

Falls of the Ohio National Wildlife Conservation Area Master Plan Update



US Army Corps
of Engineers®
Louisville District



November 2018

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1.0 Introduction and Background

1.1 Falls of the Ohio Overview

The 1,400 acre Falls of the Ohio National Wildlife Conservation Area (NWCA) encompasses a distinctive reach of the Ohio River where navigation, history, wildlife and recreation converge. As river conditions permit, the U.S. Army Corps of Engineers (USACE) closes the upper tainter gates between August and October, exposing large swaths of Early Devonian fossil beds, providing visitors with a glimpse 390 million years into the past at the ancient sea floor (Photo 1).

The gate closure also offers visitors the opportunity to experience when the “Falls” were a series of rapids that dropped 26 feet over 3 miles. When the upper gates are open, the fossil beds are submerged creating a series of waves and rapids, which provide some of the most challenging whitewater paddling in the region



Photo 1 The Devonian fossil beds and collection of islands in the NWCA present a rugged contrast to the Louisville Skyline, which flank the eastern boundary of the NWCA.



Photo 2 The Falls of the Ohio were a series of whitewater rapids, three miles long with eight-foot vertical drops. High water submerged the Falls, making boat passage possible (Glenn Drummond Postcard Collection)

Prior to Euro-American settlement, the stretch of shallow water and exposed fossil beds served as an important buffalo crossing on the Ohio River and hunting area for Native Americans. As settlers moved west in the late 1700s, these same features (Photo 2) presented the only navigation barrier on the Ohio River between Pittsburgh and the confluence with the Mississippi River. In the

river’s natural state, boats could only traverse the falls during periods of high water, so the area became a stopping point while goods were unloaded and portaged, creating the towns of Louisville, Portland, Clarksville and Jeffersonville. In 1830, the privately owned and operated Portland Canal was finished allowing safe passage through the falls without portaging. During the 1860s, the canal was widened to 90 feet, and construction began on a double-lift lock system, but due to financial problems, the Canal

Company asked for assistance from the Federal government. At the direction of Congress, USACE completed these improvements in 1872 and in 1874 Congress gave the Corps jurisdiction over navigation at the Falls. By 1881, the Corps had completed the first dam across the Ohio at this location. In the 1920s, USACE constructed a 600 feet long by 110 feet wide lock and



Photo 3 View showing the three locks and bridge to Shippingport Island ca. 1900

widened the canal to 200 feet. By 1930, a new concrete and steel dam was built in conjunction with a hydroelectric plant project of the Louisville Gas & Electric (LG&E) company directly shaping the present form and function of the NWCA.

By the 1950s, the 600 foot lock had become too small to serve the growing barge traffic on the Ohio and Congress tasked USACE with increasing the length of the locks to 1,200 feet and widen the Canal to 500 feet. The lock construction was completed in 1961 and associated dam improvements at the Falls were finished in 1964. As barge traffic on the Ohio continued to grow, it was necessary to increase the lock capacity again. In 1996, construction began on a project to add a second 1,200 foot lock. All project features, including the visitor area and overlook, were completed in 2009.

The substantial investment and continued presence of USACE at the Falls is a primary reason that Congress assigned USACE the administrative responsibility of the Falls when the area was officially designated a National Wildlife Conservation Area in 1981.

1.2 Purpose of the Master Plan

The purpose of this master plan update is to provide guidance for the preservation, conservation, restoration, maintenance, management and development of project lands, waters and associated resources located at the NWCA. To aid in responsible stewardship of project resources for the benefit of present and future generations, this master plan evaluates the present use and future potential of those resources and recommends strategies for management and development. Because the master plan is conceptual in nature, it identifies general types, intensities and locations of activities rather than specific designs or programmatic descriptions.

The master plan provides a USACE district-level plan that is consistent with national objectives and other state and regional goals and programs. Future actions by the USACE and by the agencies and individuals granted leases or licenses for use of project lands must be consistent with the master plan.

The master plan is distinct from the project-level implementation emphasis of the Operational Management Plan (OMP). Policies in the master plan are guidelines that will be implemented through provisions of the OMP and other planning mechanisms.

