figure 6. Location of APE in 1894 relative to the Missouri River and Mallinckrodt Landing.

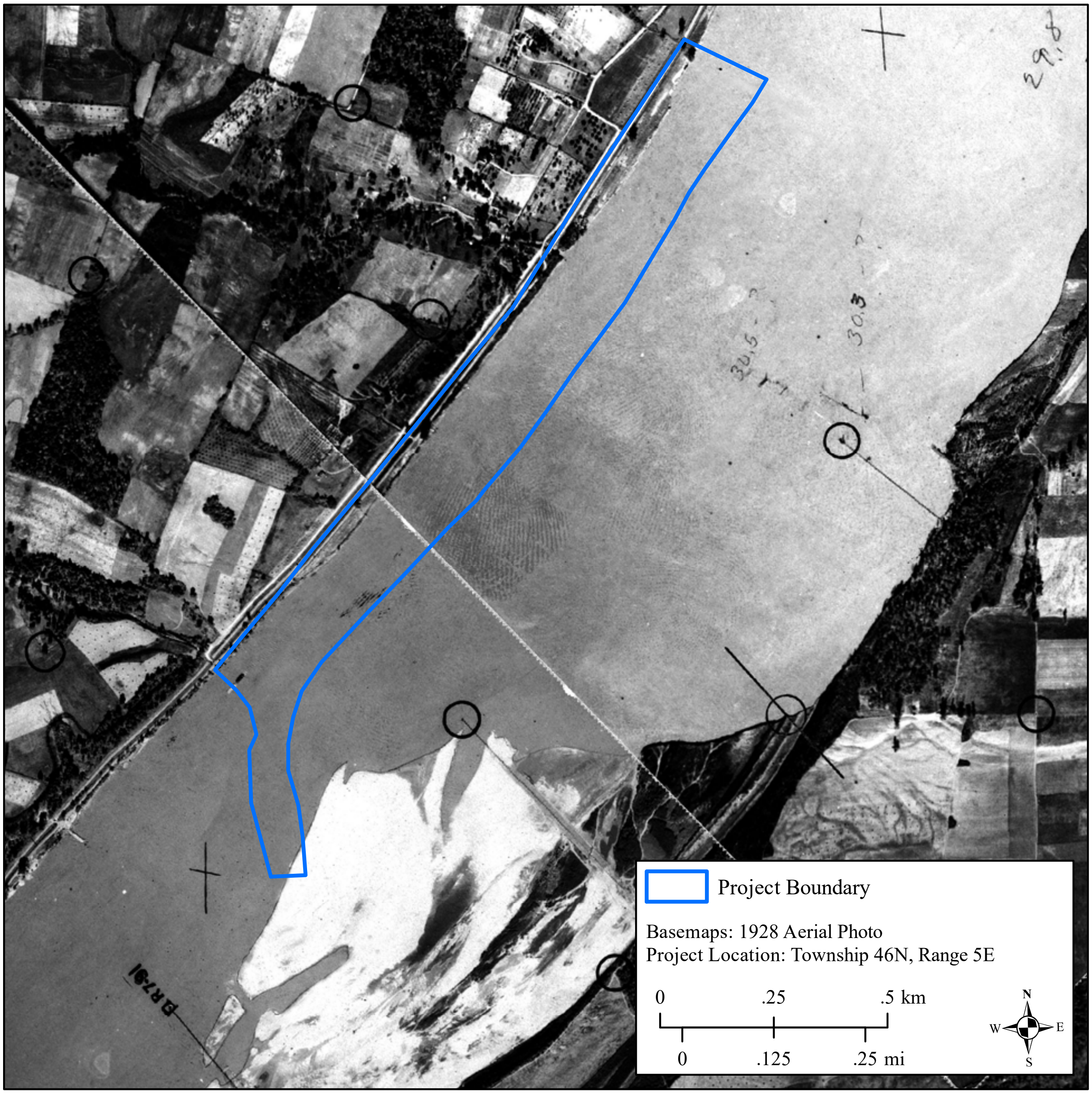

Figure 7. Location of APE in relation to the Missouri River in 1928.

Between 1894 and 1928, the river had migrated even further westward toward the bluff line. All but a portion of the APE located on the toe slope adjacent to where the railroad was located occurred within the river at the time. This is evident in a 1928 aerial photo of the area (Figure 7). This is the earliest aerial of the area and clearly shows that the main river channel was flowing through the great majority of the APE by then. Additional aerial photos and maps dating between 1937 and 1958 (Figures 8–11) illustrate the stability of the channel for another 20–25 years.

USGS 7.5' topographic maps dating to 1954 (Figure 9) show that the river had expanded to the east and nearly doubled in width since 1945. Two small islands were present by then in the middle of the channel east of the project area. These represent the beginning of Bangert Island's formation. It was shortly before this time that the U.S. Army Corps of Engineers began channelization projects

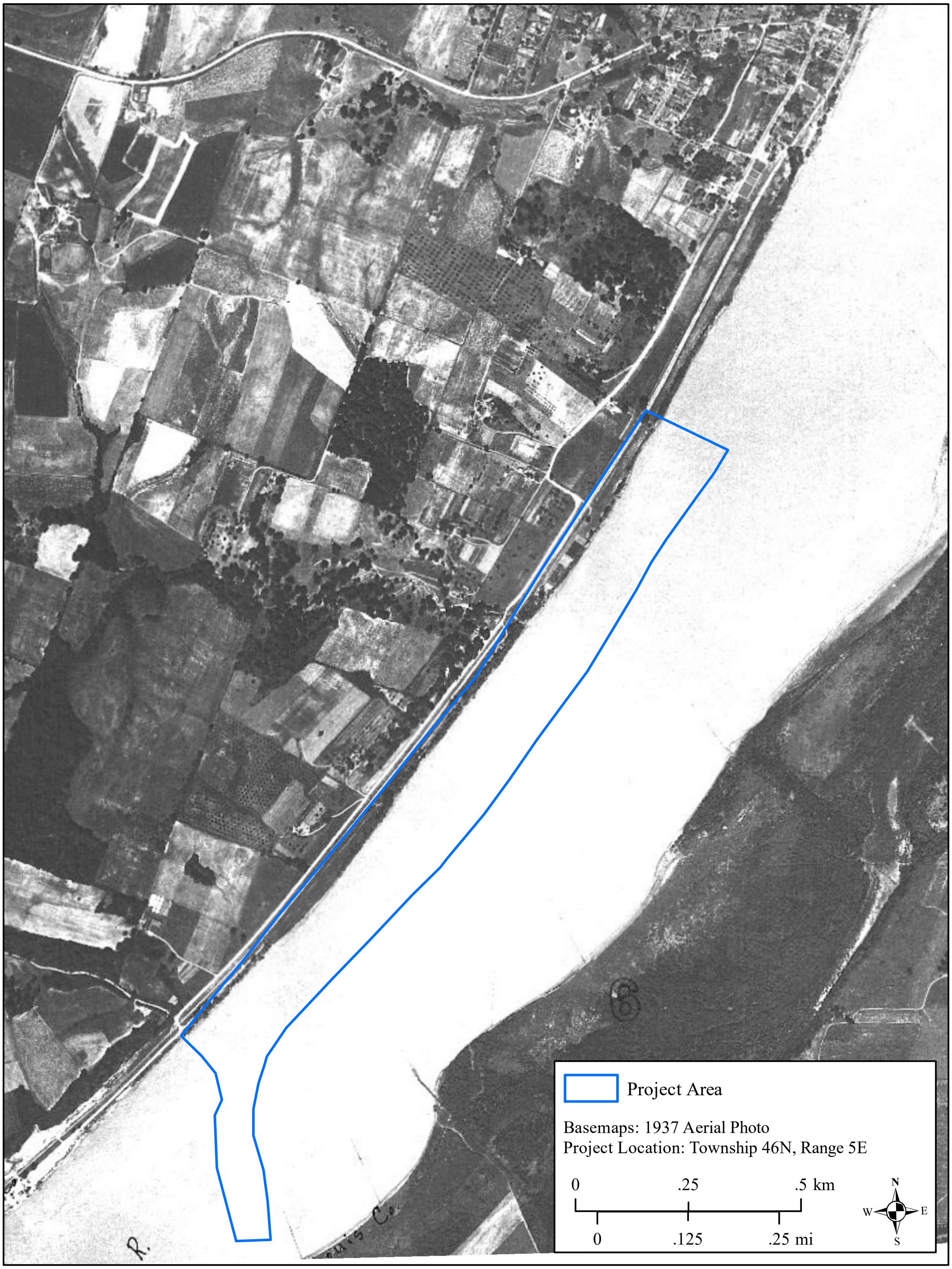

Figure 8. Location of APE relative to the Missouri River in 1937.

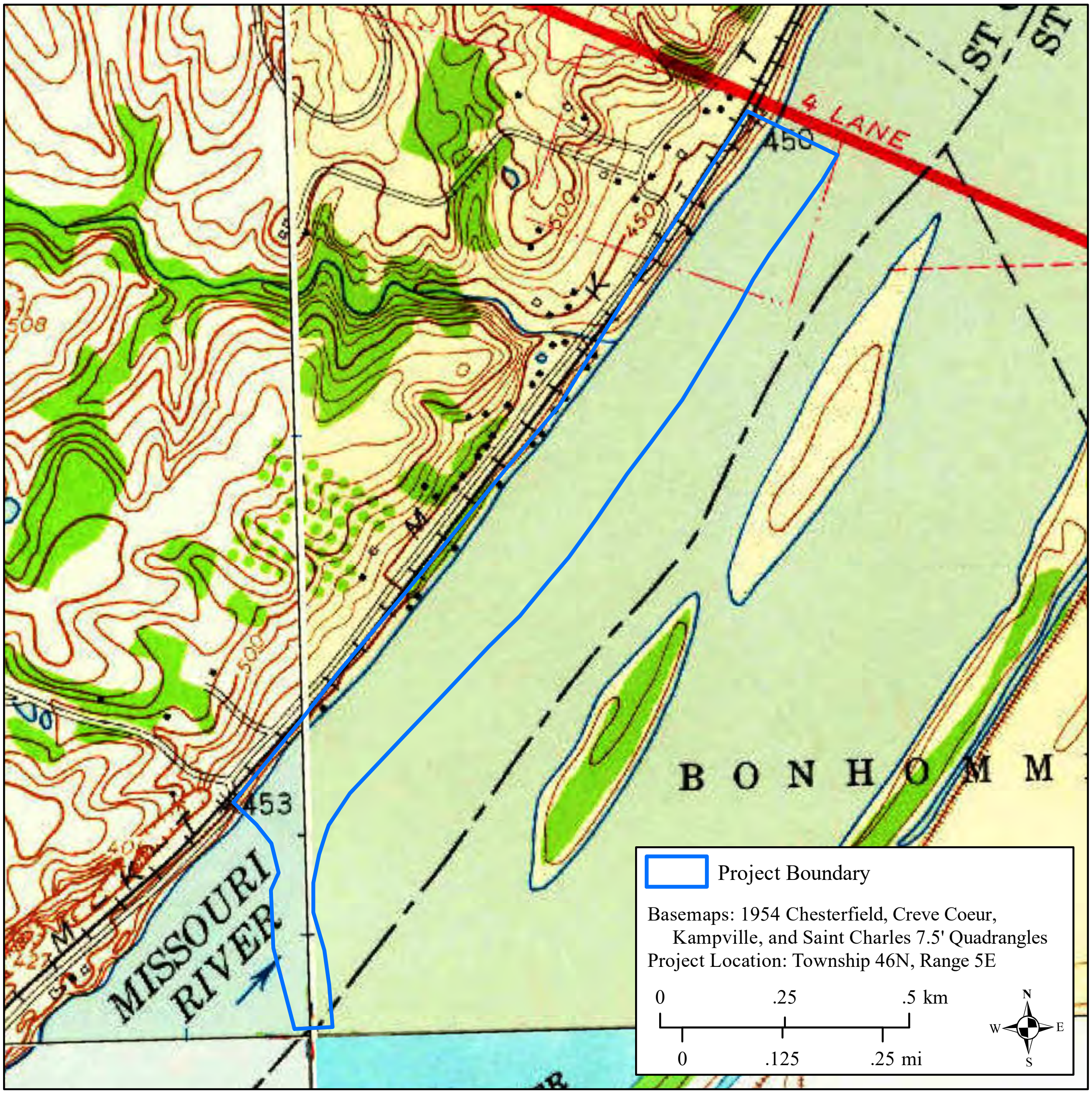

Figure 9. Location of APE relative to the Missouri River in 1954.

up and down the Missouri River to create a more narrow and deeper navigation channel. This was accomplished by the construction of dams, wing dikes, and bank stabilization projects.

An aerial photo from 1955 shows the continued siltation in the west half of the channel (Figure 10), leaving the east half to become the main channel. The two small islands had coalesced by then into one larger island, although there were still small sloughs running through it. The project area at this time was located in a backwater channel area away from the main channel. This backwater channel was still present in 1958, whereas the rest of the island became larger and more established (Figure 11).

A bridge for the newly constructed Mark Twain Expressway, later designated Interstate 70, is also evident on the 1958 aerial. The planning of this bridge likely influenced the relocation of the

Figure 10. Location of APE relative to the Missouri River in 1955.

Figure 11. Location of APE relative to the Missouri River in 1958 (white dashed line represents county boundary).

channel into its now, relatively permanent position. Construction of the bridge began in March of 1955 before Bangert Island had formed completely. However, the main truss span of the bridge, with its widely spaced piers, only crosses the east half of the river, whereas the western span uses a girder bridge with smaller more closely spaced piers. A photograph of the bridge during construction in 1957 shows the completed piers and continued accumulation of sediment at the north end of the island (Figure 12). It is unclear when the old channel west of Bangert Island completely silted in, but it was effectively no longer an island by 1994 (see Figure 2). A small permanent tributary of the Missouri River, which drains the uplands south of downtown St. Charles, adopted the old channel along the north end of Bangert Island and drained northward to the river.

Figure 12. I-70 bridge construction over the Missouri River at St. Charles in 1957, view to the west (photo by Reynold Ferguson, St. Louis Post Dispatch).

SHIPWRECKS OF CONCERN

Reported locations of shipwrecks within 1 mi of the project APE are based on maps prepared by Chittenden (1897) and Trail (n.d). The locations for the same vessels generally do not agree and should be regarded as approximate. Previous documentary research and magnetometer surveys by CAR on Jameson and Cora islands (Lopinot and Thompson 2013a) and Cranberry Bend (Lopinot and Thompson 2013b) on the lower Missouri River have revealed the imprecise nature of these

Table 1. Basic Information on Eight Shipwrecks of Concern.

Vessel Name	Date of Wreck	Cause of Wreck	Fate of Vessel
Weston	1843	Fire	Uncertain
Lewis (Louis) F. Lynn	1848/1849	Snag	Uncertain
Rowena	March 11, 1850	Snag	Loss; passengers saved
Carrier	October 15, 1858	Snag	Raised
John Bell	September 24, 1863	Snag	Loss
Seventy-Six	1876	Unknown	Unknown
Tyler	1878/1879	Unknown	Unknown
Ella Kimbrough	September 20, 1884	Snag	Loss; some cargo saved

historical maps of shipwrecks. In those studies, no steamboat wrecks were found at or in close proximity to any of the locations marked on both sets of maps. However, a deeply buried steamboat wreck was found where none was mapped. Previous research also has emphasized the importance of in-depth historical background research since some vessels marked on the Chittenden and Trail maps suffered from disasters (e.g., boiler explosions), but did not sink, while others were raised and/or salvaged.

Research was undertaken to locate historical information concerning six vessels mapped as having wrecked within 1 mi of the project area. The principle sources were McDonald (1927a, 1927b, and 1927c) and Way (1994), both of whom provide brief descriptions of vessels. In most cases, the two sources largely concur, but some vessels are only documented by one of the authors. Digitized nineteenth-century newspapers were also used when available to fill in details for some of the vessels and these sometimes provide contradicting reports. The mapped locations of six shipwrecks and historic river channels are shown in Figure 2. Two additional shipwrecks (*John Bell* and *Seventy-Si*x) are mapped upstream within a few miles of the APE and are also evaluated here. Table 1 contains basic information about each of these eight shipwrecks. Additional information for each is provided below.

Weston: Side-wheel packet, Captain William Littlejohn [Littleton]. Destroyed by fire in 1843. The hold caught fire and the crew battened down the hatches and intentionally ran aground at the head of St. Charles Island. None of the nearly 70 passengers were injured and the cabin furniture, vessel books, and all lives were saved. The cargo had been primarily hemp, tobacco, and wheat, and was insured for $8,000. [McDonald 1927c:605]

The *Boon's Lick Times* reported that the fire occurred four miles above St. Charles (Boon's Lick Times 1843:2). The same paper reported the *Weston* colliding with the *Alliquippa* the night of March 17, 1844 on the Mississippi River about 95 miles below St. Louis, with the *Weston* being a total loss (Boon's Lick Times 1844:2).

Lewis F. Linn (Louis F. Lynn): Side-wheel packet, wood hull, 163 tons, built in 1844 in Pittsburgh, Pennsylvania. Presumably, named for U.S. Senator Lewis F. Linn (1796–1843) from Missouri. Captain M. Kennett operated her on the upper Mississippi. Worked in tandem with *J.M White* for a record fast run from New Orleans to Galena, Illinois in April 1844, with the *Lewis F. Linn* taking the cargo and passengers from St. Louis to Galena. Captain W. C. Jewett snagged at the head of St. Charles Island in 1848 or 1849. [McDonald 1927b:476; Way 1994:284]

An ad dated April 10, 1847 for the *Lewis F. Linn* captained by M. Kennett runs in the *Boon's Lick Times* until October 2 (Boon's Lick Times 1847:4). Ads for the *Rowena* captained by W.

C. Jewett in the same paper begin in 1847 and continue until the last issue in September 1848, and then run in the succeeding paper the *Glasgow Weekly Times* throughout 1849 and 1950 until the wreck of the *Rowena* (see below).

Rowena: Side-wheel packet, wood hull, 230 tons, 200 feet long, built in 1847 in Elizabeth, Pennsylvania. Snagged and sunk up to the hurricane roof in Penn's Bend, just above St. Charles on either March 12 or 14, 1850 with a total loss of cargo. [McDonald 1927c:592; Way 1994:403]

The *Glasgow Weekly Times* reported Captain W. C. Jewett wrecking on March 11, 1850, noting: "a few miles above St. Charles, she ran on a rack heap at the head of an island, which so shattered her hull, that she went down in about three minutes." The wind then swung the vessel around and settled down on the larboard (left) side to the hurricane roof. The passengers were all rescued by the *Fayaway* and some had to escape by cutting holes in the roof. The papers and cabin furniture were saved, but all the cargo was lost. The boat was insured for $8,000 and Captain Jewett reportedly made arrangements for another boat. [Glasgow Weekly Times 1850:2]

Carrier: Side-wheel packet, wood hull, 250 tons, 215-x-33 feet, built in 1855 at Howard Yard in Jeffersonville, Indiana. It had a double stern with stern posts 10 feet apart. According to John Howard, of the Howard Yard, the *Carrier* was built for Captain Draffin and cost $34,000, and in a 32-day trip made $5,200. Captain Draffin made two runs to New Orleans and then sold the *Carrier* for $5,000 more than he had paid. She was running St. Louis to Glasgow, MO under Captain William C. Postal in April 1856. She snagged at the head of Penn's Bend on either October 12 or 15, 1858 under Captain McPherson. McDonald (1927a:232) gives this wreck as a total loss, but Way (1994:74) gives the *Carrier* as sinking again at Island 25 on the Mississippi on February 21, 1861 and finally being lost at St. Charles on September 12, 1861. [McDonald 1927a:232; Way 1994:74]

Contrary to McDonald and Way, the *Glasgow Weekly Times* reported on October 21, 1851 that the *Carrier* had snagged near Herman, Missouri (Glasgow Weekly Times 1958a:3). On November 4, 1858 she had been raised and taken to St. Louis for repairs (Glasgow Weekly Times 1958b:3). The *Glasgow Weekly Times* ran ads throughout 1860 stating the *Carrier* had been repaired and would run a weekly packet between St. Louis and Glasgow under Captain Henry McPherson (Glasgow Weekly Times 1860:2). The last issue published of the *Glasgow Weekly Times* reported the *Carrier* in port at Glasgow on August 17, 1861(Glasgow Weekly Times 1861:2).

John Bell: Stern-wheel packet, wood hull, 209 tons, built in Louisville, Kentucky in 1855. It was snagged and lost at St. Charles on September 24, 1863. [Way 1994:250]

Seventy-Six: Side-wheel packet, 181-x-25.5 feet; had two engines and was captained by John Gonsaullis. Sunk by rocks one-half mile above Spring House, Missouri in 1876. [McDonald 1927c:594]

Tyler: Stern-wheel packet, piloted by Captain Al Dodd. Sank just above St. Charles in 1878 or 1879 from unknown causes. [McDonald 1927c:600]

Ella Kimbrough: Stern-wheel packet, wood hull, 243 tons, 145-x-28-x-4 feet, built in 1877 at Barmore Yard in Jeffersonville, Indiana (Figure 13) for the U.S. as the *General Sherman*. She had two engines, 15½ inches x 4½ feet, and two boilers, 22 feet x 38 inches, allowing a working pressure of 145 pounds. The *General Sherman* was built for the Yellowstone River but the U.S.

