1.0 Purpose of and Need for Proposed Action

1.1 Project Authority

The United States Army Corps of Engineers (USACE) in compliance with Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (CWA) is responsible for the regulation and protection of the Nation's aquatic resources. Authority to issue permits and regulate the discharge of dredge or fill material into waters of the United States applies to all waters of the United States, including navigable waters and wetlands.

Pursuant to Section 404 of the CWA [33 United States Code (USC) 1344], the Secretary of the Army, acting through the Chief of Engineers, has the authority to issue permits, after notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the United States at specified disposal sites [see 33 Code of Federal Regulations (CFR) Part 323]. The selection and use of disposal sites will be in accordance with guidelines developed by the Administrator of United States Environmental Protection Agency (USEPA) in conjunction with the Secretary of the Army as published in 40 CFR Part 230. Jurisdictional limits of Section 404 encompasses the Howard Bend study area and applies to all waters of the United States including such features as Creve Coeur Lake, the Missouri River, and Fee Fee, Creve Coeur, Louiselle, and Bonhomme creeks, their tributaries, and floodplain wetlands.

Pursuant to Section 10, the USACE has the authority to regulate any work in, over, or under navigable waters that could affect the course, location, condition, or capacity of those waters. Examples of such regulated activities include piers, bulkheads, aids to navigation, and electric transmission lines. In the context of the area that is the subject of this study (i.e., the Howard Bend study area) limits of Section 10 authority extend from the channel of the Missouri River to the ordinary high water mark and end at the outlet of closure structures (e.g., flap gates, etc.) installed within the Howard Bend Levee. It does not extend to any waters of the United States inside either the Riverport or Howard Bend levees.

This project is also being undertaken in compliance with the National Environmental Policy Act of 1969 (NEPA, 42 USC 4321-4347). Specifically, Section 102 of that Act directs Federal agencies to prepare a detailed statement using a systematic, interdisciplinary process that assesses the effects of proposed actions by a Federal agency on the environment.

1.2 Project Background

1.2.1 Regional Development Background

The Missouri River floodplain is a valued resource that provides important flood storage and fish and wildlife habitat throughout much of its length. Use of the floodplain is varied, consisting of cultivated fields bounded by levees offering varying degrees of flood protection, open lands offering valuable fish and wildlife habitat, and relatively flat lands ideally suited to development. During the last 25 years, the Missouri River floodplain between approximate Missouri River Mile (RM) 27.0 (Earth City) and RM 47.0 (Chesterfield) in St. Louis County, Missouri, has been subjected to extensive levee construction and development for agricultural, industrial, and

commercial purposes. Examples of development activities occurring within this region of the Missouri River floodplain have included the following (Figure 1-1):

- **Earth City Development**. The development of Earth City began in 1972 with the construction of a 500-year levee and has entailed the construction of associated infrastructure (central four-lane roadway, secondary roadways, and drainage and utilities), and mixed uses including hotels, office buildings, and warehousing and distribution facilities.
- **Riverport/Harrah's Casino.** The Riverport and Harrah's Planned Development District is a mixed use development complex that consists of various opportunities for entertainment (Harrah's Casino and UMB Pavilion), offices, and hotels. Riverport is protected by a 500-year levee that was constructed in 1988, whereas the construction of the Harrah's Casino complex was accomplished with the construction of a 100-year levee in 1996.
- **Chesterfield Valley.** The Chesterfield Valley is a 4,700-acre area that has been characterized by extensive development over the last 25 years. This development has included a significant expansion of Spirit of St. Louis Airport, the construction of the St. Louis County Correctional Institution, and extensive commercial and industrial development that includes more than 250 businesses and over 3 million square feet of development. The Great Flood of 1993 breached the existing 100-year levee system and resulted in the evacuation of businesses and homes, the closure of Interstate 64 (I-64) for a 3-week period, the closure of Spirit of St. Louis Airport for 3 months, and the evacuation and relocation of inmates of the correctional facility. Economic damages attributable to the flood have been estimated at $200 million. In response, the Monarch-Chesterfield Levee District (MCLD) began construction of the 500-year Monarch-Chesterfield Levee.
- **Howard Bend Levee.** Flood protection of the Howard Bend study area was initiated in response to the 1993 flood with the repair and improvement of an existing earthen berm (agricultural levee) which provided varying levels of flood protection (approximate 20- to 40-year flood recurrence). Planning was initiated subsequent to the 1993 flood to develop a levee that provides 500-year flood protection. This project is being financed and constructed by local property owners through the Howard Bend Levee District (HBLD) without any Federal funding. The project is being undertaken in two phases: Part One and Part Two as follows:

  Part One of the overall flood protection program consists of a 500-year levee, which is nearing completion. When completed, this levee will extend from the City of St. Louis Waterworks in Howard Bend to the Riverport Levee. An application for a Conditional Letter of Map Revision (CLOMR) to the Federal Emergency Management Agency (FEMA) was submitted in December of 2000; a CLOMR was issued in June 2002. This CLOMR represents an interim condition for defining the 100-year floodplain until additional stormwater management and flood control improvements are implemented for Fee Fee and Creve Coeur creeks. This application requested a revision to the current floodplain mapping within the Howard Bend study area based on the flood protection provided by the 500-year levee. Part One would also include the construction of a 100-year plus 3-foot flood protection for the Howard Bend Levee in proximity to Harrah's Casino complex and is scheduled to be completed in 2004. A floodwall in conjunction with the levee at the Harrah's Casino complex is planned to be constructed in 2004.

  Part Two of the HBLD's flood control program will consist of the construction of interim flank levees along Fee Fee and Creve Coeur creeks as well as other ancillary stormwater management projects and is currently under design study. No funding is currently provided for Part Two.

1.2.2 Regulatory Background

Prior to February 1995, the regulatory responsibility for Section 404 permits in the Missouri River floodplain in St. Louis County, Missouri resided with the Kansas City District, USACE (Kansas City District). As of February 1, 1995, this responsibility was transferred to the St. Louis District, USACE (St. Louis District).

Kansas City District recognized the piecemeal development of the levee-protected areas within the Monarch-Chesterfield floodplain and placed a moratorium on individual developments, requiring the preparation of an environmental analysis. The St. Louis District continued this moratorium on development in the protected areas within the Monarch-Chesterfield floodplain until late 1996 and late 1997, at which time the St. Louis District issued Section 404 permits for the remaining wetlands within the levee-protected area based upon two consolidated permit applications and an accompanying environmental assessment. Large–scale mitigation was required as a condition of these permit actions. In 1997, the St. Louis District initiated an integrated feasibility study and Environmental Impact Statement (EIS) to evaluate the feasibility and impact of raising the Monarch-Chesterfield Levee. A Final EIS was released in 2002.

Other recently completed EISs within the Howard Bend study area have included the completion of an EIS for the Page Avenue Extension Project (Booker, 1992) for the Federal Highway Administration (FHWA) and Missouri Department of Transportation (MoDOT) and a Supplemental EIS for the Page Avenue Extension Project [National Park Service (NPS), 1995a]. The Kansas City District issued an accompanying Section 404 permit for the construction of Page Avenue Extension in 1995. Tables 1-1 through 1-3 present a summary of this and other permits issued by the USACE within the Howard Bend study area from 1984 to the present.

The issuance of the permit for the Riverport Levee and Page Avenue Extension projects involved legal challenges, which resulted in certain limitations and special conditions for future USACE's permit actions (see Section 1.3.2).

1.3 Project Purpose and Need

The alternatives considered in this EIS have been developed to meet several identified needs. Indeed, the needs within the study area are multi-faceted, including the USACE's need to assert its regulatory authority and the need to respond to various legal mandates. The basic purposes associated with each of these needs are provided in subsequent sections.

1.3.1 Regulation of Fill Activities within Waters of the United States (Regulatory Action Alternatives)

Past regulation of fill activities within the Howard Bend study area has been conducted on a case-by-case basis. This has been conducted in a manner consistent with that which is practiced by other USACE districts across the nation. However, this invariably has necessitated a project-by-project consideration of actions affecting waters of the United States and has resulted in a disjointed analysis of natural resource impacts in relation to Section 404 of the CWA (see Table 1-1). Difficulties associated with this include the following:

- *Incremental loss of wetland acreage and functional value.* The result of this narrow, focused approach is that wetland function and value are incrementally lost to the system, with little ability to assess impacts and preserve resources on a regional scale (i.e., within the Howard Bend area as a whole).