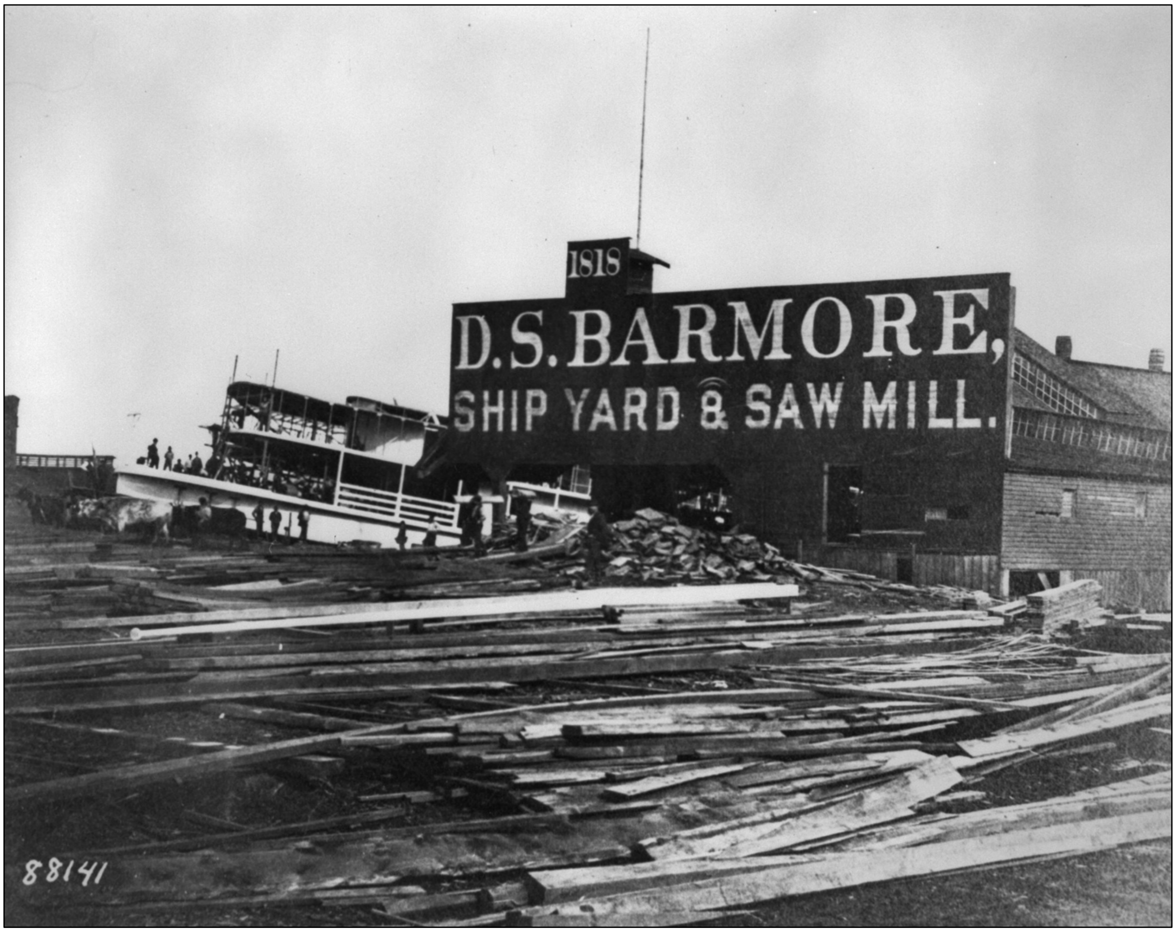

Figure 13. A steamboat on dry dock being built by D.S. Barmore Ship Yard & Saw Mill at Jeffersonville, Indiana, ca. 1861–1864 (from University of Wisconsin-La Crosse, Murphy Library, Special Collections; Image Negative No. 31510, available at https://digital.library.wisc.edu/ 1711.dl/GWWDJYYQALBFN8B).

U.S. sold her to Captain Peter M. Manion, who then sold her to Captain T. M. Kimbrough, who renamed her after his wife. The *Ella Kimbrough* snagged in the St. Charles Chute on September 20, 1884 while carrying a load 3,000 sacks of wheat insured for $8,000. The ferry *John L. Ferguson* (Figure 4) recovered the cargo but the *Ella Kimbrough* was lost. The loss was reported as $12,000. [McDonald 1927a:241; Way 1994:146]

Three days after hitting the snag the *St. Louis Globe-Democrat* reported "the wreckers are at work on her" (St. Louis Globe-Democrat 1884:10). Heckman (1914) reported that the *Ella Kimbrough* lay across from the waterworks. The 1905 plat map shows the waterworks north of the project area.

The earliest of the documented steamboat wrecks was that of the *Weston* (see Table 1). Despite being mapped in the vicinity upriver from the APE, there is good reason to assume that this vessel was damaged but not lost. The *Boon's Lick Times* reported that the fire occurred four miles above St. Charles (Boon's Lick Times 1843:2). The same newspaper reported that the *Weston* later collided with the *Alliquippa* the night of March 17, 1844 on the Mississippi River about 95 miles below St. Louis, with the *Weston* being a total loss (Boon's Lick Times 1844:2). So, it appears that the vessel was repaired and put back in service after the 1843 fire.

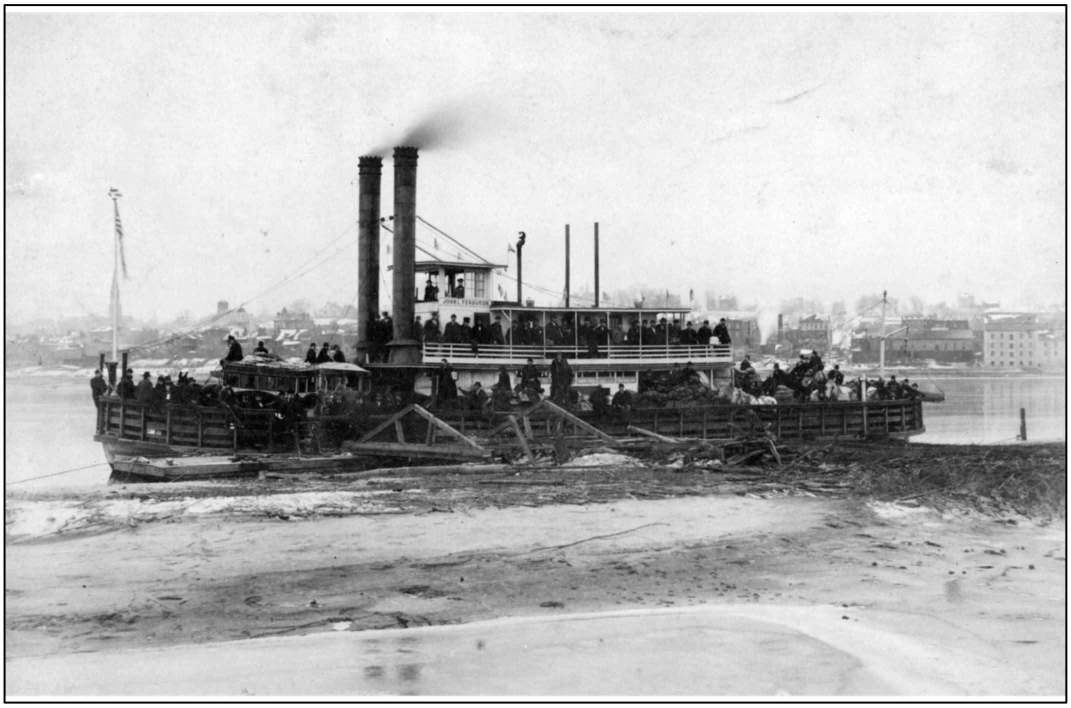

Figure 14. Steamboat ferry *John L. Ferguson* across river from St. Charles, ca. 1860–1900 (from the State Historical Society of Missouri, John J. Buse Collection, Image No. S1083_1729, available at https://digital.shsmo.org/digital/collection/imc/id/37849).

As for a few other vessels, the *Lewis F. Lynn* was documented as having been snagged at "the head of St. Charles Island" in 1848 or 1849 (Way 1994:284). The *Glasgow Weekly Times* noted that the 1850 wreck of the *Rowena* occurred: "… a few miles above St. Charles, [where] she ran on a rack heap at the head of an island, which so shattered her hull, that she went down in about three minutes." For the *Carrier*, there are conflicting stories about the actual location of the 1858 wreck, but it was raised and put back into service. In fact, the last issue published of the *Glasgow Weekly Times* reported the *Carrier* in port at Glasgow, Missouri upriver from St. Charles on August 17, 1861 (Glasgow Weekly Times 1861:2). We know very little about the *John Bell*, except that it was "snagged and lost at St. Charles" in 1863 (Way 1994:250). Information of the *Seventy-Six* is even more scant. Whereas both Chittenden and Trail depict the wreck of this vessel as occurring upstream from the Bangert Island APE, McDonald (1927c:594) indicates that it was "sunk by rocks one-half mile above Spring House, Mo. in 1876." This location is uncertain, although it likely refers to a location associated with "Spring-House Bend," as shown on the 1879 river map just upriver from St. Charles Island (see Figure 5). The only thing we know about the *Tyler* is that it sank above St. Charles in 1878 or 1879 from unknown causes (McDonald 1927c:600).

That only leaves the *Ella Kimbrough*, which sank five years after the 1879 river map (Figure 5) and 10 years before the subsequent river map of 1894 (Figure 6) was prepared. At some point during the interval of 1879–1894, the river indeed shifted westward to near the base of the St. Charles bluffline where the APE is located. It is recorded that the *Ella Kimbrough* snagged in the "St. Charles Chute" on September 20, 1884 while carrying a load 3,000 sacks of wheat insured for $8,000. The ferry *John L. Ferguson* (Figure 14) recovered the cargo, but the *Ella Kimbrough* was lost (McDonald 1927a:241; Way 1994:146). Three days after hitting the snag, however, the *St. Louis Globe-Democrat* reported "the wreckers are at work on her" (St. Louis

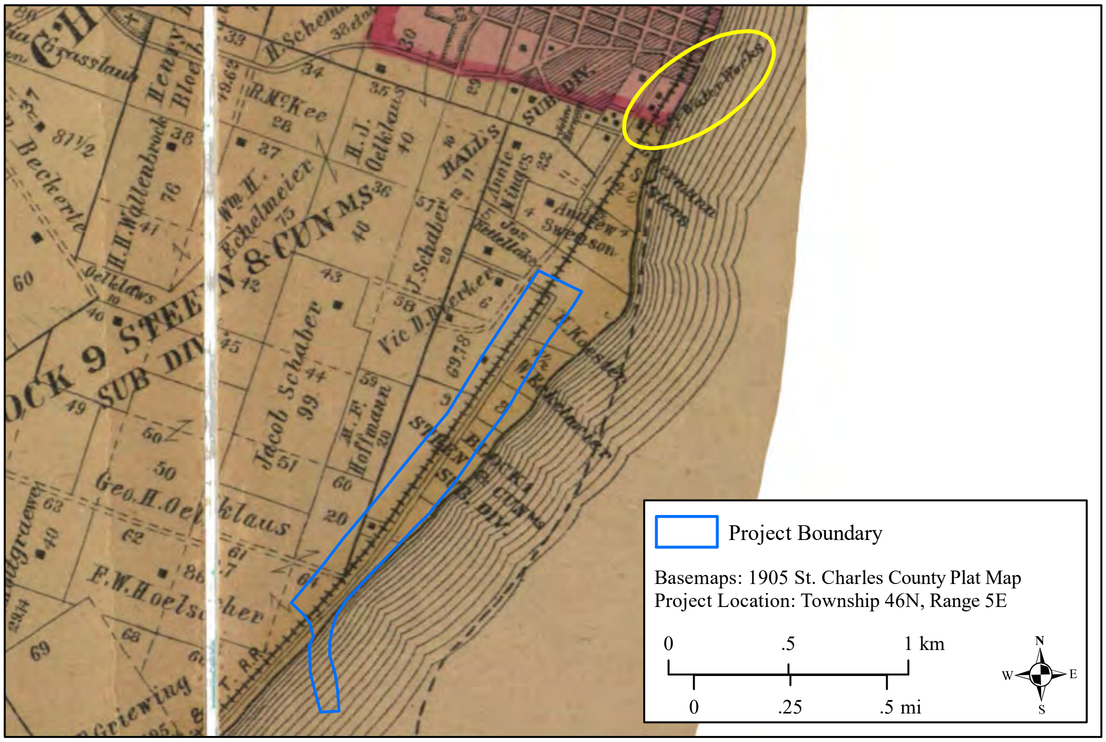

Figure 15. Plat map (1905) showing the location of the Water Works downriver from the APE.

Globe-Democrat 1884:10), which suggests that at least some salvage of machinery was likely undertaken. Heckman (1914) also later reported that the *Ella Kimbrough* lay across from the Water Works, which would place the wreck north of the project area or downriver according to the location of the waterworks on a 1905 plat of St. Charles (Figure 15).

Of the eight vessels of concern, seven of them wrecked on or before 1879, or when the 1879 river map was prepared (see Figure 5). Given the accuracy of the maps dating up to 1879, it seems impossible to expect the remains of any of these vessels to occur even near the Bangert Island APE, although parts could have been redeposited after the main channel of the river shifted westward sometime between 1879 and 1894. The *Weston* is clearly not in the APE and the *Ella Kimbrough* was downstream from the APE and appears to have been at least partially salvaged. The *Lewis F. Linn* and *Rowena* wrecked at the head of St. Charles Island, making them very unlikely to be in the project area. The *Carrier* clearly did not have a fatal wreck in 1858, although it may have done so in 1861. The actual locations for the *John Bell* and *Seventy-Six* are less certain, but they too were wrecked before the river had shifted to the left bank. One landing, Mallinckrodt Landing, is depicted within the project area on the 1894 river map (see Figure 6), though no further information on it could be located.

SURVEY METHODOLOGY

The Bangert Island survey involved the use of a (Geometrics) G-858 cesium vapor magnetometer strapped to the back and front of a surveyor (Figure 16). As with all magnetometers, the G-858 measures the intensity of the earth's magnetic field and anomalies often represent the presence of some ferromagnetic materials within that field. That is, the anomalies represent

Figure 16. Photo showing the G-858 cesium magnetometer.

deflections in the earth's magnetic field. The G-858 is highly sensitive and has an integrated submeter GPS system. It is designed for walking and its high data sample rates (up to 10 samples per second) allow one to walk at a relatively rapid pace. However, one magnetic reading per second (approximately one reading per meter) is more than adequate for a steamboat wreck survey. A handheld Trimble GeoXH submeter GPS instrument was used to locate waypoints for specific pre-programmed transects located over the proposed project area. The post-acquisition data processing was undertaken using MagMap2000, MagPick, Surfer, and ArcMap.

A base station was not used to correct for diurnal changes in the magnetic field. Such was not deemed necessary. The signature of the anomalies we expected should be between 50 and 100 gammas or more over a relatively small area (20–50 m). Diurnal variation of about 20 gammas over a 24-hour period would not affect the readings significantly.

Unfortunately, very little information has yet been found pertaining to the actual weight of engines, boilers, stacks, and other metallic machinery and piping present in steamboats. Instead, it

Table 2. Estimated Magnetic Signatures for Different Size Object(s) and Distances.[1]

Size (tons)	Distance (feet)	Anomaly (gammas)
1	30	40
	60	4.6
	90	1.4
2	30	74
	60	9
	90	2.7
4	30	148
	60	18
	90	5.5

[1]Based on formula: $T=M/r^3$, where T is in gammas, M is magnetization, and r is distance from magnetometer.

is common to find the overall tonnage, the length and diameter of the boilers, the number of boilers. and the diameter of the cylinder(s) and the length of the stroke (e.g., 20 in x 5 ft), whether the engines were low pressure or high pressure. Although we know the boilers were typically made of riveted ¼-inch cast-iron plates (Hunter 1949:155), we also have not found data pertaining to the weights of different sizes of boilers. Hunter (1949:129) indicates that the weight of machinery in the 403-ton *Washington*, considered the first great steamboat on western waters, was 4–5 tons. For the same vessel, Kane (2001:57) put the weight of the engine at a generally equivalent 9,921 lbs. This was a relatively large steamboat (403 tons) in comparison to most nineteenth-century steamboats. Not including the weight of nails, bolts, tackle, the hog chain, smokestacks, etc., it is suggested that a good approximation for the weight of the engine, boiler(s), and other operational machinery in the various unsalvaged shipwrecked vessels in this study would be 3–4 tons.

Larson (2008:2) provides a table of information pertaining to the magnetic signatures at different distances for items ranging from 1 to 4 tons in weight. The table is reproduced here (Table 2). A 15-m transect interval was used for the Bangert Island survey. The transect spacing of 15 m provides about 33 ft of coverage in all directions from the magnetometer.

The formulae provided by Larson (2008:2; footnote in Table 2) can be used to calculate the magnetic expectations for shipwrecks with 3–4 tons of metal. It is assumed that one ton of iron has the magnetization of 1×10^6. Given that and a distance of 33 feet, it is estimated that 3 tons should yield a minimum 83-gamma anomaly and 4 tons should yield a minimum 111-gamma anomaly. In general, steamboat wrecks at depths of 45 ft should yield an anomaly on the order of at least 80–110 gammas using transects of 15 m. If the objects are closer to the magnetometer, then they should yield more intense gamma spikes.

Field Conditions at Bangert Island

The magnetometer survey was undertaken on November 18–21 by Project Supervisors Dustin Thompson and Jennifer Rideout with assistance from U.S. Army Corps of Engineers, Kansas City District archaeologist Dr. Gina Powell and field technicians Brandon Ives, Alan O'Conner, and Grace Smith. Bangert Island is covered with a mix of bottomland forest, flooded and muddy remnant channel sloughs, a gravel parking lot, and masses of flood-deposited downed trees. Most of the project area is within Bangert Island, which is a relatively recent formation (post-1950s) consisting of ridge-and-swale deposits (Figure 17) in the old Missouri River Channel. The island

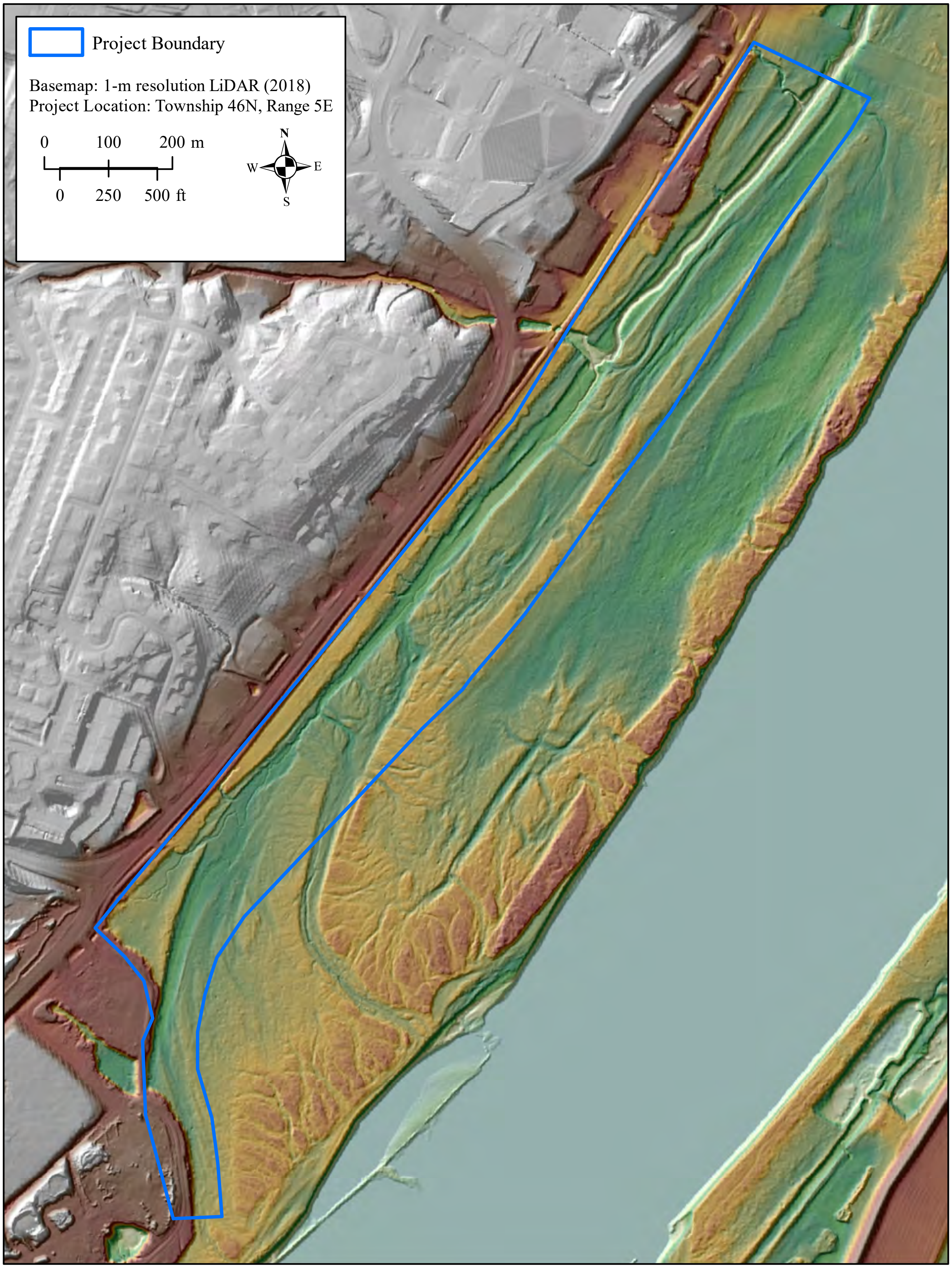

Figure 17. LiDAR map showing shaded relief within the project area.

is separated from a higher terrace (toeslope) remnant along the base of the upland ridge to the west by a slough (Figure 18), which was the last part of the old channel to silt in. The north half of this slough has since been captured by a permanent stream that drains the uplands south of I-70 and east of Highway 94 (see Figure 17). Nearly the entire project area is covered in bottomland forest vegetation (e.g., cottonwood, sycamore, and willow) and most of the project area has never been developed apart from a few park trails. However, there have been a few fishing cabins/houses built along the old terrace remnant along the base of the bluff.

The 1994 St. Charles 7.5' topographic quadrangle depicts 17 such structures along the west boundary of the project area (Figure 19). The location of the two northernmost structures, which are no longer extant, occur within the APE. One of these properties, purchased by the city and razed in 2019, offered a significant obstruction to the magnetometer survey. Aerial photos show and city employees confirmed (Daniel Mann, personal communication) that the area northwest of the previous house location was covered with old cars, boats, and miscellaneous trash. Most of the debris was removed or buried when the house was razed. However, there is still a significant amount of metal trash scattered across the project area west of the slough (Figures 20–21). This includes old tires with steel rims, metal buckets, boards with nails, metal fencing, etc. Compounding the problem in this area is the old railroad track along the west edge of the project area and a cell tower compound surrounded by a chain-link fence (Figure 22). The Interstate 70 bridge is also located at the northeast end of the project area. This continuous bridge has steel reinforced concrete piers and large steel girders supporting the deck (Figure 23).

The south end of the project area also was covered with masses of large downed trees (Figure 24) that apparently were knocked down by a tornado that passed through the APE in 2013. Unfortunately, this made it impossible to maintain evenly spaced transects in this area. Every effort was made to stay on the original transect spacing of 15 m, but it was not always possible. Alternate paths were made around the downed trees and returned to the original transects as quickly as possible. Data collection was continued on the alternate paths.

The U.S. Department of Agriculture soil map for Bangert Island characterized the soil as Haynie-Treloar-Blake complex, 0 to 2 percent slopes, frequently flooded with a typical profile having an Ap horizon of 0–18 cm of silt loam overlaying a C horizon, 18–60+ cm of stratified, very fine sandy loam to silt loam. This is consistent with a soil profile that was recorded on the terrace west of the slough. It consisted of an Ap horizon of silt loam (10YR 2/2) measuring 0–19 in thickness overlying; a stratified C horizon of sandy silt loam (10YR 4/2) at 19–46 cm; a sandy loam (10YR 5/2) at 46–84 cm; a sandy loam (10YR 4/4) at 84–98 cm; a sand (10YR 5/3) at 98–130 cm; a sandy clay loam (10YR 5/3) at 130–140 cm; and a sandy clay loam (10YR 4/6) at 140–190 cm.

Field Survey Methods

The survey of Bangert Island began with a shovel test survey of the high terrace along the northwest side of the project area. This was undertaken to identify any prehistoric or historic artifacts or features. Shovel tests were excavated at 20-m intervals along two transects spaced 20 m apart. These transects began south of the gravel parking lot in the northwest portion of the project area and extended 200 m to the southwest. Twenty shovel tests were excavated to a depth of at least 30 cm and the fills were screened through ¼-in hardware cloth. In addition, one shovel test on Transect B was continued to a depth of 1.9 m below surface using a bucket auger. All shovel tests were negative.

The magnetometer survey generally requires walking relatively straight parallel transects. Therefore, the collection of magnetometer data was obtained along transects that were created in ArcMap, loaded into the Trimble XH, and marked in the field. Guided by the Trimble GPS unit,

Figure 18. Slough in north half of the APE, a remnant of the former channel of the Missouri River.

survey transects were marked with a patch of orange surveyor's paint at intervals of 3–5 m after clearing brush and overhanging branches to a height of eight feet (Figure 24). In areas covered with brush and thickets, machetes and loppers were used to clear small trees, the lower limbs of saplings, and weedy undergrowth along each transect. There were also flooded and muddy areas that were impassable with the magnetometer. When these areas were reached, data collection on that transect was ended and was resumed once the transect was past the impediment.

The transects were roughly parallel to the western edge of the project area. They were spaced 15 m apart. Figure 25 is an aerial photograph illustrating a model of our planned investigations in the Bangert Island project area. Fifteen transects oriented northeast to southwest and spaced 15 m apart were planned for the 210-m wide and 1,750-m long main portion of the APE. An additional

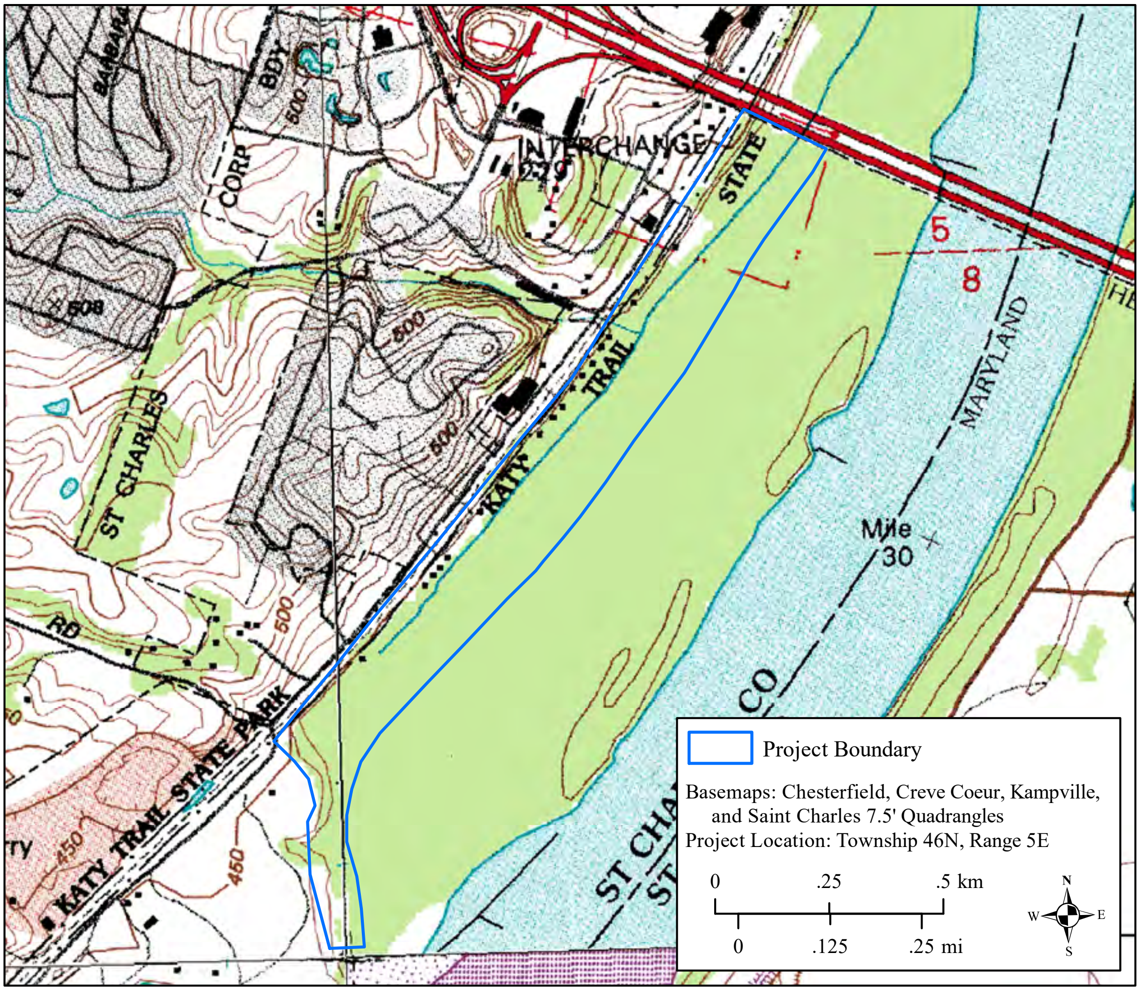

Figure 19. Excerpt of the 1994 St. Charles 7.5' topographic quadrangle depicting 17 structures along the west boundary of the APE.

five shorter transects oriented roughly north-south were planned for the shorter 90-m wide and 350-m long dogleg at the south end of the project area. However, only limited survey of the south half of the project area was completed owing to technical problems with the magnetometer.

Given technical issues with the magnetometer, nearly impenetrable mats of downed trees, the occurrence of some inundated areas, and also threats from local landowners, we had covered as much of the area as possible at the time. Additionally, it was concluded that there was a low probability of finding any historic shipwrecks within the project area after research into landform creation in the APE in relation to the timing of documented historic steamship wrecks. Therefore, the magnetometer survey portion of the project was halted before the survey of the south half of the project area was completed. Figures 26–27 illustrate what was completed and what was not completed.

DATA ANALYSIS

All collected data were downloaded from the magnetometer using Magmap 2000 software. The resulting .dat files were then opened in Microsoft Excel and all dropouts (data points with a zero reading) were subsequently removed. The resulting data were then formatted and imported

Figure 20. Scattered metal trash and wheels along northwest edge of APE.

into ArcMap 10.5 to search for anomalies. To find anomalies, individual point data were plotted and color-coded by magnetic strength. Due to the fact that some of the transects extended up to 1.7 km, the data were divided into smaller blocks that were easier to process. Due to the amount of modern debris that created large spikes in the data, this was the most efficient method to identify smaller anomalies. These smaller blocks of data were then imported into Surfer to create topographic and color relief maps using the gamma readings to better visualize potential anomalies.

Two minor issues in the data can be ignored with respect to the search for large, deeply buried objects such as steam engines, boilers, etc. First, the long staff holding the sensor for the G-858 is heavy and prone to bouncing during survey, adding minor noise to the data (Ernenwein and Hargrave 2009:72). This bouncing effect can create minor anomalies of less than about 4–5

Figure 21. Photo of additional scattered metal trash and wheels along west edge of APE.

gammas and are not an issue in distinguishing larger anomalies. Second, very small isolated pieces of ferrous metal near the floodplain surface, such as tin cans, nails in boards, and nuts or bolts from farm machinery, will yield magnetic data-point-specific spikes (i.e., cases where one point varied greatly from all the surrounding points) and therefore they can be excluded based on their magnetic extent.

A third problem that does require attention was the missplotting of data points. Although the survey was undertaken during the winter leaf-off season, dense tree cover still made it difficult for the internal GPS of the magnetometer to receive an accurate signal in places. Most of the data points follow the outlined transects. However, there are several data points clearly plotted incorrectly. This is most evident in the east central portion of the survey. If a point was incorrectly plotted into an adjoining transect that was surveyed during a different day or time of day, it would give the

Figure 22. Old railroad track (now the KATY Trail) and cell tower compound along west edge of APE.

false reading of an anomaly due to diurnal drift. An attempt was made to "clean up" such bad data by relocating obviously scattered points back into the correct location using the sequential number assigned to each point when generated.

Anomalies greater than 40 gammas, the minimum expected peak for a buried shipwreck, were further evaluated as to their depth and size. To calculate the depth of the anomalies, Peter's Half-Slope Method was used (see Burger et al. 2006:485–487). Contour maps for each of the analyzed magnetic anomalies were created using Surfer 18. The slope and half-slope of the anomaly was calculated using these maps. Using the half-slope distance, an approximation of the distance of the object from the sensor was calculated using the formula d=1.6h, where d is the half-slope distance, h is the distance to the anomaly, and 1.6 is an average value of a magnetic body. Once the distance

Figure 23. Continuous span I-70 girder bridge at the northeast end of the APE.

was calculated, an approximation of the anomaly size could be made in tons. This was undertaken using the formula provided by Larson ($M=T/r^3$), where M is magnetization (assumed that one ton of iron has the magnetization of 1×10^6), T is gammas, and r is distance from the magnetometer. Finally, the depth below ground surface was calculated by subtracting the height of the magnetometer sensor above ground (.75 m) from the distance to the anomaly.

BANGERT ISLAND SURVEY RESULTS

As expected, the area west of the slough yielded numerous peaks in the magnetometer data (Figure 28). Most of these peaks are clustered around the location of the house and lot where the

Figure 24. Downed trees at the south end of the APE showing an orange-painted survey transect.

old cars and boats were kept for many years. Some of the peaks along the western edge can be attributed to the old railroad tracks that extend along the western boundary of the project area. The cell tower complex is represented by an extreme low in the data (-7,970 gammas) and the bridge along the northeast end of the project area caused all the transects to dip as much as -1,900 gammas below the normal background level. There are other scattered anomalies outside the main cluster that represent metal trash that was noted on the surface during the survey (Figures 28–29). Because of the nature of these anomalies, they were not analyzed further. It should also be noted that if there was a buried shipwreck in this area, it’s magnetic signature would be masked by the large amount of surface anomalies and would not be detectable.

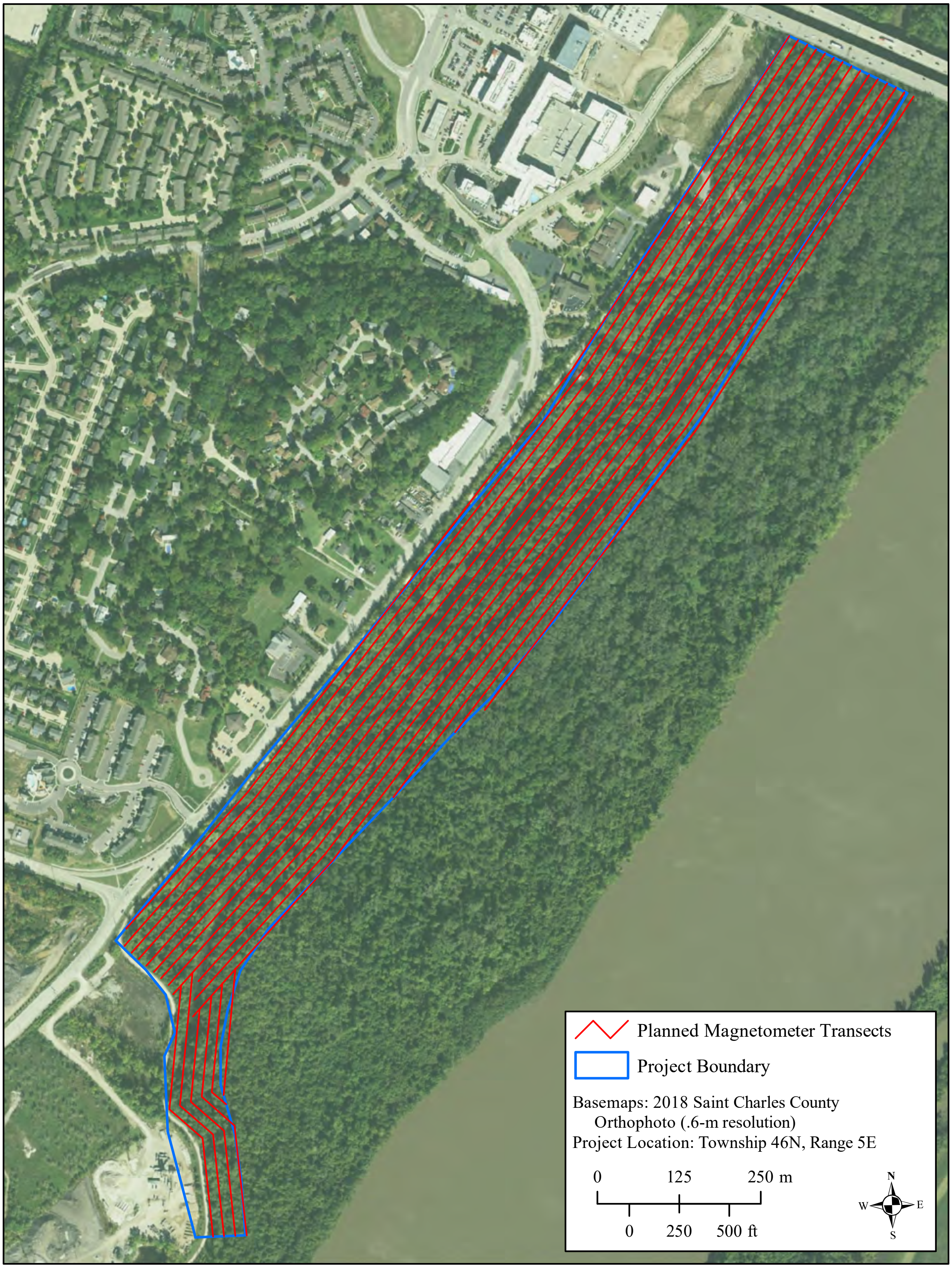

Figure 25. Aerial photo illustrating a model of our planned magnetometry investigations.

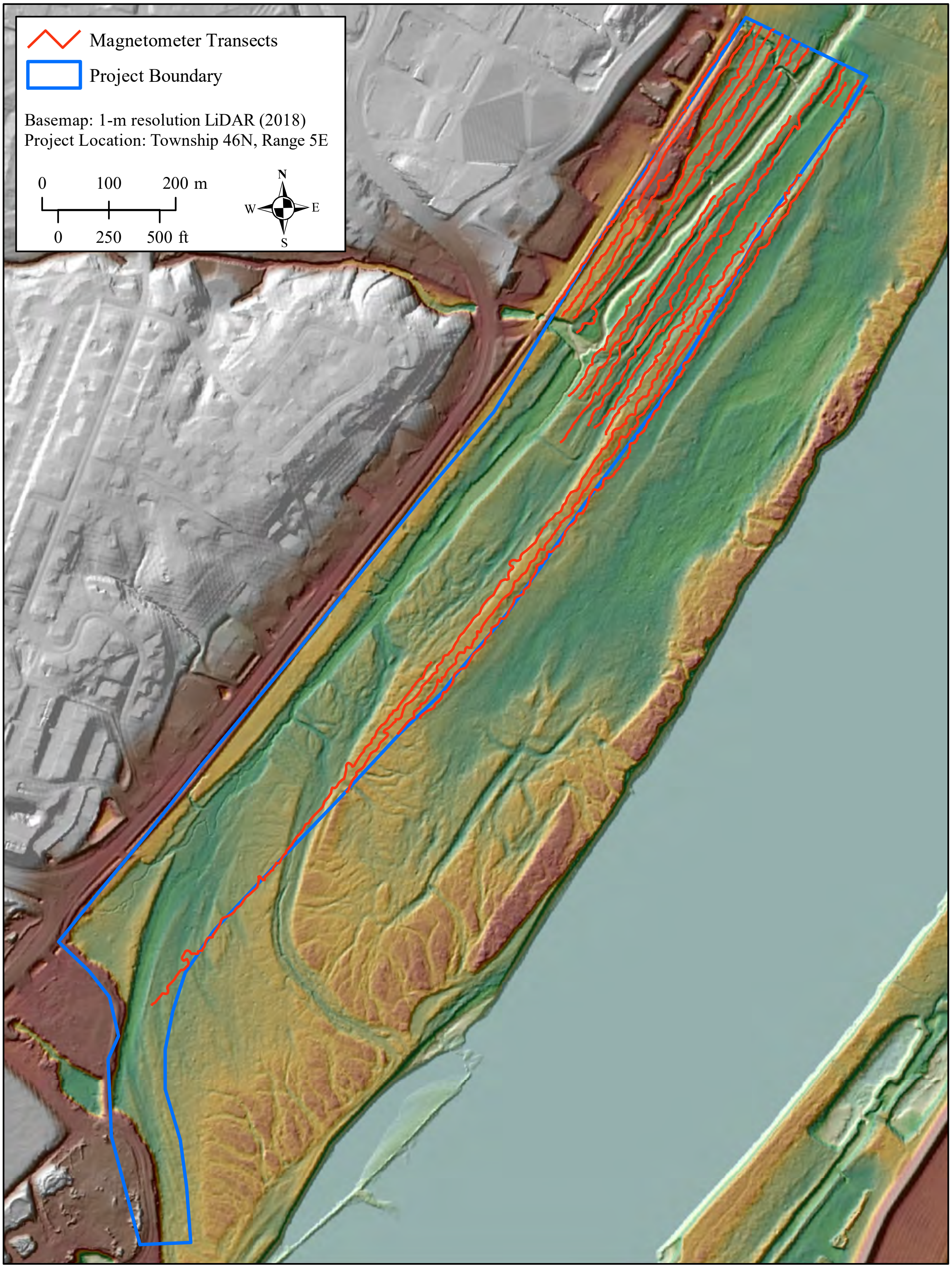

Figure 26. LiDAR map illustrating completed magnetometry transects.

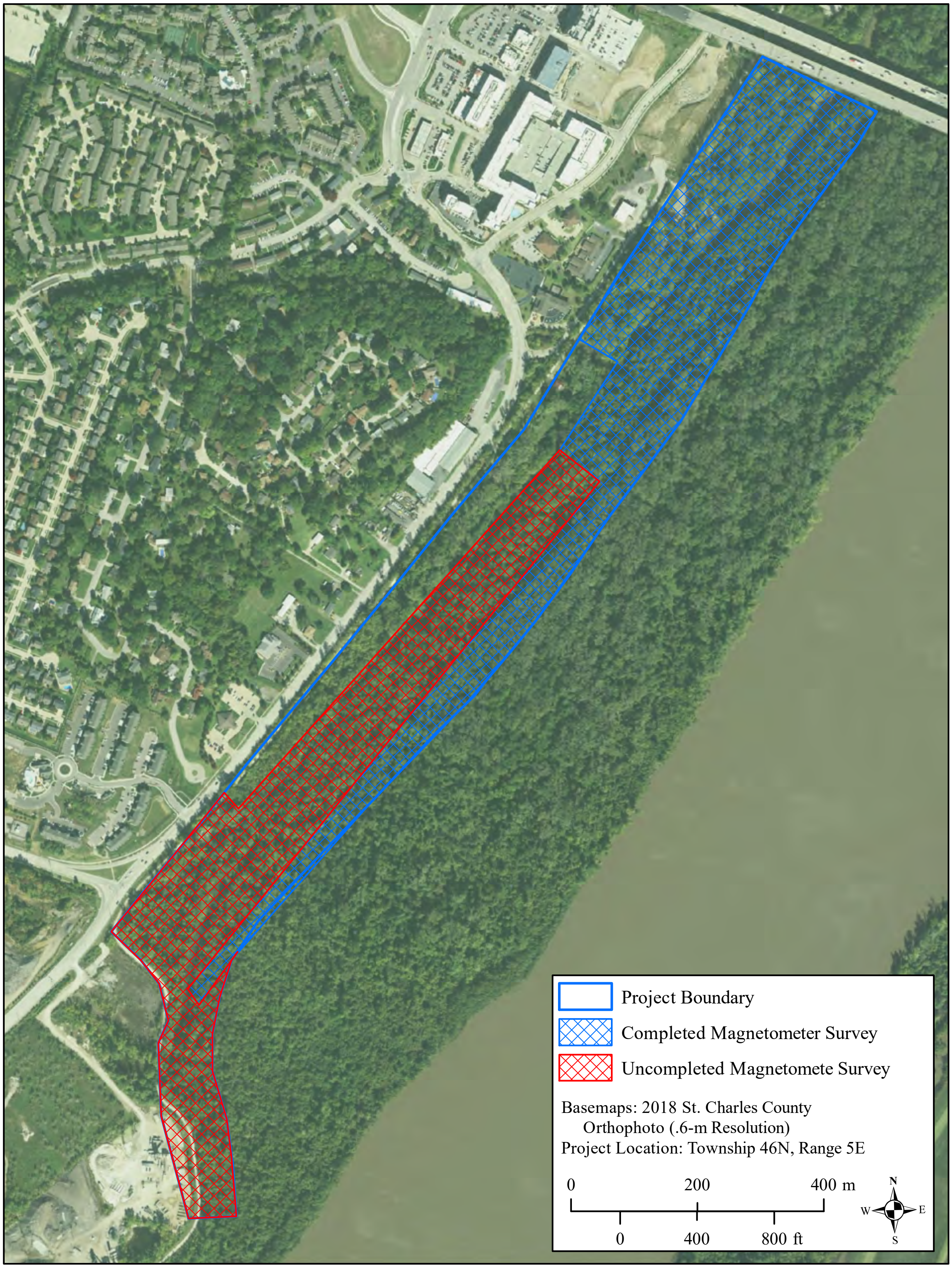

Figure 27. Aerial photo showing completed and uncompleted areas of the magnetometry survey.