Table 1-1. Permits Issued within the Howard Bend Study Area (1984 to Present)

Applicant	Project Feature	Year Permit Issued	Type of Permit*	Impacts to Wetlands and Waters of the United States	Mitigation Requirements	Mitigation Status
Metropolitan St. Louis Sewer District (MSD)	Replace outfall to Creve Coeur Creek	1984	NW7	None	None	--
	MSD Treatment Plant Expansion	1985	IP	Hydraulically dredge 500,000 cubic yards (cy), fill 19 acres of adjacent wetland	Preservation: 2.7 acres existing forested and 3.3 acres existing emergent Enhancement/creation: 17.5 acres existing wetlands	Not complete
	New outfall structure and repair of scour hole	1995	IP	0.4 acre forested 0.5 acre emergent	0.9 acre natural revegetation	Complete
	34,000-foot force main	1997	NW12	0.03 acre palustrine emergent wetland (north of Missouri American Water Plant)	None	--
	Fee Fee Creek sanitary relief 2,700 feet	1999	NW12 NW13	0.03 acre	None	--
	Fee Fee sanitary relief 9,200-foot force main	1999	NW12	0.69 acre emergent wetlands impacted	None	--
Riverport	Discharge 53,600 cubic yards to construct levee, 17 cubic yards stilling basin and outfall structure, minor grading in wetland	1983	IP	4.92 acres (calculated)	Create 10 acres of wetlands. Incorporate 28 acres of wetland as retention	Complete
	Temporary haul road, widen Earth City Expressway	1987	Mod. to IP	1 acre, plus 0.5 acre temporary	Create additional 3 acres	Complete
Missouri American Water Company (formerly St. Louis County Water Company)	Lagoon construction	1988	IP	1.5 acres emergent wetland	1.5 acres	Complete (Note: mitigation area impacted by 2000 permit)
	Water treatment components within ownership boundary to meet USEPA standards	2000	IP	2.9 acres at four locations (1.9 acres farmed wetland, 1.0 acres emergent)	3.9 acres emergent wetlands	Completed Off-Site on Bonhomme Island

Table 1-1. Permits Issued within the Howard Bend Study Area (1984 to Present)

Applicant	Project Feature	Year Permit Issued	Type of Permit*	Impacts to Wetlands and Waters of the United States	Mitigation Requirements	Mitigation Status
Howard Bend Levee District (HBLD)	Creve Coeur Creek bank stabilization	1986	IP	200 feet, left descending bank	None	--
	Creve Coeur Creek bank stabilization	1987	IP	200 feet, right descending bank	None	--
	Creve Coeur Creek bank stabilization	1990	NW 13†	875 feet, four locations	None	--
	Levee maintenance (base widening/shaping)	1991	IP	3 acres emergent and forested wetland	3 acres natural revegetation	Unknown
	Creve Coeur Creek bank stabilization	1992	NW 13†	875 feet, four locations	None	--
	Levee repairs after 1993 flood	1994	GP	0.32 acre farmed wetland	0.32 acre (same site as 1991 permit)	Unknown
	Creve Coeur Creek bank stabilization	1994	NW 13†	875 feet, four locations	None	--
	Creve Coeur Creek bank stabilization	1996	NW 13†	875 feet, four locations	None	--
	Louiselle Creek ditch maintenance	1997	NW3	5,200 feet	None	--
Harrah's Casino Complex	Inland harbor with channel impacts for floating casino	1994	IP**	2.84 acres wetland 2.79 riparian trees	9.99 wetland 4.40 acres riparian trees	
	Relocate casino to 1,000 feet from river	1995	Mod. to IP**	4.80 acres wetland 0.74 acres riparian trees	13.99 wetland 4.02 riparian trees	
	Construct casino and move groundwater wells	1996	Mod. to IP	3.15 acres 1.65 acres (temporary) 0.74 acres riparian trees	11.93 wetland 4.02 riparian trees	Complete

Table 1-1. Permits Issued within the Howard Bend Study Area (1984 to Present)