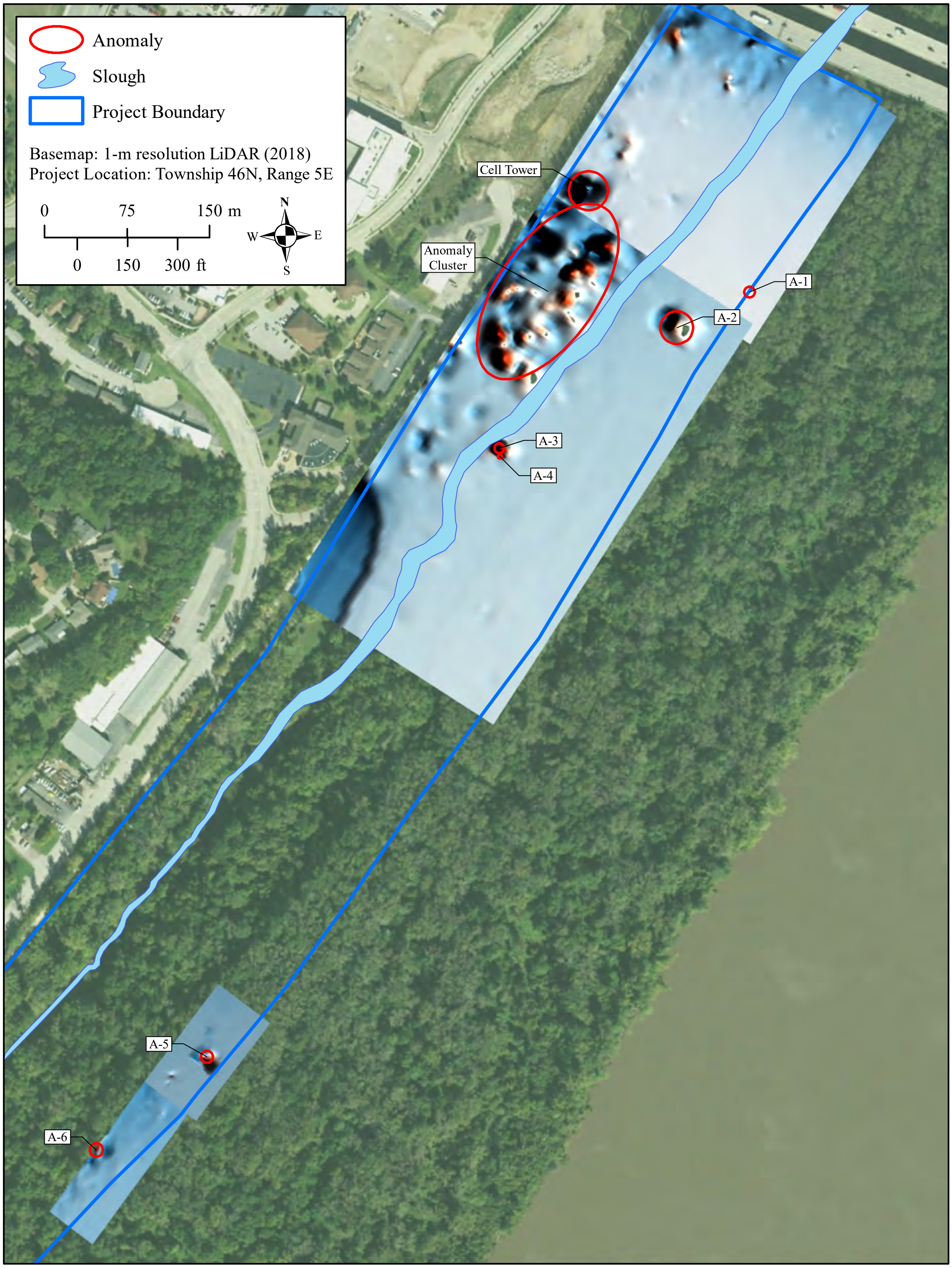

Figure 28. Aerial photo depicting magnetic anomalies detected during the survey of the APE.

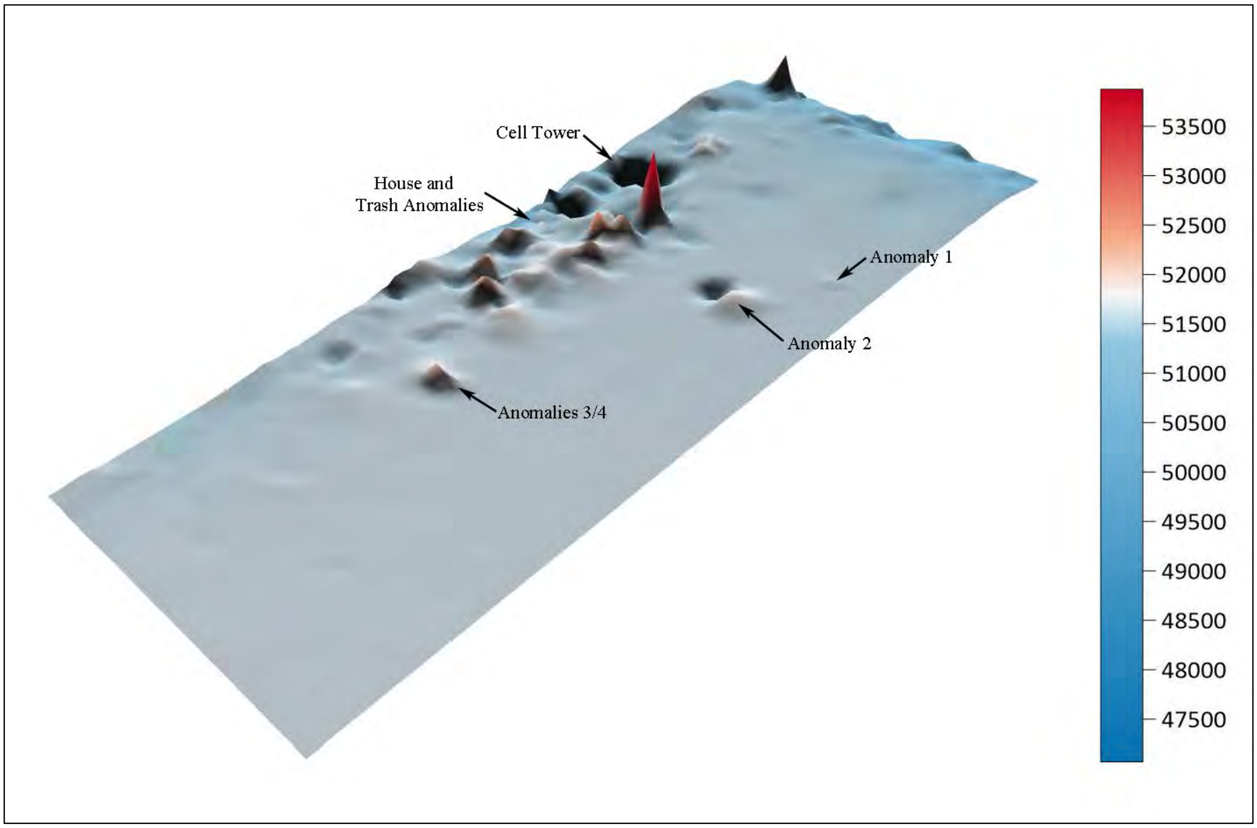

Figure 29. Three-dimensional depiction of anomalies at north end of the APE.

There are six remaining anomalies in the surveyed area east of the slough. Although, none of these anomalies appeared to have the expected attributes of a shipwreck, all six were analyzed so they could either be ruled out or be considered for further study. These anomalies are numbered 1–6 from north to south (see Figures 29–30).

Anomaly 1**:** Anomaly 1 is located along the eastern border of the project area approximately 200 m from the northeast end (Figure 28). It yielded a peak of 147 gammas (Figure 30), which does fall within the range expected for a buried shipwreck. However, the peak is only about 4 m in diameter. Using Peter's Half-Slope Method, the approximate depth of the anomaly is calculated to be 0.5 m below ground surface and the size of the anomaly is approximately 20 lbs.

Anomaly 2**:** Anomaly 2 is located in a swale in the north half of the project area (Figures 28–29). The anomaly has a peak of 2,900 gammas (Figure 31) with a diameter of 5 m. The distance to the anomaly is calculated to be approximately 1.25 m of the magnetometer or 0.5 m below ground surface with a weight of around 400 lbs.

Anomaly 3**:** This anomaly is located on the east bank of the slough in the north half of the project area (Figure 28–29). It consists of a peak of 2,860 gammas with a diameter of 4 m. It calculates to an object with a depth of approximately 0.25 m below ground surface and a weight of 138 lbs.

Anomaly 4**:** Anomaly 4 is located just a few meters south of Anomaly 3 near the slough (Figure 28). Like Anomaly 1, this anomaly is within the gamma range of a buried shipwreck with a peak of 125 gammas. However, the diameter of the anomaly is only 4.25 m and it is apparently about 0.5 m below ground surface with a weight of around 17 lbs.

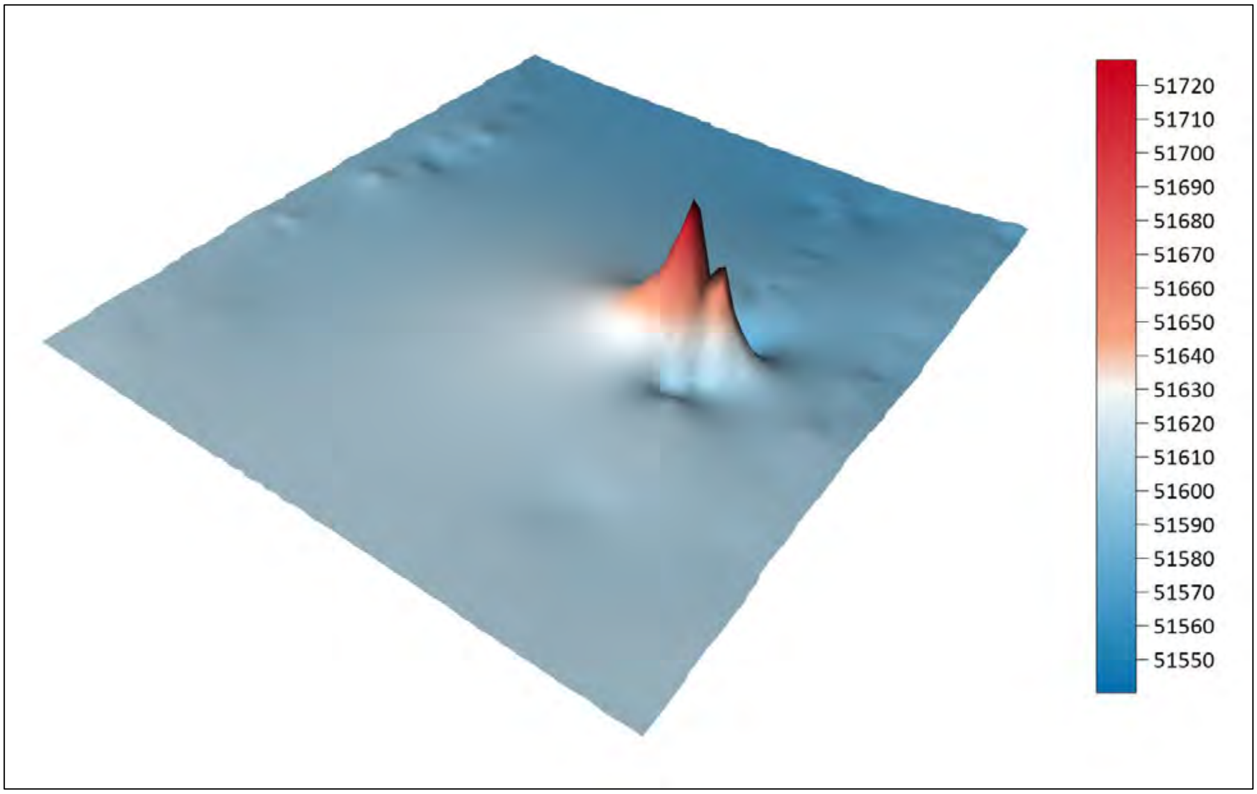

Figure 30. Three-dimensional surfer image of Anomaly 1.

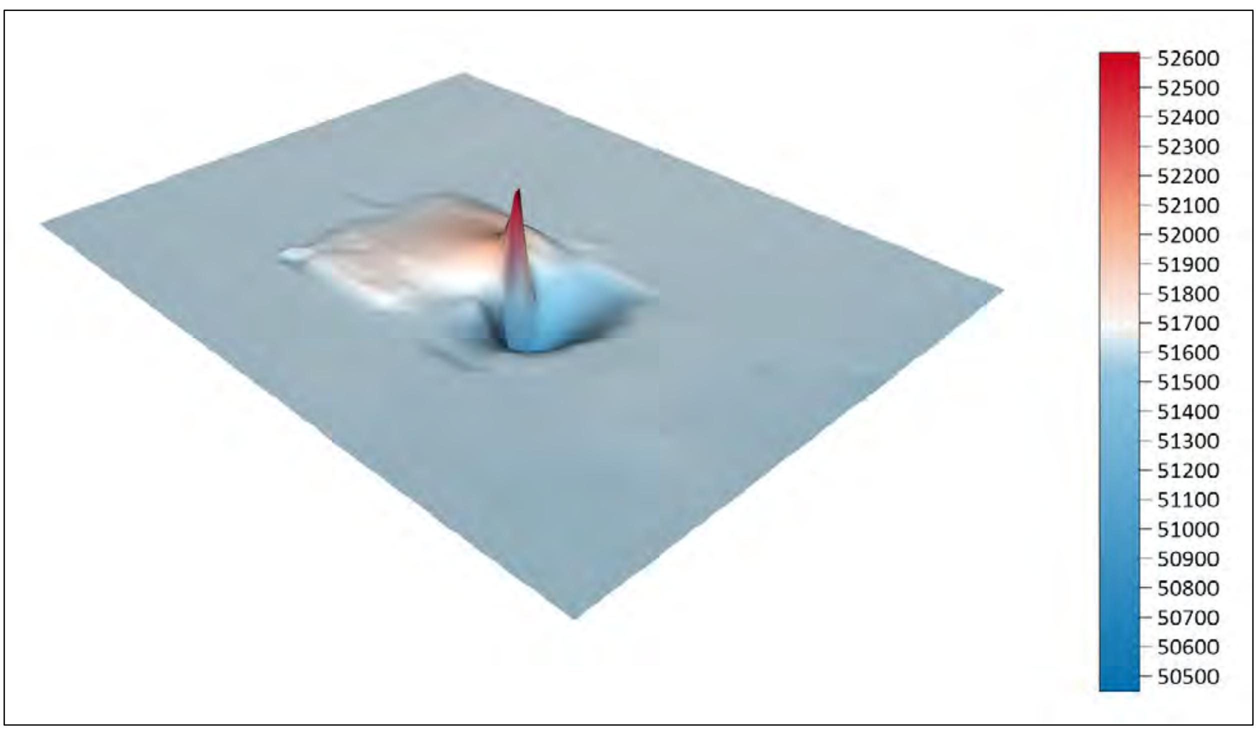

Figure 31. Three-dimensional surfer image of Anomaly 2.

***Anomaly 5*: ** Anomaly 5 is located on a ridge in the south half of the project area (Figure 28). This is another large spike with a peak of 1,100 gammas with a diameter of 6 m. That makes the object around 325 lbs at a depth of 0.85 m below ground surface.

***Anomaly 6*: ** The final anomaly is also located on a ridge in the south half of the project area, 120 m south-southwest of Anomaly 5 (Figure 28). It has a peak of 175 gammas, which is within the range expected for a buried shipwreck. However, the peak is only about 9 m in diameter. Using Peter's Half-Slope Method, the approximate depth of the anomaly is calculated to be 1.75 m below ground surface and the size of the anomaly is approximately 193 lbs.

Three of the six recorded anomalies had gamma spikes over 1,000. The spikes are indicative of relatively shallow iron objects. The remaining three anomalies were all within the gamma range (40–200) expected for a buried shipwreck. However, the diameter of an anomaly in this range needs to be between 20–40 m, which would indicate the buried object is at a sufficient depth to possibly represent a buried steamboat wreck. All of the detected anomalies were less than 10 m in diameter, meaning the magnetometer only began to detect the source within a few meters of passing over them. Although the calculated depths and weights of the anomalies are based on averages that can vary somewhat, it is clear that none of the anomalies represent large, deeply buried objects that could represent steamboat wrecks.

OTHER CONSIDERATIONS

Once the main channel of the Missouri River shifted to the left bank of the valley toward the end of the nineteenth century, the only remaining uneroded land within the project area would have been the linear apron of colluvial toeslope or terrace deposits bordering the western edge of the APE. The main channel remained in this location until at least 1954, based on a series of historic maps and aerials dating to 1921, 1928, 1937, 1940, 1946, and 1951, as well as its depicted location on the USGS St. Charles 7.5' Quadrangle (see Figure 9). By the time the photo-revised USGS quadrangle was prepared in 1968 and 1974, the Missouri River had moved eastward. This likely occurred during the late 1950s, but it had already begun by 1955 as an aerial photo from that year depicts (Figure 10).

In February, March, and early April of 2020, 20 borings and five test pits also were excavated in the APE. Figure 32 illustrates their location. Since the backhoe-excavated test pits only extended to 10 ft below surface (bs) and invariably ended in sands (n=3), sandy silt (n=1), and clayey silt, they are not very informative. However, it is notable that the profiles of those test pits illustrate relatively sharp boundaries with little or no welding between them, indicating very short-term and recent episodic deposition resulting from either ponding or swift current from floodwaters.

The depth of the borings ranged from 15.8 ft to 39 ft bs. Of the 20 borings, 14 were terminated upon encountering limestone bedrock or boulders. These consisted of B-1 (32 ft bs), B-4 (24.6 ft bs), B-5 (28 ft bs), B-6 (24.25 ft bs), B-8 (20.6 ft bs), B-9 (24 ft bs), B-11 (18.9 ft bs), B-12 (20.6 ft bs), B-13 (33.2 ft bs), C-1 (21 ft bs), C-2 (22.6 ft bs), C-3 (18.11 ft bs), C-4 (15.8 ft bs), and C-15 (17 ft bs). The two deepest borings (B-14 and B-15) extended to depths of 39 ft bs, but were terminated in sand. As is evident in Figure 32, both of the deepest borings were taken in the thalweg of the Missouri River by the early twentieth century, if not before. This would have been the deepest part of the river with the strongest current. If there ever was a shipwreck in the general vicinity, it would have surely washed away by the 1950s. Of the four other borings (B-2, B-3, B-7, and B-10) that did not encounter bedrock/boulders, all were stopped at 20 ft bs in fine to medium sand or silty sand, one of which had clay seams.

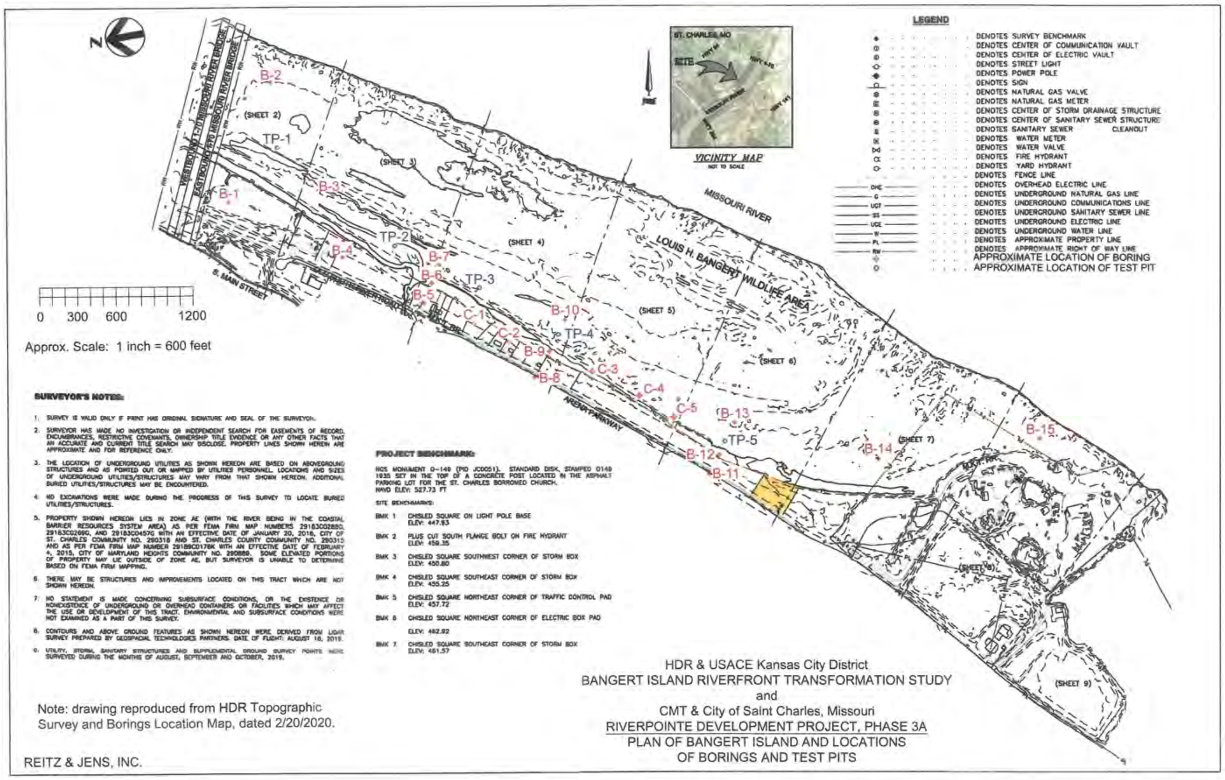

Figure 32. Plan map showing locations of borings (B- and C-) and test pits (TP-).