Applicant	Project Feature	Year Permit Issued	Type of Permit*	Impacts to Wetlands and Waters of the United States	Mitigation Requirements	Mitigation Status
Missouri Department of Transportation (MoDOT)	Page Avenue Extension	1995	IP	2.90 acres scrub shrub, 8.40 acres emergent, 3.99 acres forested	8.99 acres scrub shrub, 27.30 acres emergent, 20.19 acres forested [to be incorporated with Little Creve Coeur Lake 6(f) mitigation]. Monitor for 20 years	Not complete, in progress
	Creve Coeur Creek siltation basin (64-acre excavation)	1998	Mod. to IP	None	Part of mitigation for Page Avenue Extension (located in mitigation land. Incorporate into Creve Coeur Lake Memorial Park (CCLMP).	Complete
Tree Court Golf	Golf course	1995	NW 14‡	None	None	--
Sportport	Bridge crossing	1998	NW 14	0.33 acre emergent wetland	None	--
AmerenUE Power Line	Linear project, 11.2 miles	1999	NW 12	Minor impacts	None	--
Creve Coeur Airport	Access road, tree clearing	1998	NW 14	0.1 acre emergent	None	--
City of Maryland Heights	Relocate existing Creve Coeur Mill Road	1999	NW 14	0.001 acre 0.04 acre (temporary)	None	--
St. Louis Rowing Club	Phase 2 Dredge Creve Coeur Lake	2002	NW 42	275 feet	None	--

* NW = nationwide; IP = individual permit; Mod. = modification.
† Creve Coeur Creek bank stabilization is at the same four locations.
** Permit issued, superceded by subsequent modification.
‡ Permit issued, but project never built.

Source: USACE, St. Louis District, Permit Files.

Table 1-2. Section 404 Permitting Summary in the Howard Bend Study Area

Type of Permit	Number	Total Impact
Individual Permit	14*	Wetlands: 53.81 acres Riparian habitat: 0.74 acre Stream channel: 400 feet
Nationwide	16†	Wetlands: 1.22 acres Stream channel: 8,975 feet
General Permit	1	Wetlands: 0.32 acre
Total	31	Wetlands: 55.35 Riparian habitat: 0.74 acre Stream channel: 9,375 feet

* Includes modifications to IPs.
† Includes all issued NW permits

Table 1-3. Mitigation Summary in the Howard Bend Study Area

Type of Mitigation	Applicant	Mitigation Acreage Requirement	Completed Mitigation	Unfulfilled Mitigation Commitment
Wetlands				
Preservation	MoDOT	None	NA	NA
	All Others	34.00	28.00	**6.0**
Enhancement and Creation	MoDOT	56.48	56.48 (in progress)	0
	All Others	52.05	31.23	**20.82**
Riparian Habitats				
	All Others	4.02	4.02	0
Total		**146.55**	**119.73**	**26.82**

- *Small, unconsolidated mitigation.* The mitigation of wetland impacts suffered a similar fate as direct wetland impact, as mitigation for many projects has been piecemeal and in some cases, ineffective. On a landscape scale, this results in a loss of functional value for the ecosystem. Additionally, in some cases, mitigation has not been implemented in a timely fashion. For example, a permit granted to the Metropolitan St. Louis Sewer District (MSD) for a proposed plant expansion contained a required condition to develop and preserve a wetland mitigation site. At present, the commitment to establish this mitigation area remains unfulfilled. This proposed mitigation site may also be subject to future impacts in conjunction with the need to further expand treatment plant capacity.
- *Inconsistent ownership and management of mitigation wetlands.* Independent mitigation of wetlands has typically been done on lands owned by differing landowners who have often taken a minimalist approach with regard to management of mitigation sites. This has, in most cases, resulted in wetland mitigation sites of poor quality that are reduced in their functional opportunity and effectiveness.

Regulatory alternatives considered in this EIS, therefore, meet a need to assert a more comprehensive and cohesive approach toward the regulation of waters of the United States within the Howard Bend study area, thereby avoiding the inadvertent effects of a case-by-case regulatory approach.

1.3.2 Legal Mandates

The preparation of this document is also being undertaken to fulfill several legal mandates that require the preparation of an EIS. Each of these mandates and the needs they represent are described below.