Due to the ridge-and-swale topography characterizing Bangert Island, it is noted that the depth-to-bedrock data found on the boring logs are not directly comparable. Table 3 was prepared to normalize the data somewhat and provide a better basis for evaluating conditions within and near the project area. The starting elevations of the 20 cores varied by 15 ft. To compensate for this, the depth of each core was subtracted from the core elevation to give the elevation of the bedrock at each core location. Cores in which bedrock was not reached provide a maximum elevation for bedrock. The buried bedrock surface appears to be very irregular, varying in elevation from 411.5 to 440.5 ft amsl, a difference of at least 29 ft. However, the bedrock is generally higher along the western edge of the island near the bluff line, and it becomes deeper closer to the current channel of the Missouri River.

It is evident that all of the strata in all 20 borings were deposited rapidly from floodwaters of variable mobility and/or force. That is, the major breaks in all of the strata illustrate rapid accretion and lack any stable soil development, except at the tops of the profiles or at/near the surface. The deeper borings—B-1, B-13, B-14, and B-15—contained 20–25 ft or more of silty sands and fine-to-coarse sands before encountering bedrock/boulders and being terminated in sand. This reflects deposition by still-rapidly moving water in the former channel of the Missouri River as it moved back eastward during the middle of the twentieth century.

CONCLUSIONS AND RECOMMENDATIONS

As for cultural resource management projects of this type, it is generally impossible to anticipate what may or may not be found in the absence of relatively intensive historical research.

Table 3. Summary of Boring Data from Bangert Island.

Bore No.	Date Drilled	Core Elevation	Total Depth (ft)	Termination Material	Elevation of Bedrock (ft amsl)
B-1	2/18/20	443.5	32	Bedrock/Boulder	411.5
B-2	3/17/20	445.0	20	Sand	below 425
B-3	3/17/20	440.5	20	Sand	below 440.5
B-4	2/18/20	446.5	20.5	Bedrock/Boulder	426
B-5	2/18/20	448.0	28	Bedrock/Boulder	420
B-6	4/1/20	440.0	24.25	Bedrock/Boulder	415.75
B-7	3/17/20	444.0	20	Sand	below 424
B-8	2/18/20	450.5	20.5	Bedrock/Boulder	430
B-9	3/17/20	439.0	24	Bedrock/Boulder	415
B-10	3/17/20	442.0	20	Sand	below 422
B-11	2/18/20	454.0	18.75	Bedrock/Boulder	435.25
B-12	4/2/20	443.0	20.5	Bedrock/Boulder	422.5
B-13	4/2/20	445.0	33.2	Bedrock/Boulder	411.8
B-14	4/2/20	445.0	39	Sand	below 406
B-15	4/2/20	451.0	39	Sand	below 412
C-1	2/18/20	445.0	21	Bedrock/Boulder	424
C-2	2/18/20	445.0	22.5	Bedrock/Boulder	422.5
C-3	4/1/20	439.0	18.9	Bedrock/Boulder	420.1
C-4	4/2/20	439.0	15.7	Bedrock/Boulder	423.3
C-5	4/2/20	439.0	17	Bedrock/Boulder	422

Such research generally cannot be undertaken prior to recommendations for Section 106 investigations. Furthermore, we are typically hampered by the reality that the reported locations of shipwrecks prepared by Chittenden (1897) and Trail (n.d) are only approximations, which requires remote sensing to determine if shipwrecks may be present in a particular project area. Chittenden in particular (but also Trail) did not have the kind of mapping and historical research tools, including access to a considerable volume of digital source material, that modern-day investigators have at our disposal. With this in mind, we have evaluated the likelihood that any shipwrecks may remain buried within the Bangert Island APE and might be subject to disturbance in the future.

Based on the partial magnetometer survey, the researched historic records of shipwrecks in the area, and the geomorphological history of Bangert Island, it appears to be extremely unlikely that any buried steamboat wrecks dating to the nineteenth century are located within the APE. It was our contention that additional magnetometer surveying within the APE would not be beneficial from a time and monetary standpoint, and that an interim report (Lopinot and Thompson 2020) and this report has sufficiently addressed the likelihood that buried steamboat wrecks are not located within the APE. However, a magnetometer survey cannot adequately detect the partial remains of shipwrecks that had salvaged engines and boilers, nor of flatboats and barges constructed with very little iron or other metals. Therefore, it is recommended that the proposed clearing of the former channel of the Missouri River on Bangert Island should be allowed to proceed as planned, provided that the following conditional stipulations are met.

1. If the current project boundaries change to include other previously unsurveyed areas that have a moderate to high probability for containing buried steamboat wrecks or other types of archaeological sites, additional archaeological investigations should be required.

2. If previously unrecorded buried cultural resources are encountered during project construction, the ground-disturbing activities must cease in the immediate area and the Kansas City USACE District Archaeologist and the Missouri SHPO must be notified immediately.

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Missouri Department of
NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

October 26, 2020

U.S. Army Corps of Engineers
Kansas City District,
Attn: Gina Powell
601 East 12th Street, RM 402
Kansas City, MO 64103

Re: **SHPO Project Number: 093-SC-20** – Riverpointe Public Infrastructure Project Bangert Island Flood Risk & Riverfront Transformation Project, St. Charles County, Missouri

Dear Ms. Powell:

Thank you for submitting information about the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

We have reviewed the report *A Shipwreck Magnetometer Survey on Bangert Island, St. Charles, Missouri*, by the Center for Archaeological Research, submitted to our office on August 25, 2020, concerning the above referenced project. Based on this review it is evident that a thorough and adequate cultural resources survey has been conducted of the proposed project area. We concur with your recommendation that there will be **no historic properties affected** for the area covered by the survey, and therefore, we have no objection to the initiation of project activities.

If project plans change, please send additional information documenting the revisions for further review. In the event that cultural materials are encountered during project activities, all construction should be halted, and this office notified as soon as possible in order to determine the appropriate course of action.

If you have any questions, please write to State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call Amy Rubingh (573) 751-4589. Please be sure to include the SHPO Log Number **(093-SC-20)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Toni M. Prawl

Toni M. Prawl, Ph.D.
Director and Deputy State
Historic Preservation Officer

CC: Ellen Hogrebe - Crawford, Murphy, and Tilly

Ellen Hogrebe

From: Rubingh, Amy <Amy.Rubingh@dnr.mo.gov>
Sent: Wednesday, November 4, 2020 10:30 AM
To: Ellen Hogrebe
Cc: Powell, Gina S CIV USARMY CENWK (US)
Subject: RE: 093-SC-20 Bangert Island Development

Hi Ellen,

I took a look at the new boundary for the project and I will be sending you a letter that we concur with a No Historic Properties Affected determination. If the project extends to the south for the portion of the project that is labeled as phase 2 on the original project maps then that will need to be resubmitted to my office for comment and since there are archaeological sites within that project area and the current condition of them is unknown, we would likely request a survey of the area.

If you have any questions let me know.

Thank you,
Amy Rubingh
Archaeologist/Records Management
Missouri SHPO
PO Box 176
Jefferson City, MO 65102
(573)751-4589

From: Ellen Hogrebe <ehogrebe@cmtengr.com>
Sent: Wednesday, October 28, 2020 9:42 AM
To: Rubingh, Amy <Amy.Rubingh@dnr.mo.gov>
Cc: Heather Lacey <hlacey@cmtengr.com>
Subject: RE: 093-SC-20 Bangert Island Development

Thank you Amy. I understand that the letter of comment applies only to areas within the magnetometer survey area. The original Section 106 coordination packet I submitted in July (attached) included a project study area that extended beyond the limits of the magnetometer survey. The development has since scaled back its project limits and is mostly covered by the magnetometer survey, with exception to areas along South River Road and Old South River Road. Will Mo SHPO be issuing a separate, or additional letter of comment for the additional areas outside the magnetometer survey area?

Thank you! Please let us know if you have any questions or need additional information,

ELLEN HOGREBE | Environmental Scientist
Crawford, Murphy & Tilly
w 314.571.9103 | m 419.350.1271

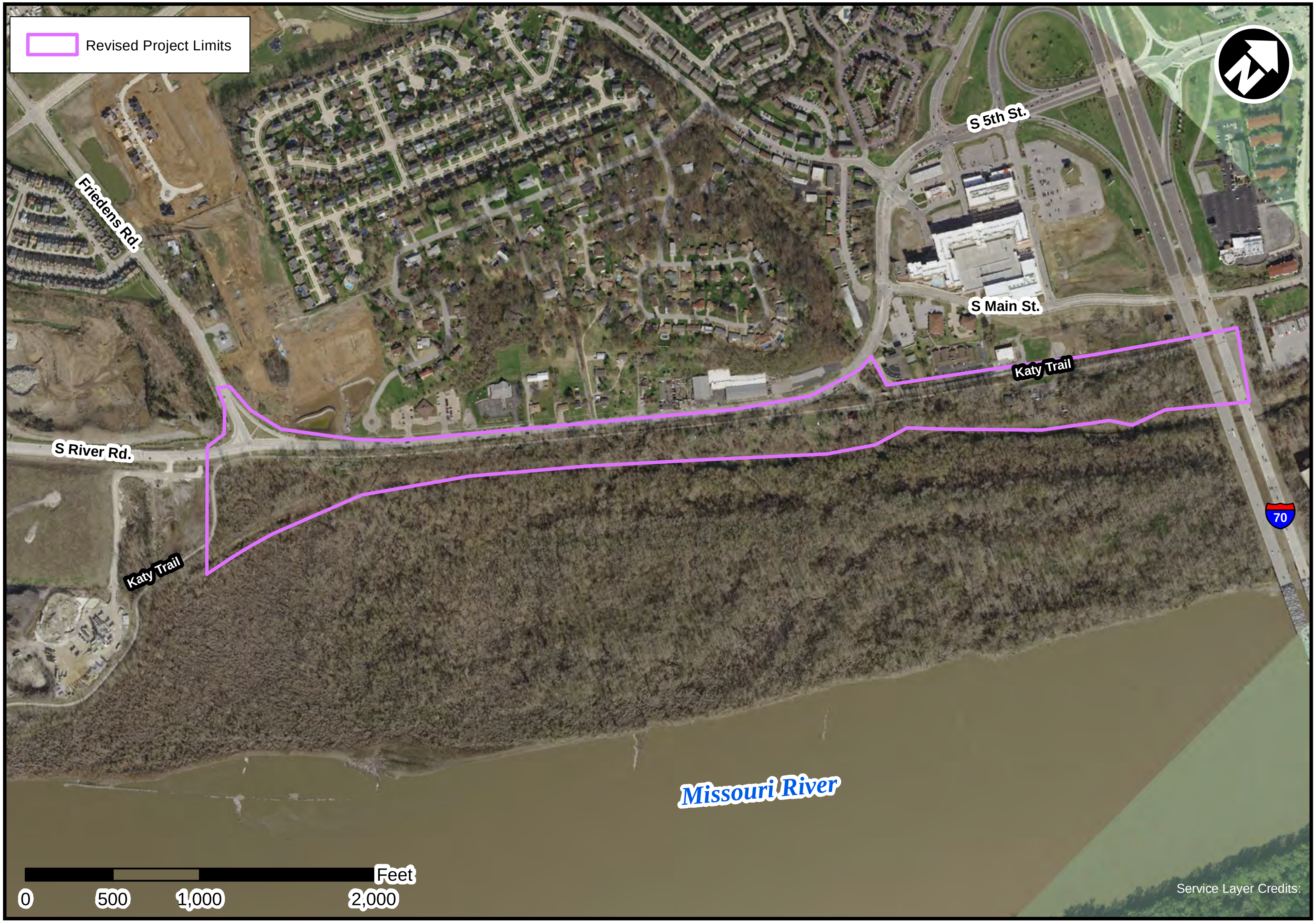
From: Rubingh, Amy <Amy.Rubingh@dnr.mo.gov>
Sent: Tuesday, October 27, 2020 10:59 AM
To: Powell, Gina S CIV USARMY CENWK (US) <Gina.S.Powell@usace.army.mil>; Ellen Hogrebe
<ehogrebe@cmtengr.com>
Subject: 093-SC-20 Bangert Island Development

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources. Our formal letter of comment is attached. Please retain a copy of this letter for your records as no physical copies will be mailed.

If you have any questions, please respond to Amy.rubingh@dnr.mo.gov or call 573/751-4589.

Best,

Amy Rubingh
Archaeologist/Records Management
Missouri SHPO
PO Box 176
Jefferson City, MO 65102
(573)751-4589



Riverpointe Public Infrastructure Project - St. Charles, St. Charles Co., MO

Aerial

CMT
Crawford, Murphy & Tilly

Ellen Hogrebe

From: Rubingh, Amy <Amy.Rubingh@dnr.mo.gov>
Sent: Friday, November 6, 2020 12:43 PM
To: Ellen Hogrebe
Cc: Powell, Gina S CIV USARMY CENWK (US)
Subject: 093-SC-20 Riverpointe Public Infrastructure project APE Revision
Attachments: 093SC20.pdf

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources. Our formal letter of comment is attached. Please retain a copy of this letter for your records as no physical copies will be mailed.

If you have any questions, please respond to Amy.rubingh@dnr.mo.gov or call 573/751-4589.

Best,

Amy Rubingh
Archaeologist/Records Management
Missouri SHPO
PO Box 176
Jefferson City, MO 65102
(573)751-4589

CULTURAL RESOURCE ASSESSMENT
Section 106 Review

CONTACT PERSON/ADDRESS:

Ellen Hogrebe
One Memorial Drive, Suite 500
St. Louis, MO 63102

C:

Gina Powell – USACE St. Louis

PROJECT:

Riverpointe Public Infrastructure Project – Project Area Revision

FEDERAL AGENCY:

USACE

COUNTY:

St. Charles

The State Historic Preservation Office has reviewed the information submitted on the above referenced project. Based on this review, we have made the following determination:

- [X] Adequate documentation has been provided as outlined in 36 CFR Section 800.11. After review of the initial submission, the project area has no known historic properties present and a low potential for the occurrence of cultural resources. We concur with a determination of **No Historic Properties Affected**.

- [ ] An adequate cultural resource survey of the project area has been previously conducted; therefore, SHPO concurs with your determination of **No Historic Properties Affected**.

- [ ] An adequate cultural resource survey has been conducted for this project titled, , by . Based on this survey and its negative findings, SHPO concurs with your determination of **No Historic Properties Affected.**

For the above checked reason, the State Historic Preservation Office has no objection to the initiation of project activities. PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK CHANGES, A BORROW AREA IS INCLUDED IN THE PROJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of compliance with Section 106 of the National Historic Preservation Act, as amended.

By: Toni M. Prawl **November 4, 2020**

Toni M. Prawl, Ph.D., Deputy State Historic Preservation Officer **Date**

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102
For additional information, please contact Amy Rubingh, (573) 751-4589.

Please be sure to refer to the project number: 093-SC-20

Riverpointe Public Infrastructure Project

APPENDIX D: ENDANGERED SPECIES DOCUMENTATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

In Reply Refer To: April 16, 2020
Consultation Code: 03E14000-2020-SLI-1940
Event Code: 03E14000-2020-E-04889
Project Name: Riverpointe Public Infrastructure Project

Subject: 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:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. N**ote that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, 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 information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Refer to the Midwest Region S7 Technical Assistance website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects: projects in developed areas, HUD, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Federally Listed Bat Species

Indiana bats, gray bats, and northern long-eared bats occur throughout Missouri and the information below may help in determining if your project may affect these species.

Gray bats - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. If your project will impact caves, mines, associated riparian areas, or will involve tree removal around these features particularly within stream corridors, riparian areas, or associated upland woodlots gray bats could be affected.

Indiana and northern long-eared bats - These species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags 5 inches diameter at breast height (dbh) for Indiana bat, and 3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory, white oak, cottonwood, and maple. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, Indiana bats or northern long-eared bats could be affected.

Examples of <u>unsuitable</u> habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas;
- Trees found in highly-developed urban areas (e.g., street trees, downtown areas);
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees; and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of "There are no listed species found within the vicinity of the project," then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project other than bats (see #3 below) then project proponents can conclude the proposed activities **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species through the S7 Technical Assistance website.

3. If IPac returns a result that one or more federally listed bat species (Indiana bat, northern long-eared bat, or gray bat) are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** these bat species **IF** one or more of the following activities are proposed:

a. Clearing or disturbing suitable roosting habitat, as defined above, at any time of year;
b. Any activity in or near the entrance to a cave or mine;
c. Mining, deep excavation, or underground work within 0.25 miles of a cave or mine;
d. Construction of one or more wind turbines; or
e. Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on listed bat species. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

If any of the above activities are proposed in areas where one or more bat species may be present, project proponents can conclude the proposed activities **may affect** one or more bat species. We recommend coordinating with the Service as early as possible during project planning. If your project will involve removal of over 5 acres of suitable forest or woodland habitat, we recommend you complete a Summer Habitat Assessment prior to contacting our office to expedite the consultation process. The Summer Habitat Assessment Form is available in Appendix A of the most recent version of the Range-wide Indiana Bat Summer Survey Guidelines.

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Next Steps

Should you determine that project activities **may affect** any federally listed species or trust resources described herein, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

If you have not already done so, please contact the Missouri Department of Conservation (Policy Coordination, P. O. Box 180, Jefferson City, MO 65102) for information concerning Missouri Natural Communities and Species of Conservation Concern.

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Karen Herrington

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

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:

Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
(573) 234-2132

Project Summary

Consultation Code: 03E14000-2020-SLI-1940

Event Code: 03E14000-2020-E-04889

Project Name: Riverpointe Public Infrastructure Project

Project Type: DEVELOPMENT

Project Description: St. Charles, St. Charles County, MO. Riverfront development.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.757345567255115N90.49712457615198W

Counties: St. Charles, MO

Endangered Species Act Species

There is a total of 5 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.

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* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Decurrent False Aster *Boltonia decurrens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7705	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- Palustrine

RIVERINE

- Riverine

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to
protect and manage the forest, fish, and
wildlife resources of the state and to
facilitate and provide opportunities for all citizens to
use, enjoy and learn about these resources.

Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act

There are records for species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this website is to provide information to federal, state and local agencies, organizations, municipalities, corporations and consultants regarding sensitive fish, wildlife, plants, natural communities and habitats to assist in planning, designing and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: Riverpointe Public Infrastructure Project #7356
User Project Number: 19043402-00
Project Description: The City of St. Charles is proposing a new, multi-phase riverfront development project along South River Road located south of Interstate 70 to the Family Arena within the City of St. Charles. The Missouri River is located adjacent to the project area and Crystal Springs Creek is located within the project area. (Lat 38.761279, Long -90.491744) The project consists of three phases of development along Bangert Island and the Missouri River. Phase 1 of the project consists of an approx. 22-acre mixed-use development located adjacent to I-70 and South Main Street. Phase 1 would also include a water-quality basin at the outflow of Crystal Springs Creek. Phase 2 of the project consists of an approx. 80-acre mixed-use and office space development near the Family Arena. Phase 3 of the project consists of an approx. 20-acre development along South River Road connecting Phases 1 and 2. The development will provide recreational, employment, entertainment, and retail opportunities along approximately 1.6 miles of riverfront.
Project Type: Residential, Commercial and Governmental Building Development
Contact Person: Ellen Hogrebe
Contact Information: ehogrebe@cmtengr.com or 3145719103

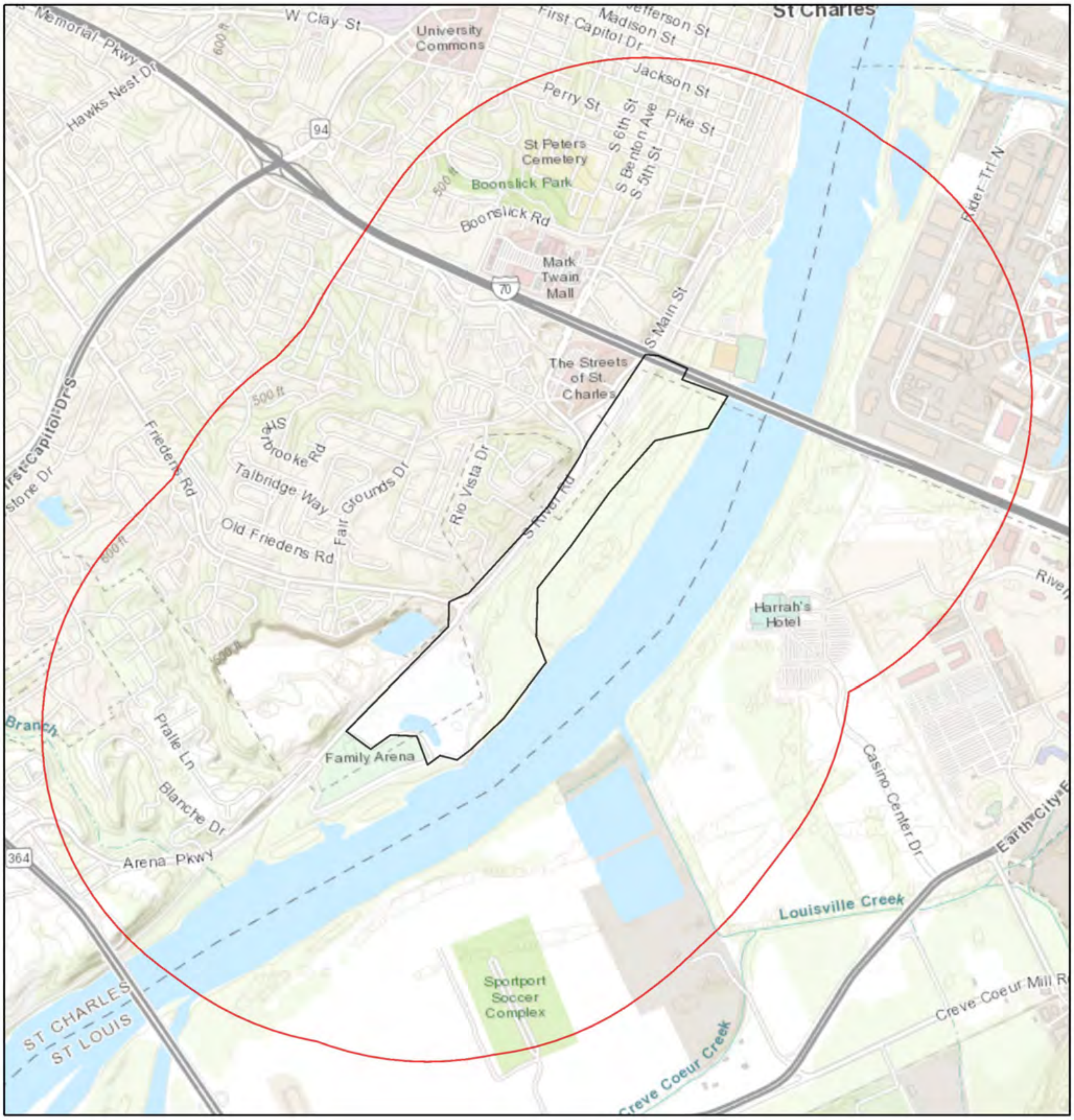
Disclaimer: The NATURAL HERITAGE REVIEW REPORT produced by this website identifies if a species tracked by the Natural Heritage Program is known to occur within or near the area submitted for your project, and shares suggested recommendations on ways to avoid or minimize project impacts to sensitive species or special habitats. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information. The Natural Heritage Program tracks occurrences of sensitive species and natural communities where the species or natural community has been found. Lack of an occurrence record does not mean that a sensitive plant, animal or natural community is not present on or near the project area. Depending on the project, current habitat conditions, and geographic location in the state, surveys may be necessary. Additionally, because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, Reports include information about records near but not necessarily on the project site.