Need: Assess Secondary and Cumulative Impacts. By mutual agreement between the St. Louis District, MoDOT, FHWA, and the City of Maryland Heights, this EIS is being prepared pursuant to Subpart "r" of the Section 404 permit issued for the Page Avenue Extension. Specifically Subpart "r" states the following:

> *"In the event an extension of the new Earth City Expressway/Highway 141 is proposed that would tie into the Page Avenue Extension, you must prepare an EIS or assure that an EIS is prepared to assess the potential significant impacts to the Missouri River floodplain in St. Louis County that may occur if a road equivalent to Earth City Expressway or Highway 141 were connected to the Page Avenue Extension in the vicinity of River Valley Drive interchange."*

Of particular concern to the Kansas City District, as the Page Avenue permit was written, was the potential for induced development within the floodplain resulting from an increase in the roadway capacity of the City of Maryland Heights Expressway (MHE) connection with Page Avenue. Expansion of the through capacity of this intersection to four-lanes could conceivably result in greater development within the floodplain and, therefore, potentially greater impact to wetlands and other waters of the United States. Condition "r" was written as part of the USACE permit with the intent to address potential secondary and cumulative impacts to the Howard Bend floodplain resulting from increased access. The USACE interprets and enforces this condition as requiring assessment of the impacts to the Missouri River floodplain only within the Howard Bend floodplain in St. Louis County. Consequently, a central focus of this EIS, prepared in response to this requirement, is to assess potential secondary and cumulative impacts associated with induced development within the floodplain.

However, this EIS will not reevaluate previously approved projects including the Page Avenue Extension project, the Riverport or Harrah's Casino levees, or any other previously approved or USACE-permitted projects located in or in proximity to the study area such as the Monarch-Chesterfield Levee project.

Potential Future Need: Provide Additional Flood Control. It is recognized that the on-going construction of the 500-year +3 feet levee by the HBLD is a non-Federal activity, that to date, has not required the issuance of any Federal permit. Construction of the primary 500-year levee by the HBLD is an action anticipated to be complete in 2004. The presence of this levee, therefore, must be assumed as a base condition of the affected environment, and not part of the proposed action. However, as discussed in Section 2.2.1, future phases of levee construction are being considered that may entail the construction of flank levees along Fee Fee and Creve Coeur creeks and would likely require the issuance of a Section 404 permit from the USACE. Needs for the additional levee construction along these creeks arise from a desire to control interior flooding and promote economic development within the floodplain. At this time, the construction of flank levees is an action that is a "reasonably foreseeable future" action and as such will be evaluated in detail in this EIS. Therefore, in anticipation of this potential future action, this EIS effectively will meet the legal need for an EIS as stated in Paragraph 5.a. of the Riverport Consent Decree, which reads as follows:

> *"Should any person or entity apply for a USACE permit for, or initiate construction to build, an approximately 5-mile long levee extending from Riverport to Howard Bend and substantially along the alignment as indicated on Lahay Deposition Exhibit One or the functional equivalent thereof, invoking the Corp's jurisdiction under Section 404 of the CWA or Section 10 of the Rivers and Harbors Act of 1899, the USACE shall prepare an EIS regarding same if no other Federal agency with jurisdiction prepares an EIS."*

Consequently, alternatives to these levee improvements, their varying degrees of interior flood protection, and their resultant effects will be given consideration in this EIS as per the NEPA process.

1.3.3 Area of Study

The Missouri River and its floodplain have been subjected to extensive modification due to man's alterations. Most of the Missouri River floodplain has been extensively cleared and put into agricultural production. Extensive levee systems have also isolated much of the floodplain and wetlands from naturally occurring flooding cycles. The river itself has been extensively modified, beginning as early as 1884, when the Federal government (first under the Missouri River Commission and later under the USACE) was mandated to maintain a navigation channel by removing snags, deepening and straightening the river, and building flood control structures such as levees and reservoirs. The Missouri River Bank Stabilization and Navigation Project, constructed and maintained by the USACE has resulted in the reduction of surface water area of the Missouri River by as much as 50 percent between Rulo, Nebraska and St. Louis, Missouri (Missouri River Bank Stabilization and Navigation Project, Final Feasibility Report and Final Environmental Impact Statement, May 1981). In-channel islands have been nearly eliminated, chutes and sloughs have been closed off, and the connectivity of the river and floodplain has been drastically reduced. The upstream dams have reduced the natural flows of the river for purposes of navigation, and stabilization structures have provided a controlled navigable channel. However, these stabilization structures have also caused a major accretion of soil along the river, between dikes, and within river chutes and side channels (Missouri River Bank Stabilization and Navigation Project, Final Feasibility Report and Final Environmental Impact

Statement, May 1981). These conditions have led to an increase in agricultural land use within the floodplain, and in some locations, may increase the interest in floodplain urban development by providing local citizens with a sense of security that the river will not meander within the floodplain as it once did. The lower Missouri River floodplain, especially in St. Louis County, Missouri, from approximate river mile 27 to 47 has been affected by public and private levees.

This EIS is evaluating the impacts of the floodplain development in this particular section of the Missouri River floodplain. The primary focus of this EIS and, therefore, the Proposed Action, is to select the project alternative that provides the USACE the best means by which to fulfill its regulatory function under the Clean Water Act within the Howard Bend floodplain area. The focus of this analysis is accordingly, directed to the human and natural environment of the floodplain and the potential impacts of future development on those resources. The scope of this EIS will, therefore, focus on the section of the Missouri River floodplain between the Monarch-Chesterfield Levee (RM 38.4, Bonhomme Creek) north to I-70 at the Blanchette Memorial Bridge (RM 29.6) and will encompass Riverport and the Harrah's Casino complex (Figure 1-2). Because the floodplain is the primary resource affected by the alternatives under study, it shall furthermore be limited to that area from the St. Louis County bank of the Missouri River to the base of the bluffs. It shall, however, extend up the Creve Coeur Creek valley to the intersection of Olive Boulevard, the proposed relocated Route 141 (Woods Mill Road), and Creve Coeur Mill Road.

The USACE recognized that some actions considered in the cumulative impact analysis of this document may have effects on Missouri River flood elevations and consequently, may result in impacts to areas outside the designated study area. While these potential consequences are recognized in this document, they are appropriately not analyzed in detail, as these actions may not be subject to USACE authority or control, and are not associated with the resources of the immediate project area (i.e., that area that is the subject of the Federal action). The legal mandates outlined above, the fact that the Howard Bend Levee already exists, and the need to evaluate an area that is environmentally sensitive and under strong developmental pressures dictates a limited study area. The collaborative planning effort within this geographic area of special sensitivity has very limited impacts to the Missouri River outside of the identified study area.

Although some agencies have commented that the St. Louis District should extend the reach of this study to encompass a much larger region, the USACE believes that the project area, as defined, adequately gives consideration to cumulative impacts in a manner consistent with the intent of the regulatory and legal mandates presented. The USACE would be interested in participating with other resource agencies in a comprehensive study of the lower Missouri River as suggested by these agencies. That comprehensive study would be a daunting task, and it would be well beyond the authority and scope of this study. A task such as this could possibly be completed under a program similar to the Upper Mississippi River Environmental Management Program or like the Kansas City Districts Missouri River Fish and Wildlife Mitigation Project. If authorized by Congress, a comprehensive study of the lower Missouri River could be conducted. The Kansas City District is also modifying the Missouri River Master Manual for management of flows on the Missouri River for commercial and environmental purposes. The USFWS, under the Big Muddy Refuge, is also purchasing and developing up to 60,000 acres of Missouri River floodplain for fish and wildlife purposes. Programs with the U.S. Department of Agriculture through their Conservation Reserve Program and Wetland Reserve Program, and the MDC land acquisition and wetlands programs along the Missouri River are also providing needed habitat and floodplain wetlands.

U.S. Army Corps of Engineers
St. Louis District

Howard Bend Floodplain EIS

Legend

- Howard Bend
- Earth City
- Chesterfield Valley
- Riverport/Harrah's Casino Complex
- Municipal Boundary
- Major Expressway

- Study Area
- Interstate Hwy
- US Hwy
- State Hwy
- Railroad
- Road
- Water
- County Line