<u>The Natural Heritage Report is not a site clearance letter for the project.</u> It provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from the Natural Heritage Program into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive fish, forest and wildlife resources. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. The information within this report is not intended to replace Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit the USFWS Information for Planning and Conservation (IPaC) website at https://ecos.fws.gov/ipac/ for further information. This site was developed to help streamline the USFWS environmental review process and is a first step in ESA coordination. The Columbia Missouri Ecological Field Services Office may be reached at 573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or www.modot.mo.gov/ehp/index.htm for additional information on recommendations.

Riverpointe Public Infrastructure Project



June 12, 2020

1:29,589

0	0.25	0.5		1 mi
0	0.4	0.8		1.6 km

- Project Boundary
- Buffered Project Boundary

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Species or Communities of Conservation Concern within the Area:

There are records for species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

MDC Natural Heritage Review
Resource Science Division
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182
NaturalHeritageReview@mdc.mo.gov

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Other Special Search Results:

The project occurs on or near public land, First Missouri State Capitol State Historic Site, please contact DNR.

Project Type Recommendations:

New construction, maintenance and remodeling, including government, commercial and residential buildings and other structures. Fish, forest, and wildlife impacts can be avoided by siting projects in locations that have already been disturbed or previously developed, where and when feasible, and by avoiding alteration of areas providing existing habitat, such as wetlands, streams, forest, native grassland, etc. The project should be managed to minimize erosion and sedimentation/runoff to nearby wetlands, streams and lakes, including adherence to any “Clean Water Act Permit” conditions. Project design should include stormwater management elements that assure storm discharge rates to streams for heavy rain events will not increase from present levels. Revegetate areas in which the natural cover is disturbed to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crownvetch and sericea lespedeza. Pollutants, including sediment, can have significant impacts far downstream. Use silt fences and/or vegetative filter strips to buffer streams and drainages, and monitor the site after rain events and until a well-rooted ground cover is reestablished.

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April. **If any trees need to be removed for your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

The project location submitted and evaluated is within the geographic range of nesting Bald Eagles in Missouri. Bald Eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. Adults begin nesting activity in late December and January and young birds leave the nest in late spring to early summer. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: http://www.fws.gov/midwest/MidwestBird/EaglePermits/index.html if eagle nests are seen.

The project location submitted and evaluated is within the known range of the Decurrent False Aster (*Boltonia decurrens*, federal-listed threatened and state-listed endangered) in Missouri. The plant may occur in your project area if suitable habitat conditions exist.   Decurrent False Aster is a big river floodplain species that grows in wetlands and on the borders of marshes, lakes, oxbows, and sloughs. It also may be found in old fields, roadsides, agricultural fields, and on levees. It favors sites characterized by moist soil and regular disturbance, preferably periodic flooding, which maintains open areas with high light levels. Today it is found in areas where succession is prevented and sunlight is allowed to reach the seedlings. It is a perennial plant that blooms from August through October. Visit http://mdc.mo.gov/discover-nature/field-guide/decurrent-false-aster for more information on this plant species.

The project location submitted and evaluated is within the range of the Gray Myotis (i.e., Gray Bat) in Missouri. Depending on habitat conditions of your project's location, Gray Myotis (*Myotis grisescens*, federal and state-listed endangered) could occur within the project area, as they forage over streams, rivers, lakes, and reservoirs. Avoid entry or disturbance of any cave inhabited by Gray Myotis and when possible retain forest vegetation along the stream and from the cave opening to the stream. See http://mdc.mo.gov/104 for best management recommendations.

The project location submitted and evaluated is located within or adjacent to the Mississippi or Missouri rivers. Pallid Sturgeons (*Scaphirhynchus albus*, federal- and state-listed endangered) are big river fish that range widely in the Mississippi and Missouri River system (including parts of some major tributaries). Any project that modifies big river habitat or impacts water quality should consider the possible impact to pallid sturgeon populations. See http://mdc.mo.gov/124 for Best Management Practices. Additional coordination with the U.S. Fish and Wildlife Service under the Endangered Species Act may be necessary (U.S. Fish and Wildlife Service, Ecological Services, 101 Park DeVille Drive, Suite A, Columbia, Missouri 65203-0007; phone 573-234-2132.)

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See http://mdc.mo.gov//9633 for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (?140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch.aspx) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (http://dnr.mo.gov/env/wpp/401/index.html), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit http://dnr.mo.gov/env/wpp/permits/index.html for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below.

MDC Natural Heritage Review
Resource Science Division
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182
NaturalHeritageReview@mdc.mo.gov

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

Additional information on Missouri's sensitive species may be found at http://mdc.mo.gov/discover-nature/field-guide/endangered-species . Detailed information about the animals and some plants mentioned may be accessed at http://mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx . If you would like printed copies of best management practices cited as internet URLs, please contact the Missouri Department of Conservation.

Missouri Department of Conservation

Natural Heritage Review Report

Resource Science Division
P. O. Box 180
Jefferson City, MO 65102
Prepared by: Jordan Meyer
NaturalHeritageReview@mdc.mo.gov
(573) 522 – 4115 ext. 3182

Ellen Hogrebe
Crawford, Murphy, & Tilly
Engineers & Consultants
One Memorial Drive, Suite 500
St. Louis, MO 63102
EHogrebe@cmtengr.com

Project type:	Land Development
Location/Scope:	T46N R05E S05, 08 Land Grants 150, 2982, 3280
County:	St. Charles
Query reference:	Riverpointe Public Infrastructure Project
Query received:	6/12/2020

This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed project. On-site verification is the responsibility of the project. Natural Heritage records were identified at some date and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed in order to avoid or minimize impacts. More information is at http://mdc.mo.gov/discover-nature/places-go/natural-areas and mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx.

Level 3 issues: Records of federal-listed (these are also state-listed) species or critical habitats near the project site:

Mississippi River: The Mississippi River (together with its tributary mouths) is home to a number of aquatic species of state and federal concern, including federal-listed Pallid Sturgeon, several mussel species in the pooled reaches upstream of the Missouri confluence, and Interior least terns in the lower Mississippi; and state-listed Lake Sturgeon, and Flathead Chubs. All these are sampled at points but must be assumed to be present in suitable habitats through extended river reaches. Bluffs, banks, and floodplains may also include habitat used by listed gray bats, Indiana bats and bald eagles.

- Terrestrial projects that manage construction and include operation plans to avoid runoff of sediment or pollutants are unlikely to affect the aquatic species.
- Regulations enforced by other agencies to protect water quality and human health are generally adequate to protect the needs of wildlife as well.
- Projects that place fill in or discharge water to the river are subject to federal permits, and strict observance of conditions required in those permits is important to minimize risk of damage to endangered species.
- See General Recommendations for additional information on ways to minimize impacts to aquatic resources.

Natural Heritage Records indicate Federal-listed Endangered Pallid Sturgeon (*Scaphirhynchus albus*) approximately 0.08 miles from the project area.

Pallid Sturgeon: Pallid Sturgeons (*Scaphirhynchus albus*, federal and state-listed endangered) are big river fish that range widely in the Mississippi and Missouri River system (including parts of major tributaries). Any project that modifies big river habitat or impacts water quality should consider the possible impact to Pallid Sturgeon populations. See https://mdc.mo.gov/sites/default/files/downloads/Pallid%20Sturgeon.pdf for Best Management Practices.

FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. Contact the U.S. Fish and Wildlife Service (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; 573-234-2132) for Endangered Species Act coordination and concurrence information).

Level 2 issues: Records of <u>state-listed</u> (not federal-listed) endangered species AND / OR <u>state-ranked</u> (not state-listed endangered) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines and/or apparent vulnerability.

Natural Heritage records indicate the following State-listed Endangered species near the project area: American Bittern (*Botaurus lentiginosus*) approximately 2.47 miles from the project area.

Scientific Name	Common Name	Proximity (miles)
Acipenser fulvescens	Lake Sturgeon	0.01
Botaurus lentiginosus	American Bittern	2.47
Platygobio gracilis	Flathead Chub	0.01

<u>Lake Sturgeon:</u> Lake Sturgeon (*Acipenser fulvescens*) are widely distributed in North America. In Missouri, they are found in the Mississippi and Missouri Rivers but have also been known to occur in the larger tributaries of those two rivers. Lake Sturgeon are listed as either threatened or endangered throughout most of its original range in the United States. Over-harvest appears to have been responsible for the greatest decline in abundance of the Lake Sturgeon. Pollution and restriction of migratory movements due to construction of dams have compounded the problems of over-exploitation. Best management for this species can be found at https://mdc.mo.gov/sites/default/files/downloads/9547.pdf .

<u>American Bitterns</u> (*Botaurus lentiginosus*) nest in permanent wetlands with tall, emergent vegetation such as bur-reed and bulrush. Breeding occurs between April and July. Protection and restoration of quality wetlands are important for many species, including the American Bittern. Project activities should not occur within 100 feet of wetland habitat between April 1 and July 31 to prevent disturbing nesting birds. Erosion and sediment controls should be implemented, maintained and monitored for the duration of the project. Disposal of wastes and garbage should be done in designated areas far from wetlands. Draining or destroying permanent, emergent wetland habitat should be avoided. See https://mdc.mo.gov/sites/default/files/downloads/AmericanBittern.pdf for best management practices regarding this species.

<u>Flathead Chub:</u> Flathead Chub's (*Platygobio gracilis,* State-listed Endangered), historical range included the entire length of the Missouri and Mississippi River to the Arkansas state line. Their habitat can vary from turbid waters in swift currents to clear pools and small creeks. See https://mdc.mo.gov/sites/default/files/downloads/Flathead%20Chub.pdf for Best Management Practices regarding this species.

Natural Heritage records indicate the following State-ranked species near the project area:

Scientific Name	Common Name	State Rank	Proximity (miles)
Carpiodes velifer	Highfin Carpsucker	S2	0.90
Echinodorus tenellus	Dwarf Burhead	S1	2.16
Hybognathus argyritis	Western Silvery Minnow	S2	0.16
Hybognathus placitus	Plains Minnow	S2	0.13
Macrhybopsis gelida	Sturgeon Chub	S3	0.01

Notropis buchanani	Ghost Shiner	S2	0.51
Paspalum setaceum var. setaceum	Slender Paspalum	S1	0.28
Percina shumardi	River Darter	S3	2.82
Schoenoplectiella saximontana	Rocky Mountain Bulrush	S1	0.44
Taxidea taxus	American Badger	S3	3.26

State Rank Definitions:

- S1: Critically imperiled in the state because of extreme rarity of or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically, 5 or fewer occurrence or very few remaining individuals.
- S2: Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. (6 to 20 occurrences or few remaining individuals).
- S3: Vulnerable in the state means this species is rare and uncommon, or found only in a restricted range (even if abundant in some locations), or because of other factors making it vulnerable to extirpation. Typically, 21 to 100 occurrences or between 3,000 and 10,000 individuals.
- S4: Uncommon but not rare, and usually widespread in the nation or state. Possibly of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.
- SU: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

There are no regulatory requirements associated with this status, but we encourage voluntary stewardship for all these species to minimize the risk of further decline that could lead to listing

See http://mdc.mo.gov/145 for a complete list of species and communities of conservation concern.

STATE ENDANGERED species are listed in and protected under the Wildlife Code of Missouri (3CSR10-4.111).

General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific Natural Heritage records):

- **Bald Eagles:** Bald Eagles (*Haliaeetus leucocephalus*) nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: https://www.fws.gov/midwest/eagle/permits/index.html if eagle nests are seen.

- **Decurrent False Aster:** Decurrent False Aster (*Boltonia decurrens*, federal-listed threatened and state-listed endangered) may occur in this area. Decurrent False Aster is a head floodplain species that grows in wetlands and on the borders of marshes, lakes, oxbows, and sloughs. It also may be found in old fields, roadsides, agricultural fields, and on levees. It favors sites characterized by moist soil and regular disturbance, preferably periodic flooding, which maintains open areas with high light levels. Today it is found in areas where succession is prevented, and sunlight is allowed to reach the seedlings. It is a perennial plant that blooms from August through October. Visit https://mdc.mo.gov/sites/default/files/downloads/Decurrent%20False%20Aster.pdf for more information on this plant species.

- **Gray Bats:** Gray Bats (*Myotis grisescens*, federal and state-listed endangered) occur in St. Charles County and could occur in the project area, as they forage over streams, rivers, and reservoirs. Avoid entry or disturbance of any cave inhabited by gray bats and when possible retain forest vegetation along the stream and from the gray bat cave opening to the stream.

- **Indiana Bats and Northern Long-eared Bats** occur in St. Charles County and could occur in the project area. Indiana Bats *(Myotis sodalis*, federal and state-listed endangered) and Northern Long-eared Bats (*Myotis septentrionalis,* federal-listed threatened) hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana Bats and/or Northern Long-eared Bats, especially from September to April. **If any trees need to be removed by your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

- Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.
  - Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
  - Drain water from boats and machinery that has operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
  - When possible, wash and rinse equipment thoroughly with hard spray or HOT water (≧140° F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

- **Karst:** St. Charles County has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural Heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area.

- **Land Development:** Construction should be managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any “Clean Water Act Permit” conditions (Missouri DNR or US Army Corps of Engineers). Project design should include stormwater management elements that assure storm discharge rates to streams for heavy rain events will not increase from present levels. Revegetate disturbed areas to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as Crown Vetch and *Sericea lespedeza*.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect sites visited by specialists in the last 30 years. Many privately owned tracts have not been surveyed and could host remnants of species once but no longer common.

Draft Report

Summer Acoustic Survey

For the Riverpointe Public Infrastructure Project

St. Charles County, Missouri

Prepared for:

Crawford, Murphy & Tilly

Prepared by:

July 2020

1 Acronyms and Abbreviations

ESA	Endangered Species Act
Kpro	Kaleidoscope Pro
USFWS	U.S. Fish and Wildlife Service

Executive Summary

The City of St. Charles is proposing the Riverpointe Public Infrastructure Project (Project), which will be located along the Missouri River in St. Charles County, Missouri. The Project will include mass grading, tree clearing, public sanitary and storm sewer relocations, and overhead electric adjustments. Because the Project is within the range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*M. septentrionalis*), disturbance of forested habitat associated with the Project area may result in impacts to summering populations of these species. Acoustic surveys were conducted in accordance with U.S. Fish and Wildlife Service protocols to determine the presence or potential absence of Indiana and/or northern long-eared bats within the Project area.

A total of five acoustic sites were surveyed from 23 to 25 June 2020. Survey efforts consisted of four detectors deployed for two nights (one detector was moved to a new site after one night), for a total of eight detector nights. Bat calls were analyzed using a software program approved by the U.S. Fish and Wildlife Service: Kaleidoscope Pro (KPro) Version 5.1.1. The only Federally listed bat calls identified by KPro were from gray bats (*M. grisescens*). Calls identified as gray bats by KPro were manually verified. No Indiana or northern long-eared bat calls were recorded.

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Table of Contents

Appendices

Figures

Tables

1. Introduction

The City of St. Charles is proposing the Riverpointe Public Infrastructure Project (Project), which will be located along the Missouri River. The Project will include mass grading, tree clearing (115 acres), public sanitary and storm sewer relocations, and overhead electric adjustments.

Pursuant to Section 7(a)(2) and Section 9 of the Endangered Species Act (ESA), clearing forested land may impact summering populations of the Indiana (*Myotis sodalis*) and northern long-eared bats (*M. septentrionalis*). Acoustic surveys were conducted to determine the presence or probable absence of Indiana and/or northern long-eared bats within or near the Project Area. The ESA was codified as law in 1973. This law provides for the listing, conservation, and recovery of threatened and endangered plants and wildlife. The U.S. Fish and Wildlife Service (USFWS) monitors and protects species listed under the ESA.

Acoustic surveys were conducted in accordance with USFWS protocols (USFWS 2020) and a USFWS Columbia Field Office-approved Study Plan (**Appendix C**).

2. Project Location and Description

The Project is located adjacent to the Missouri River, in St. Charles County Missouri, near the confluence of the Mississippi and Missouri Rivers (**Figure 1**). The Project site is in the west half of Section 7 and the east half of Section 8, Township 46 North, Range 5 East at River Mile (RM) 31.1 to RM 29.0 on the left descending bank of the Missouri River. Located north of the Project area is the City's historic Main Street and Ameristar Casino and Hotel Complex, just west lies the Streets of Saint Charles Development, and the southern end the Project area is bounded by the Family Arena.

The Project area includes Bangert Island. Bangert Island was once an island separated from the bluff at Saint Charles by a side channel. However, river channel structures built on the Missouri River in the 1930s and 1940s have gradually silted in the channel separating Bangert Island from the shoreline. The deposition choked the original side channel entrance at the Missouri River to the point of closure by 1980 and effectively reattached Bangert Island to the bluff.

Bangert Island is considered a wetland according to the USFWS National Wetland Inventory (NWI) mapping. NWI wetlands are primarily freshwater forested/shrub wetland temporarily flooded. The remainder of the island is freshwater forested/shrub wetland seasonally flooded. Vegetation throughout the Project area is comprised primarily of bottomland hardwood forest, which includes cottonwood (*Populus deltoides*), silver maple (*Acer sachhirinum*), box elder (*Acer negundo*), black willow (*Salis nigra*), and sycamore (*Platanus occidentalis*).

N

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MILES

LEGEND

STUDY AREA

PROJECT LOCATION

RIVERPOINTE BAT SURVEYS

ST CHARLES, MISSOURI

JULY 2020

FIGURE 1

Crawford, Murphy & Tilly

PATH: J:\2020\20-046_RIVERPOINTE_BAT_SURVEYS_(HINES)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\RIVERPOINTE_BATS_GENLOC_8X11.MXD - USER: ASTOUT - DATE: 7/13/2020

Bangert Island, purchased by St. Charles County from the Missouri Department of Conservation in 2014, is currently being utilized as a park/recreation area. Within the park, there are approximately four miles of natural surfaced trails utilized for hiking, biking, bird watching, etc. The remainder of the land is maintained as a natural area comprised of habitats that primarily consist of bottomland hardwood forest. The Katy Trail is located adjacent to the northwest boundary of the Project. Immediately southwest of Bangert Island is an active quarry site owned by LaFarge Aggregates, and southwest of that is the Family Arena. Along the western edge of the Project area is a mixture of residential, industrial, and commercial properties. To the north of Bangert Island is Interstate-70 (I-70) and the Ameristar Casino.

3. Methods

Based on desktop analysis and study plan approval from the USFWS Columbia Field Office, it was determined that four acoustic sites (eight detector nights) would serve as a sufficient level of effort for the Project. Based on field reconnaissance, three sites were sampled for two nights and sampling was conducted for one night at two different sites to maximize coverage of the Project area.

3.1 Acoustic Site Selection

HDR biologists conducted reconnaissance of the Project area to select appropriate detector sites prior to deploying acoustic monitoring equipment. Acoustic survey site requirements include, but not are not limited to forest canopy openings, water sources, wooded fence lines that are adjacent to large openings or connect two larger blocks of suitable habitat, blocks of recently logged forest where some potential roost trees remain, road and/or stream corridors with open tree canopies or canopy height of more than 33 feet (10 meters), and woodland edges (Britzke et al. 2010, USFWS 2020).

Five acoustic sampling sites were selected based on criteria set forth in the 2020 *USFWS Range-Wide Indiana Bat Survey Guidelines* (USFWS 2020) and an expectation that the site would be used by bats and yield high quality search phase calls. Surveys were conducted from 23 to 25 June 2020. Survey effort consisted of five detectors set out for two nights, for a total of eight detector nights. **Figure 2** shows detector locations; **Appendix A** contains acoustic data sheets and site photographs; and **Appendix B** contains a detailed table of acoustic results.

3.2 Acoustic Surveys

Bat calls collected during the acoustic surveys were analyzed using Kaleidoscope Pro Version 5.1.1. (KPro). For KPro, the appropriate regional bat species were included in the analysis (i.e., Species Set for Missouri) and then the species list was fine-tuned for the region. Call files identified by the software program as Indiana or northern long-eared bats, as well as the entire night's call data from those sites, were qualitatively reviewed by HDR biologist John Timpone.

Weather conditions were recorded during the survey to ensure compliance with USFWS survey guidelines (USFWS 2020). Weather data included temperature, wind speed, cloud cover, precipitation, and moon phase.

4. Results

4.1 Acoustic Sites

The acoustic survey consisted of five sites (**Table 1**). The detector from Site #D2 was moved to Site #D5 for the second sampling night to survey more of the project area. **Appendix A** contains a habitat descriptions of the sites and photographs of the detectors.