1:125000

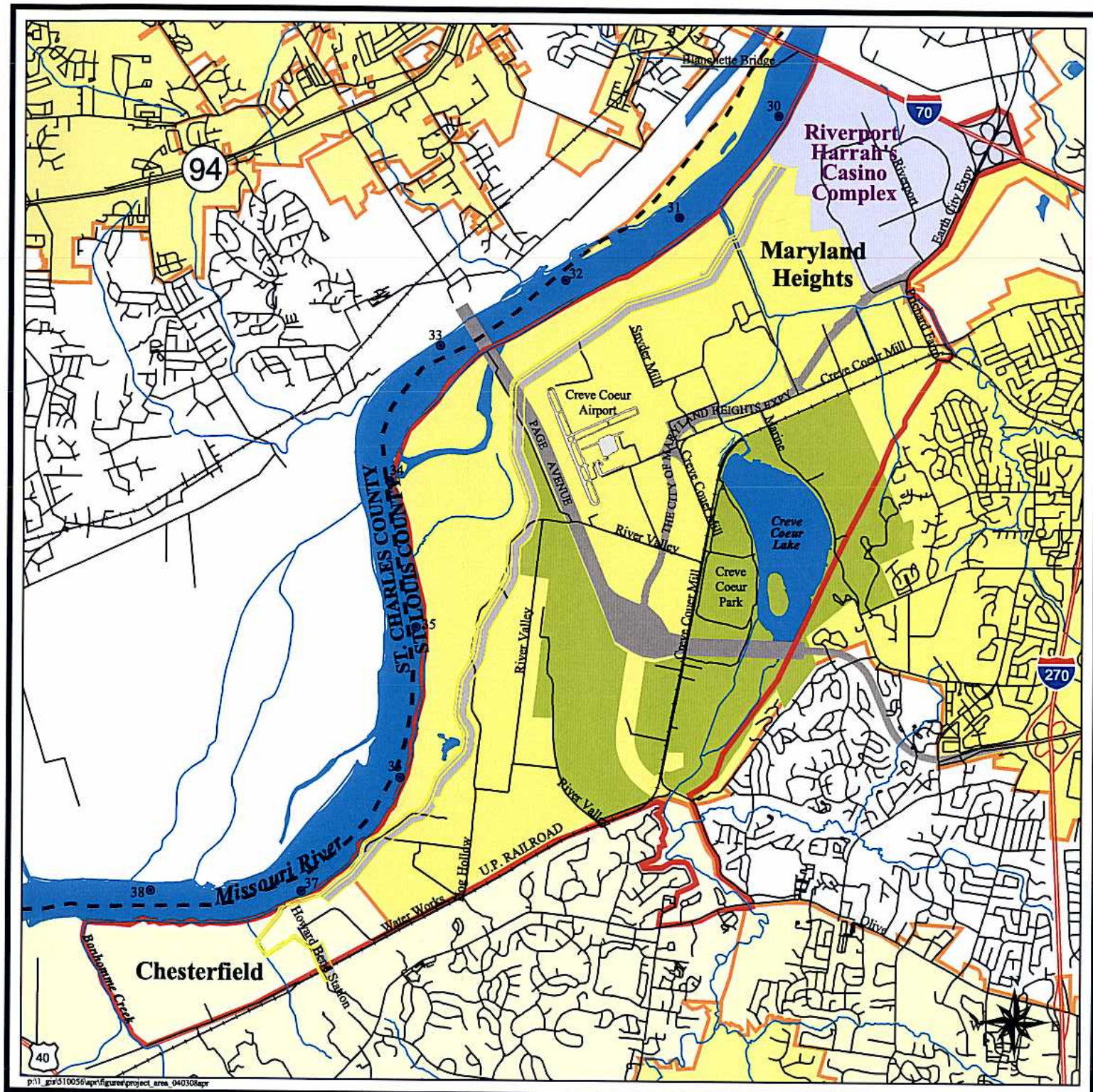
1 0 1 2 Miles

February 26, 2004

Figure 1-1
Regional Project
Setting

MACTEC, Inc.

p:\1_gis\510056\apr\figures\regional_setting_040226.apr



U.S. Army Corps of Engineers
St. Louis District

Howard Bend Floodplain EIS

Legend

- Riverport/Harrah's Casino Complex
- 500-Year Levee
- Newly Constructed Roadways
- Creve Coeur Park
- Municipal Boundary
- Study Area
- Interstate Hwy
- US Hwy
- River Mile
- Road
- Railroad
- Stream
- Water
- County Line

1:60000

0.5 0 0.5 1 Miles

March 8, 2004

Figure 1-2
Project Study Area

MACTEC, Inc.