Table 1. Riverpointe Public Infrastructure Project Acoustic Survey Locations

Detector Site Number	Latitude	Longitude	Survey Night (2020)
#D1	38.759406	-90.498076	June 23 and 24
#D2	38.758801	-90.489695	June 23
#D3	38.755768	-90.498274	June 23 and 24
#D4	38.762663	-90.491906	June 23 and 24
#D5	38.757861	-90.496941	June 24

4.2 Acoustic Survey

Ten species were identified by KPro as potentially being present: big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), evening bat (*Nycticeius humeralis*), gray bat (*Myotis grisescens*), little brown bat (*M. lucifugus*), Indiana bat, northern long-eared bat, and eastern pipistrelle (*Perimyotis subflavus*). However, of these ten species, only the big brown bat, red bat, hoary bat, evening bat, and gray bat were manually verified as being present. KPro identified a single call from both the Indiana bat and northern long-eared bat. The MLE p-values for these two species were 0.247 and 0.053, respectively, and do not meet the p-value threshold ($P<0.05$) set by the USFWS (2020). These calls were therefore discounted.

Acoustic data did provide evidence that federally listed gray bats are active within the Project area.

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FEET

LEGEND

BAT DETECTOR LOCATION

STUDY AREA

CMT Crawford, Murphy & Tilly

HDR

DETECTOR LOCATIONS

RIVERPOINTE BAT SURVEYS

ST CHARLES, MISSOURI

JULY 2020

FIGURE 2

PATH: J:\2020\20-046_RIVERPOINTE_BAT_SURVEYS_(HINES)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\RIVERPOINTE_BATS_DETECTORS_8X11.MXD - USER: ASTOUT - DATE: 7/13/2020

5. Conclusions

From June 23 – June 25 2019, Indiana and northern long-eared bat acoustic surveys were conducted in the Project area located on Bangert Island, St. Charles County, Missouri. No Indiana bats or northern long-eared bats were recorded during surveys. Acoustic data did provide evidence that federally listed gray bats are active within the project corridor. The gray bat is considered a cave obligate (e.g., roosting in caves during year-round). There are no caves in the project corridor although suitable foraging habitat is present.

6. Literature Cited

Britzke, E.R., B.A. Slack, M.P. Armstrong, and S.C. Loeb. 2010. Effects of orientation and weatherproofing on the detection of bat echolocation calls. Journal of Fish and Wildlife Management 1(2):136-141.

U.S. Fish and Wildlife Service. 20120. Range-Wide Indiana Bat Summer Guidelines. Accessed June 9, 2020 at: https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html

A

Acoustic Survey / Habitat Data Sheets and Photographs

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2020 ACOUSTIC SURVEY SITE DATA SHEET

PROJECT/SITE INFORMATION			
DEPLOYER: John Timpone (JCT)		**SITE SELECTOR:** John Timpone (JCT)	
PROJECT: Riverpoint Development	**SITE: 1** -Bangert Island	**SURVEY DATE(S):**	6/23 – 6/24 -2020
LATITUDE: 38.759406	**LONGITUDE:** -90.498076	**STATE:** MO	**COUNTY:** St. Charles
Start Recording: 2000 h	**End Recording:** 0600 h	**Total Recording Time:** 10 h	**Photos:** Attached – Page 2

NOAA WEATHER SERVICE STATION DATA								
Moon Phase:	**New**	**Waxing Crescent**	**First Quarter**	**Waxing Gibbous**	**Full**	**Waning Gibbous**	**Third Quarter**	**Waning Crescent**

Air Temp C°:		**Wind Speed (mph):**		**Precipitation:**	**Weather Comments:**
	6/23– 80° at 2000 6/24 – 87° at 2000		6/23 – 5 mph at 2000 6/24 – 3 mph at 2000	None	Clear to partly cloudy.
	6/24– 65° at 0600 6/25 – 70° at 0600		6/24 – 3 mph at 0600 6/25– 6 mph at 0600		

DETECTOR DATA				
Detector Brand/Model: SM4BAT FS	**Microphone Brand/Model (circle):** SMMU2	**Directional**	**Hemispherical**	**Omnidirectional**

Weatherproofing? No	**SENSITIVITY:** NA	**SAMPLE RATE (MIN/MAX):**	**256dB**	**Data Division Ratio:**			**Audio Division Ratio:**		
	Functioning (Finger Rubs): Yes	**Trigger Level**	12dB	16	8	4	16	8	4
		Trigger Frequency	10kHz						

Gain:	**Mic Height (m):**	**Distance from Nearest Vegetation or other Obstruction (m)(apart from veg. on ground):**	**Horizontal Orientation of Mic (1-360°):**	**Vertical Orientation of Mic (0° = horizon):**	**Calls collected in:**
16dB	3m	5m	90°	0°	Full Spectrum

2020 ACOUSTIC SURVEY SITE DATA SHEET

HABITAT DATA

Dominant Canopy Species:

1. Silver maple (*Acer saccharinum*)
2. Cottonwood (*Populus deltoides*)
3. Green ash (*Fraxinus pennsylvanicum*)

Subdominant Canopy Species:

1. Box elder (*Acer negundo*)
2. Silver maple (*Acer saccharinum*)

Recently Logged Forest	
Crop/Pasture Land	
Shrub/Scrub Swamp	
Young Upland Forest	
Pine Plantation	
Stream/River	
Vernal Pool	
Mature Lowland Forest	X
Forest Edge	
Emergent Wetland	
Deepwater Lake/Pond	
Young Lowland Forest	
Old Field	
Forest Swamp	X
Other	

Site Description:

Detector deployed in Bangert Island Conservation Area in open area under bottomland forest canopy. Area was frequently flooded as no herbaceous vegetation was present.

2020 ACOUSTIC SURVEY SITE DATA SHEET

PROJECT/SITE INFORMATION			
DEPLOYER: John Timpone (JCT)		**SITE SELECTOR:** John Timpone (JCT)	
PROJECT: Riverpoint Development	**SITE: 2** west bank of MO River	**SURVEY DATE(S):**	6/23 – 2020
LATITUDE: 38.758801	**LONGITUDE:** -90.489695	**STATE:** MO	**COUNTY:** St. Charles
Start Recording: 2000 h	**End Recording:** 0600 h	**Total Recording Time:** 10 h	**Photos:** Attached – Page 2

NOAA WEATHER SERVICE STATION DATA								
Moon Phase:	**New**	**Waxing Crescent**	**First Quarter**	**Waxing Gibbous**	**Full**	**Waning Gibbous**	**Third Quarter**	**Waning Crescent**

Air Temp C°:	6/23– 80° at 2000	**Wind Speed (mph):**	6/23 – 5 mph at 2000	**Precipitation:** None	**Weather Comments:** Clear to partly cloudy.
	6/24– 65° at 0600		6/24 – 3 mph at 0600		

DETECTOR DATA				
Detector Brand/Model: SM4BAT FS	**Microphone Brand/Model (circle):** SMMU2	**Directional**	**Hemispherical**	**Omnidirectional**

Weatherproofing? No	**SENSITIVITY:** NA	**SAMPLE RATE (MIN/MAX):**	256dB	**Data Division Ratio:**			**Audio Division Ratio:**		
	Functioning (Finger Rubs): Yes	**Trigger Level**	12dB	16	8	4	16	8	4
		Trigger Frequency	10kHz						

Gain:	**Mic Height (m):**	**Distance from Nearest Vegetation or other Obstruction (m)(apart from veg. on ground):**	**Horizontal Orientation of Mic (1-360°):**	**Vertical Orientation of Mic (0° = horizon):**	**Calls collected in:**
16dB	3m	3m	90°	0°	Full Spectrum

2020 ACOUSTIC SURVEY SITE DATA SHEET

HABITAT DATA

Dominant Canopy Species:	**Subdominant Canopy Species:**
1. Silver maple (*Acer saccharinum*) 2. Cottonwood (*Populus deltoides*)	1. Box elder (*Acer negundo*) 2. Silver maple (*Acer saccharinum*) 3. White mulberry (*Morus alba*)

Recently Logged Forest	
Crop/Pasture Land	
Shrub/Scrub Swamp	
Young Upland Forest	
Pine Plantation	
Stream/River	X
Vernal Pool	
Mature Lowland Forest	
Forest Edge	
Emergent Wetland	
Deepwater Lake/Pond	
Young Lowland Forest	
Old Field	
Forest Swamp	
Other	

Site Description:

Detector deployed in Bangert Island Conservation Area on west bank of Missouri River facing north.

2020 ACOUSTIC SURVEY SITE DATA SHEET

PROJECT/SITE INFORMATION									
DEPLOYER: John Timpone (JCT)					**SITE SELECTOR:** John Timpone (JCT)				
PROJECT: Riverpoint Development		**SITE: 3** Bangert Island – trail opening			**SURVEY DATE(S):**	6/23 – 6/24 -2020			
LATITUDE: 38.755768		**LONGITUDE:** -90.498274			**STATE:**	MO	**COUNTY:**	St. Charles	
Start Recording: 2000 h	**End Recording:** 0600 h		**Total Recording Time:** 10 h		**Photos:** Attached – Page 2				
NOAA WEATHER SERVICE STATION DATA									
Moon Phase:	**New**	**Waxing Crescent**	**First Quarter**	**Waxing Gibbous**	**Full**	**Waning Gibbous**	**Third Quarter**	**Waning Crescent**	
Air Temp C°:	6/23– 80° at 2000 6/24 – 87° at 2000 6/24– 65° at 0600 6/25 – 70° at 0600	**Wind Speed (mph):**	6/23 – 5 mph at 2000 6/24 – 3 mph at 2000 6/24 – 3 mph at 0600 6/25– 6 mph at 0600	**Precipitation:** None	**Weather Comments:** Clear to partly cloudy.				
DETECTOR DATA									
Detector Brand/Model: SM4BAT Mini		**Microphone Brand/Model (circle):** built in ultrasonic mic		**Directional**		**Hemispherical**		**Omnidirectional**	
Weatherproofing? No	**SENSITIVITY:** NA	**SAMPLE RATE (MIN/MAX):**	**256dB**		**Data Division Ratio:**			**Audio Division Ratio:**	
	Functioning (Finger Rubs): Yes	**Trigger Level**	12dB		16	8	4	16	8	4
		Trigger Frequency	10kHz						
Gain: 16dB	**Mic Height (m):** 3m	**Distance from Nearest Vegetation or other Obstruction (m)(apart from veg. on ground):** 2m		**Horizontal Orientation of Mic (1-360°):** 90°		**Vertical Orientation of Mic (0° = horizon):** 0°		**Calls collected in:** Full Spectrum	

2020 ACOUSTIC SURVEY SITE DATA SHEET

HABITAT DATA

Dominant Canopy Species:

1. Black willow (*Salix nigra*)
2. Cottonwood (*Populus deltoides*)

Subdominant Canopy Species:

1. Box elder (*Acer negundo*)
2. American elm (*Ulmus americana*)

Recently Logged Forest	
Crop/Pasture Land	
Shrub/Scrub Swamp	
Young Upland Forest	
Pine Plantation	
Stream/River	
Vernal Pool	
Mature Lowland Forest	X
Forest Edge	
Emergent Wetland	
Deepwater Lake/Pond	
Young Lowland Forest	
Old Field	
Forest Swamp	
Other	

Site Description:

Detector deployed in Bangert Island Conservation Area on hiking trail where there is an opening in the forest canopy.

2020 ACOUSTIC SURVEY SITE DATA SHEET

PROJECT/SITE INFORMATION				
DEPLOYER: John Timpone (JCT)		**SITE SELECTOR:** John Timpone (JCT)		
PROJECT: Riverpoint Development	**SITE: 4** Bangert Island – creek	**SURVEY DATE(S):**	6/23 – 6/24 -2020	
LATITUDE: 38.762663	**LONGITUDE:** -90.491906	**STATE:** MO	**COUNTY:**	St. Charles
Start Recording: 2000 h	**End Recording:** 0600 h	**Total Recording Time:** 10 h	**Photos:** Attached – Page 2	

NOAA WEATHER SERVICE STATION DATA								
Moon Phase:	**New**	**Waxing Crescent**	**First Quarter**	**Waxing Gibbous**	**Full**	**Waning Gibbous**	**Third Quarter**	**Waning Crescent**

Air Temp C°:		**Wind Speed (mph):**		**Precipitation:**	**Weather Comments:**
	6/23– 80° at 2000 6/24 – 87° at 2000		6/23 – 5 mph at 2000 6/24 – 3 mph at 2000	None	Clear to partly cloudy.
	6/24– 65° at 0600 6/25 – 70° at 0600		6/24 – 3 mph at 0600 6/25– 6 mph at 0600		

DETECTOR DATA				
Detector Brand/Model: SM4BAT FS	**Microphone Brand/Model (circle):** SMMU2	**Directional**	**Hemispherical**	**Omnidirectional**

Weatherproofing? No	**SENSITIVITY:** NA	**SAMPLE RATE (MIN/MAX):**	**256dB**	**Data Division Ratio:**			**Audio Division Ratio:**		
	Functioning (Finger Rubs): Yes	**Trigger Level**	12dB	16	8	4	16	8	4
		Trigger Frequency	10kHz						

Gain:	**Mic Height (m):**	**Distance from Nearest Vegetation or other Obstruction (m)(apart from veg. on ground):**	**Horizontal Orientation of Mic (1-360°):**	**Vertical Orientation of Mic (0° = horizon):**	**Calls collected in:**
16dB	3m	2m	90°	0°	Full Spectrum

2020 ACOUSTIC SURVEY SITE DATA SHEET

HABITAT DATA

Dominant Canopy Species:	**Subdominant Canopy Species:**
1. Box elder (*Acer negundo*) 2. Cottonwood (*Populus deltoides*)	1. Box elder (*Acer negundo*) 2. Silver maple (*Acer saccharinum*)

Recently Logged Forest	
Crop/Pasture Land	
Shrub/Scrub Swamp	
Young Upland Forest	
Pine Plantation	
Stream/River	X
Vernal Pool	
Mature Lowland Forest	X
Forest Edge	X
Emergent Wetland	
Deepwater Lake/Pond	
Young Lowland Forest	
Old Field	
Forest Swamp	
Other	

Site Description:

Detector deployed in Bangert Island Conservation Area on creek/slough.

2020 ACOUSTIC SURVEY SITE DATA SHEET

PROJECT/SITE INFORMATION			
DEPLOYER: John Timpone (JCT)		**SITE SELECTOR:** John Timpone (JCT)	
PROJECT: Riverpoint Development	**SITE: 5** Bangert Island – slough	**SURVEY DATE(S):**	6/24 -2020
LATITUDE: 38.757861	**LONGITUDE:** -90.496941	**STATE:** MO	**COUNTY:** St. Charles
Start Recording: 2000 h	**End Recording:** 0600 h	**Total Recording Time:** 10 h	**Photos:** Attached – Page 2

NOAA WEATHER SERVICE STATION DATA								
Moon Phase:	**New**	**Waxing Crescent**	**First Quarter**	**Waxing Gibbous**	**Full**	**Waning Gibbous**	**Third Quarter**	**Waning Crescent**

Air Temp C°:		**Wind Speed (mph):**		**Precipitation:**	**Weather Comments:**
	6/24 – 87° at 2000		6/24 – 3 mph at 2000	None	Clear to partly cloudy.
	6/25 – 70° at 0600		6/25– 6 mph at 0600		

DETECTOR DATA				
Detector Brand/Model: SM4BAT FS	**Microphone Brand/Model (circle):** SMMU2	**Directional**	**Hemispherical**	**Omnidirectional**

Weatherproofing? No	**SENSITIVITY:** NA	**SAMPLE RATE (MIN/MAX):**	256dB	**Data Division Ratio:**			**Audio Division Ratio:**		
	Functioning (Finger Rubs): Yes	**Trigger Level**	12dB	16	8	4	16	8	4
		Trigger Frequency	10kHz						

Gain:	**Mic Height (m):**	**Distance from Nearest Vegetation or other Obstruction (m)(apart from veg. on ground):**	**Horizontal Orientation of Mic (1-360°):**	**Vertical Orientation of Mic (0° = horizon):**	**Calls collected in:**
16dB	3m	2m	90°	0°	Full Spectrum

2020 ACOUSTIC SURVEY SITE DATA SHEET

HABITAT DATA

Dominant Canopy Species:

1. Silver maple (*Acer saccharinum*)
2. Black willow (*Salix nigra*)
3. Green ash (*Fraxinus pennsylvanicum*)

Subdominant Canopy Species:

1. Box elder (*Acer negundo*)
2. Silver maple (*Acer saccharinum*)

Recently Logged Forest	
Crop/Pasture Land	
Shrub/Scrub Swamp	
Young Upland Forest	
Pine Plantation	
Stream/River	X
Vernal Pool	
Mature Lowland Forest	X
Forest Edge	X
Emergent Wetland	
Deepwater Lake/Pond	
Young Lowland Forest	
Old Field	
Forest Swamp	
Other	

Site Description:

Detector deployed in Bangert Island Conservation Area on creek/slough.

B

Detailed Acoustic Survey Results Table

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Table B-1. Detailed Acoustic Survey Results

Site	Date (2020)	Total Data Files	Bat Call Files	Noise Files	SPECIES (MAXIMUM LIKELIHOOD ESTIMATOR)										
					MYSO	**MYSE**	**LABO**	**LACI**	**LANO**	**EPFU**	**MYGR**	**MYLU**	**NYHU**	**PESU**	**NOID**
#1	June 23	238	210	28	**0**	**0**	3 (0.017)	51 (0.000)	4 (1.000)	87 (0.000)	0	2 (0.295)	4 (0.100)	0	59
	June 24	684	651	33	**0**	**0**	1 (0.935)	85 (0.000)	16 (1.000)	424 (0.000)	4 (0.000)	3 (0.026)	12 (0.000)	0	106
#2	June 23	1,051	1,037	14	**0**	**0**	3 (0.038)	372 (0.000)	45 (1.000)	423 (0.000)	0	3 (0.107)	6 (0.011)	2 (0.124)	182
	June 23	526	484	42	**0**	**0**	18 (0.000)	121 (0.000)	13 (1.000)	267 (0.000)	1 (0.005)	1 1.000)	7 (0.457)	2 (0.383)	54
#3	June 24	678	622	56	**1 (0.247)**	**1 (0.053)**	9 (0.000)	143 (0.000)	4 (1.000)	399 (0.000)	3 (0.000)	0	1 (1.000)	3 (0.018)	58
#4	June 23	467	449	18	**0**	**0**	17 (0.000)	196 (0.000)	7 (1.000)	150 (0.000)	0	(0.952)	8 (0.389)	2 (0.430)	66
	June 24	870	852	18	**0**	**0**	14 (0.000)	172 (0.000)	14 (1.000)	535 (0.000)	0	5 (0.287)	17 (0.000)	2 (0.561)	93
#5	June 24	498	476	22	**0**	**0**	3 (0.035)	134 (0.000)	14 (1.000)	252 (0.000)	2 (0.000)	1 (0.856)	7 (0.003)	1 (0.632)	62

MYSO = Indiana bat, MYSE = northern long-eared bat, LABO = red bat, LACI = hoary bat, LANO = silver-haired bat, EPFU = big brown bat, MYGR = gray bat, MYLU = little brown bat, NYHU = evening bat, PESU = eastern pipistrelle, TABR = Brazilian free-tailed bat

C

Study Plan and USFWS COMO Field Office Concurrence Email

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HDR

Study Plan
Acoustic Bat Survey

Riverpointe Development

St. Charles County, MO
May 22, 2020

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May 22, 2020

U.S. Fish and Wildlife Service
Ecological Services
101 park DeVille Drive, Suite A
Columbia, MO 65203

USFWS ACOUSTIC STUDY PLAN FOR THE CITY OF ST. CHARLES RIVERPOINTE DEVELOPMENT | ST. CHARLES COUNTY, MISSOURI

Dear USFWS:

Please accept this letter as a study plan for HDR, Inc. (HDR) and our client Crawford, Murphy & Tilly (CMT), to complete a bat acoustic survey for the proposed Riverpointe Development project located in St. Charles County, MO.

Introduction

The City of St. Charles is proposing the Riverpointe Development Project (Project) which will be located along the Missouri River (Figure 1). The project will connect and enhance the surrounding investments in the City. Located north of the project area is Historic Main Street and Ameristar Casino and Hotel Complex, just west of the project lies the Streets of St. Charles Development, and on the southern end the project is bounded by the Family Arena. The proposed project will require vegetation clearing of approximately 115 acres prior to construction.

For projects or portions of projects that are not within known Indiana bat occurrence areas, the USFWS generally requires project proponents to either assume presence or conduct a summer presence/absence survey. Depending on multiple factors, including time, cost, and appropriate survey conditions, summer presence/absence surveys can include a mist net survey, an acoustic survey, or a combination of both. In response to the risk of reverse zoonosis of COVID-19 from humans to wild mammals, the USFWS and Missouri Department of Conservation have temporarily suspended authorizations for hands-on work with bats. Therefore, it was determined that a summer presence/absence acoustic survey would be conducted.

Level of Effort

The acoustic survey will be conducted in accordance with the latest protocols provided in the *2020 Range-wide Indiana Bat Summer Survey Guidelines, March 2020* (USFWS 2020 Guidelines), which are currently considered approved methods of surveying for Indiana bats. The USFWS Guidelines for acoustic surveys require all non-linear projects to utilize a minimum of eight detector nights per 123 acres (50 ha) of suitable summer habitat (i.e., forest). HDR determined the need for four survey sites (Figure 1), where each survey site will employ a minimum of two calendar nights of survey effort for a total of eight detector nights.

Acoustic Site Selection

A qualified bat biologist will perform desktop and field reconnaissance to select optimal acoustic survey sites based on availability of suitable forest-canopy openings, water sources, wooded fence lines that are adjacent to large opening or connect two larger blocks of suitable habitat, blocks of recently logged forest where some potential roost trees remain, road and/or stream corridors with open tree canopies or canopy height of more than 33 feet (10 m), and woodland edges.

Methodology

Four acoustic sites (with a total of two detector nights per location) will be sampled for a total of eight detector nights. This level of effort is based upon review of project area maps showing potentially suitable habitat for both the Indiana bat and northern long-eared bat. Summer habitat for Indiana and northern long-eared bats consist of a variety of forested habitats utilized for roosting, foraging, and commuting. These habitats consist of forested blocks and linear features comprised of dense or loose aggregates of trees with variable amounts of canopy closure. Typical foraging habitat for the Indiana bat includes semi-open forested habitats. Northern long-eared bats foraging habitat is typically interior forested areas. Commuting habitat is used to travel between roosting and foraging areas, and typically includes forest edges and linear features, including riparian corridors and fencerows.

The acoustic survey will be conducted during the timeframe of June 25 through August 15, 2020, and will be performed in accordance with the USFWS 2020 Guidelines. Specific placement of detectors (Wildlife Acoustics, Maynard MA - SM4 BAT or SM4 BAT mini) will be determined by the micro-habitat of the project site. The sampling area of each detector will be assessed to determine the zone of detection around a given microphone. Detection distance, orientation and height of the microphone, and specific features such as vegetation, and other obstructions, will dictate the specific sampling area of each detector.

Features such as vegetation, water, and power lines can obstruct or reflect call sequences resulting in low-quality bat calls. To avoid this, detector microphones will be deployed at least 10 ft (3 m) in any direction from an obstruction, in areas without, or minimal vegetation within 100 ft (30 m) of directional microphones or 33 ft (10 m) from other microphones, parallel to woodland edges, and at least 49 ft (15 m) from known or suitable roosts. Detectors will be oriented horizontally to sample the majority of an identified flight path. At each acoustic survey site, the following information will be recorded: date, duration of survey, location coordinates, detection zone (habitat being sampled), and weather. Photographs depicting microphone orientation and habitat will be taken at each survey site.

After each night of sampling, data will be downloaded and checked to ensure a full sampling period was achieved. Bat calls will be analyzed using the latest version of a USFWS-approved software program (Kaleidoscope Pro Version 5.1.1). All target bat species call files identified by the software program(s) will be manually vetted by HDR bat biologists John Timpone (USFWS T&E Permit No. 120231-4) and Brooke Hines (USFWS T&E Permit No. 31355B-3).

Reporting

A report will be prepared summarizing the findings of the acoustic efforts. In addition, a copy of the raw acoustic data and auto-ID output, along with the report, will be submitted to USFWS.

If you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,

Brooke A Hines

Brooke Hines
Sr. Environmental Scientist

HDR
2517 Sir Barton Way
Lexington, KY 40509
D 859.629.4890 | M 502.330.4936

brooke.hines@hdrinc.com


O'Fallon
St Peters
St Charles
Hazelwood
Florissant
Proposed Study Area
Maryland Heights
Ferguson
Miles
Proposed Study Area
Proposed Acoustic Bat Survey Locations
Service Layer Credits:
Imagery Source: Esri, DigitalGlobe, Geoey
1 in = 1,000 feet
0
1,000
2,000
4,000
Feet
HDR
CMT
Riverpointe Development
Figure 1 - Proposed Acoustic Bat Survey Locations
Page 1 of 1
Scale: 1:12,000
NAD Missouri East ft
Date: 05/15/2020

From: Heather Lacey
To: Hines, Brooke
Cc: Ellen Hogrebe; Dennis Denby; Jay Rakers
Subject: Fwd: [EXTERNAL] MVS-2019-606 - Survey Plan Review (UNCLASSIFIED)
Date: Tuesday, June 16, 2020 12:41:30 PM

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Brooke,
We have approval of your survey plan. Let us know what else you might need from us to get this on your calendar. Once you've had a chance to schedule, let us know when you plan on conducting the work and an approximate date for the report so we can advise the city.

Thanks!
Heather Lacey
(937) 307-0744

Begin forwarded message:

From: "Kuczynska, Iwona" <iwona_kuczynska@fws.gov>
Date: June 16, 2020 at 12:24:31 PM EDT
To: "Lamontagne, Chad M CIV USARMY CEMVS (USA)" <Chad.M.Lamontagne@usace.army.mil>
Cc: Ellen Hogrebe <ehogrebe@cmtengr.com>, Heather Lacey <hlacey@cmtengr.com>, "Weber, John S" <John_S_Weber@fws.gov>, "Herrington, Karen" <karen_herrington@fws.gov>
Subject: Re: [EXTERNAL] MVS-2019-606 - Survey Plan Review (UNCLASSIFIED)

External Message: *This email was sent from someone outside of CMT. Please use caution with links and attachments from unknown senders or receiving unexpected emails.*

Good morning Chad,

Thank you for submitting your acoustic study plan for this summer. The Service approves the study plan as submitted on 6/16/2020. This email also serves as your site-specific authorization to conduct permitted activities.

Note on annual reporting: In addition to a traditional written report, federal permit holders are now required to submit their survey data using the standardized permit reporting spreadsheets available on the R3 Indiana Bat Summer Survey Guidance webpage (http://www.fws.gov/midwest/Endangered/mammals/inba/inbasummersurveyguidance.html).

Let me know if you have any questions. Good luck with your survey.

Thank you,

Vona Kuczynska

Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Missouri Ecological Services Field Office
101 Park DeVille Drive, Suite A, Columbia, MO 65203
Office: 573-234-5011

From: Lamontagne, Chad M CIV USARMY CEMVS (USA) <Chad.M.Lamontagne@usace.army.mil>
Sent: Tuesday, June 16, 2020 11:01 AM
To: Kuczynska, Iwona <iwona_kuczynska@fws.gov>
Cc: Ellen Hogrebe <ehogrebe@cmtengr.com>; Heather Lacey <hlacey@cmtengr.com>
Subject: [EXTERNAL] MVS-2019-606 - Survey Plan Review (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Vona,

Please find the attached habitat assessment and study plan for a proposed acoustic bat survey for a project in St. Charles County, Missouri. The St. Louis District has reviewed the habitat assessment and concurs with the findings from CMT Engineering that suitable habitat is present on site. Please review the plan at your convenience and report back any concerns you may have. Thank you.

Take care,
Chad LaMontagne
Regulatory Project Manager
CEMVS, Regulatory Division
1222 Spruce Street
St. Louis, Missouri 63103-2833
314-331-8044

CLASSIFICATION: UNCLASSIFIED

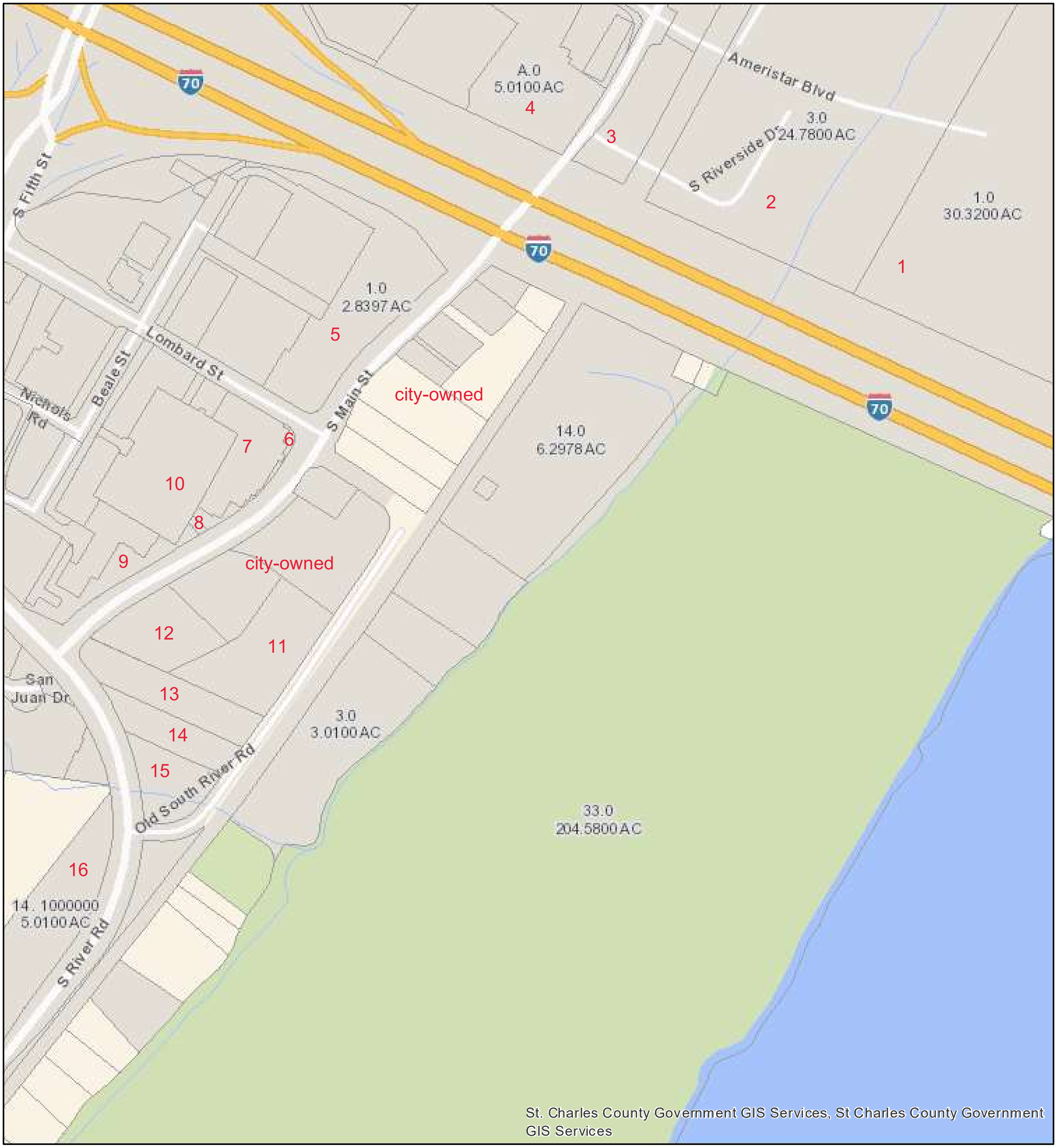
Riverpointe Public Infrastructure Project

APPENDIX E: ADJACENT PROPERTY OWNERS

CMT

Adjacent Property Owners

No.	Parcel No.	Owners Name	Address	City, State, Zip
1	6-014D-7421-00-0001.0000000	PINNACLE ENTERTAINMENT INC	6465 S RAINBOW BLVD	LAS VEGAS NV, 89118-3215
2	6-014D-7421-00-0003.0000000	PINNACLE ENTERTAINMENT INC	6465 S RAINBOW BLVD	LAS VEGAS NV, 89118-3215
3	6-014D-7421-00-0002.0000000	PINNACLE ENTERTAINMENT INC	6465 S RAINBOW BLVD	LAS VEGAS NV, 89118-3215
4	6-014D-8213-00-000A.0000000	IMPERIAL CATERING COMPANY INC	1410 S 5TH ST	ST CHARLES MO, 63301
5	6-014D-C615-00-0001.0000000	ST CHARLES - NOAH DEVELOPMENT LLC	420 N MAIN ST	EAST PEORIA IL, 61611
6	6-014D-C063-00-005C.0000000	ST CHARLES - NOAH DEVELOPMENT LLC	420 N MAIN ST	EAST PEORIA IL, 61611
7	6-014D-C063-00-005B.0000000	SCND BLOCK 1000 LLC	420 N MAIN ST	EAST PEORIA IL, 61611
8	6-014D-A930-00-00R2.0000000	PLAZA AT NOAHS ARK COMMUNITY IMPROVEMENT DISTRICT	1500 S 5TH ST	ST CHARLES MO, 63303
9	6-014D-C241-00-0004.0000000	SCND BLOCK 4000 LLC	420 N MAIN ST	EAST PEORIA IL, 61611
10	6-014D-C063-00-0003.0000000	PLAZA AT NOAHS ARK COMMUNITY IMPROVEMENT DISTRICT	1500 S 5TH ST	ST CHARLES MO, 63303
11	6-014D-3280-00-0025.1000000	BRIDGEWAY COUNSELING SERVICE	125 N 5TH ST	ST CHARLES MO, 63301
12	6-014D-3280-00-0025.3000000	BRIDGEWAY COUNSELING SERVICE	125 N 5TH ST	ST CHARLES MO, 63301
13	6-0023-S007-00-0001.0000000	ST CHARLES COUNTY	201 N 2ND ST RM 529	ST CHARLES MO, 63301
14	6-0023-S007-00-0002.0000000	ST CHARLES COUNTY	201 N 2ND ST RM 529	ST CHARLES MO, 63301
15	6-0023-S007-00-0037.1000000	ST CHARLES COUNTY	201 N 2ND ST RM 529	ST CHARLES MO, 63301
16	6-0023-S007-00-0014.1000000	1735 SOUTH RIVER ROAD LLC	1715 DEER TRACKS TRL STE 220	ST LOUIS MO, 63131-1855
17	6-0023-S007-00-0018.1000000	ST CHARLES SIGN AND ELECTRIC INC	527 1ST CAPITOL DR	ST CHARLES MO, 63301-2725
18	6-0023-S007-00-0019.0000000	DAVID SCHOLLE	12 ASHLAND PL	ST CHARLES MO, 63301
19	6-0023-S007-00-0022.0000000	JAMES L & LISA A BURNITT	1765 S RIVER RD	ST CHARLES MO, 63303
20	6-0023-S007-00-0014.3000000	CHERRY L BURNITT	1767 S RIVER RD	ST CHARLES MO, 63303-4122
21	6-0023-S007-00-0025.0000000	DENNIS E GROOMS	1769 S RIVER RD	ST CHARLES MO, 63303-4122
22	6-0023-S007-00-0026.0000000	DONALD & LINDA MILLER	2 BROOK VIEW CT	DARDENNE PRAIRIE MO, 63368-8204
23	6-0023-S007-00-0027.0000000	KEVIN L CHOWNING	1801 S RIVER RD	ST CHARLES MO, 63303-4124
24	6-0023-S007-00-0029.1000000	JOSEPH WOOMER & TANGIE PHILLIPS	3406 SUN LAKE DR	ST CHARLES MO, 63301
25	6-0023-S007-00-0029.0000000	FLOOD ELECTRIC LLC	2330 CANYON DR	ST CHARLES MO, 63303
26	6-0023-S007-00-0030.0000000	GRACE DOCTRINE CHURCH	1821 S RIVER RD	ST CHARLES MO, 63303
27	6-0023-S007-00-0031.0000000	ST CHARLES CONGREGATION OF JEHOVAHS WITNESSES	1831 S RIVER RD	ST CHARLES MO, 63303
28	6-0022-C273-00-000A.0000000	EDWARD ROSE MILLENNIAL DEVELOPMENT LLC	11611 N MERIDIAN ST STE 800	CARMEL IN, 46032
29	3-0162-2982-00-0028.2000000	METRO FILL DEVELOPMENT LLC	1515 DES PERES RD STE 300	ST LOUIS MO, 63131
30	3-0012-S007-00-0028.1110000	ARENA PARKWAY EAST LLC	1515 DES PERES RD STE 300	ST LOUIS MO, 63131-1853



Parcel Map

August 17, 2020

N

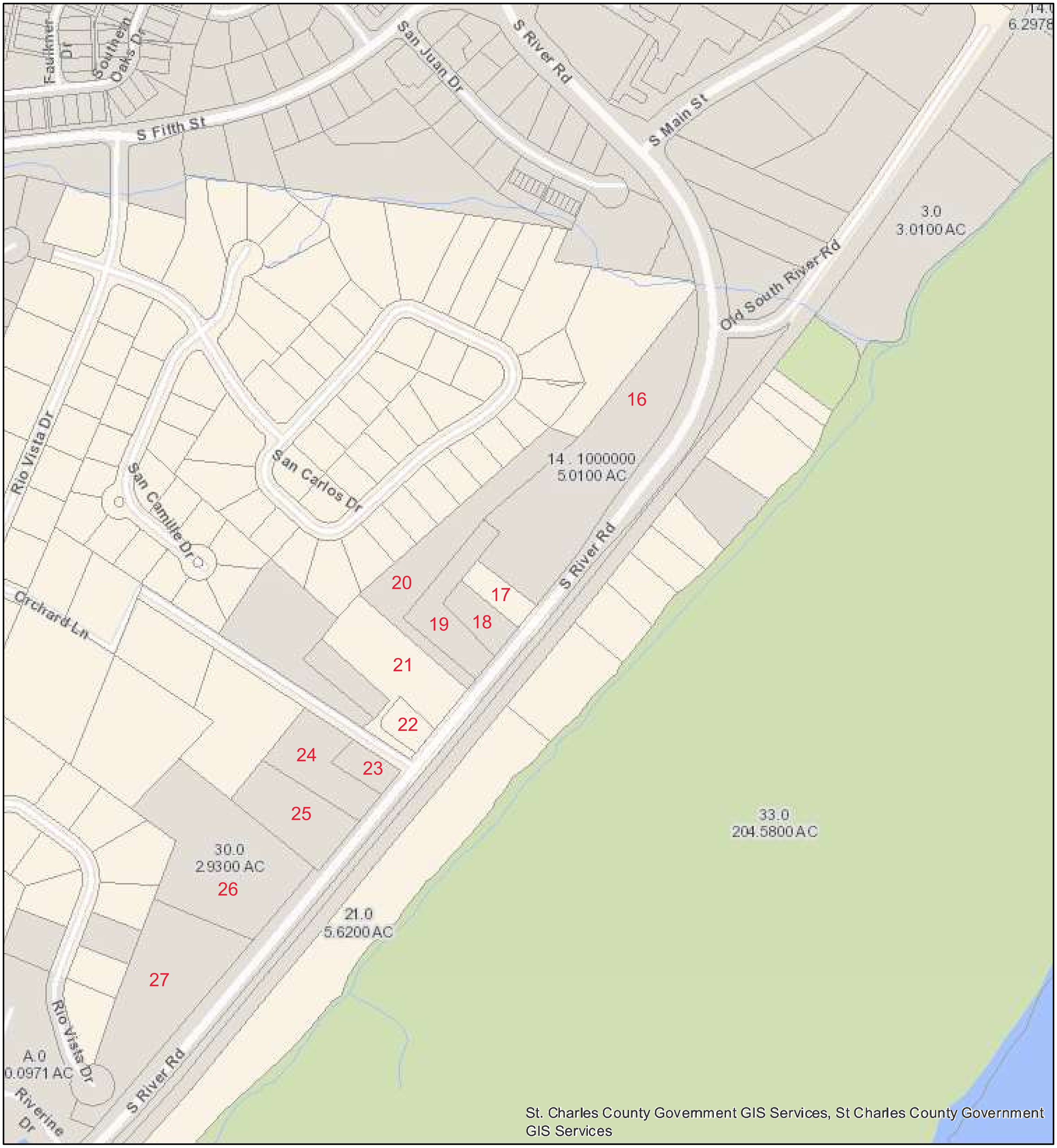
1:4,514

Legend

0 0.05 0.1 mi

Source: St. Charles County GIS Services. All map content are copyright of the St. Charles County Government and are subject to disclaimer.

ST. CHARLES COUNTY



Parcel Map

August 17, 2020

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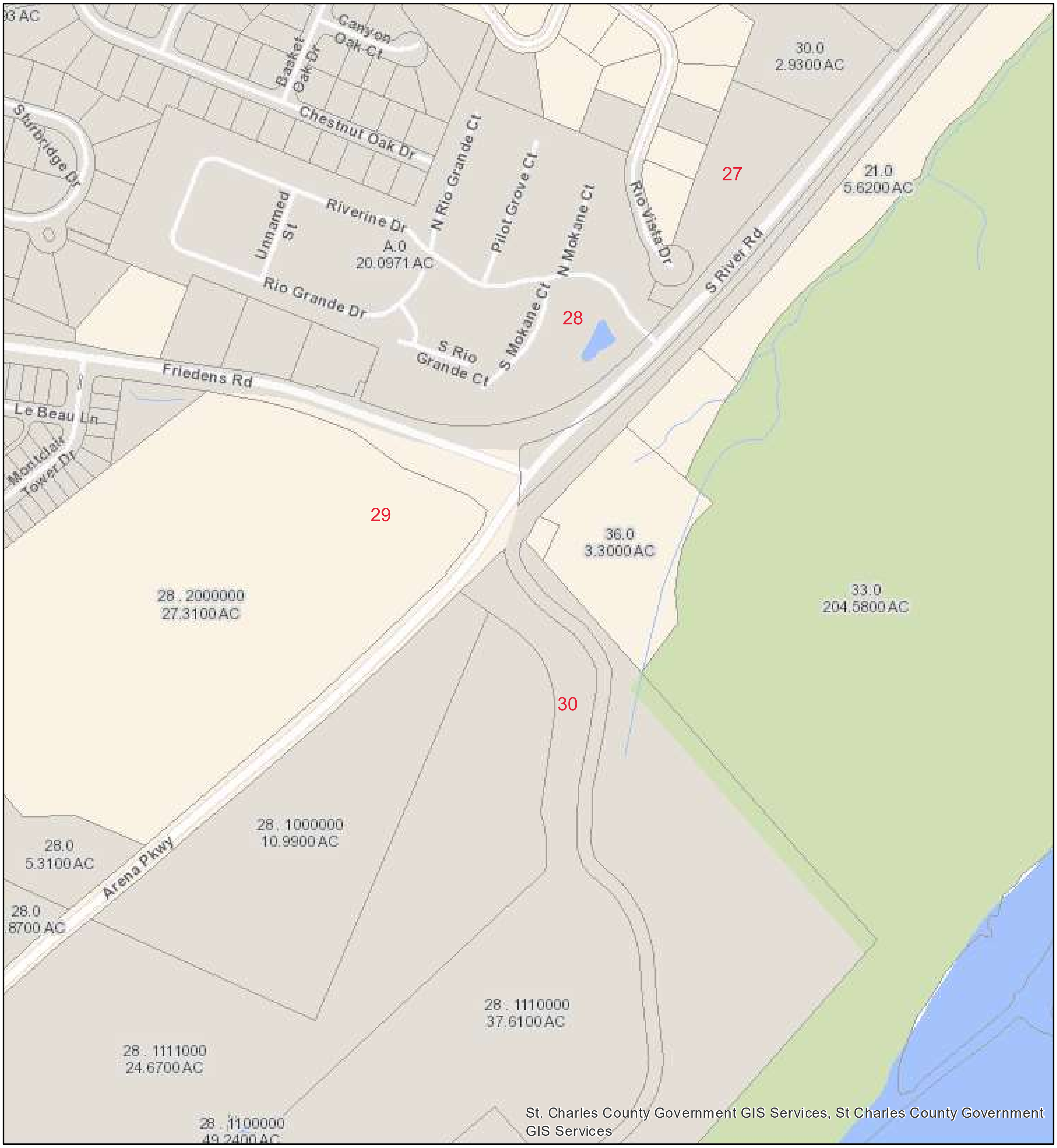
ST. CHARLES COUNTY



Parcel Map

August 17, 2020

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Legend

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ST. CHARLES COUNTY