The broad objectives of this master plan are to:

- Determine appropriate uses and intensities of development for project resources;
- Provide a framework within which the OMP and other planning mechanisms can be updated and implemented; and
- Establish a basis on which outgrants, wildlife enhancement activities and recreational development proposals can be evaluated.

1.3 NWCA Authorization

The NWCA was authorized by Title II of Public Law 97-137 which was signed into law on December 29, 1981. The boundary of the NWCA was designated by the Secretary of the Interior through publication of a notice in the Federal Register on August 12, 1983. Regulations for the protection, use and management of the WCA were published in the Federal Register, September 9, 1983, 36 CFR Part 331. Authorized Project Purposes

Section 203 of Public Law 97-137 established five purposes for the NWCA:

1. To protect wildlife populations and habitats in their natural diversity including, but not limited to, bald eagle, peregrine falcon, Canada geese, mallard, gadwall, blue-winged teal, black duck, American widgeon, and wood duck;
2. To conserve fish populations in their natural diversity including, but not limited to, shad, shiner, crappie, largemouth bass, striped bass and channel catfish;
3. To ensure, to the maximum extent practicable and in a manner consistent with paragraphs 1 and 2 and compatible with navigation on the Ohio River and operation of the McAlpine locks and dam, the necessary water quantity within the wildlife conservation area;
4. To protect the fossilized coral reef as a unique paleontological feature; and
5. To provide opportunities for scientific research and interpretive and environmental uses and fish and wildlife oriented recreational uses.

1.4 Prior Master Plans and Significant Supporting Documents

The previous master plan for the NWCA was completed in 1984. This document serves to update the 1984 master plan by updating land use and applicable statutes. It does not negate actions proposed in the 1984 master plan. This document represents the first comprehensive update to the 1984 Master Plan.

Supporting documents include the real estate design memorandum, Environmental Assessment for the Falls of the Ohio Interpretative Center, and Operational Management Plan. Further description of each of these documents is presented in the sections below.

1.4.1 Falls of the Ohio National Wildlife Conservation Area Master Plan and Environmental Assessment (1984) - Design Memorandum 1

Following the Congressional designation of the NWCA and final publication of associated rules and regulations in the September 9, 1983 Federal Register a master plan was developed by USACE in 1984 for the area. The 1984 master plan set out to describe how project lands, waters and other resources could be developed, managed and used in the best public interest while maintaining the goals for which the project was established. The 1984 Master plan also includes maps of the proposed area, an Environmental Assessment, and comments from a public workshop held in Dec 1983 to present the development and management plans. The 1984 Master Plan presented a Development Plan that considered the following components in order to allow the NWCA to be managed and utilized in such a manner as to be in full compliance with provisions of Public Law (PL) 97-137:

- Overlook/Interpretative Station – Initial siting of the future Falls of the Ohio Interpretative Center (west end of Riverside Drive). This location provided suitable grading, elevation and views into the fossil beds;
- Pedestrian Access to the Indiana Fossil Bed;
- Pedestrian Access to the Outer Fossil Beds;
- Use of the Outer Bed by Permit;
- Commercial Fishing;
- Vehicular Access;
- Shippingport Island; and
- Sand Island.

1.4.2 Falls of the Ohio National Wildlife Conservation Area Master Plan Real Estate Interests and Requirements (1984) - Design Memorandum 2

The boundary of the NWCA was designated by the Secretary of the Interior through publication of notice in the Federal Register of August 12, 1982, and provided that lands, waters and interests therein will be acquired by the Corps of Engineers as may be necessary to insure that the NWCA can be effectively managed for the purposes for which it was established.

The NWCA boundary was to include land and water areas from the Penn Central Railroad Bridge (currently referred to as the Louisville and Indiana Railroad Bridge) to the Kentucky and Indiana (K&I) Railroad Bridge. The boundary on the Kentucky shoreline was to follow the existing boundary of the McAlpine Lock and Dam project. The boundary on the Indiana shoreline was set at five feet above the Ordinary High Water (OHW) mark at elevation 413 feet above mean sea level (msl).

The Real Estate Design Memorandum defined the property interests and statutory authority that was utilized to establish the Falls of the Ohio National Wildlife Conservation Area, and more specifically, to secure approval to acquire the necessary outstanding real estate interests. The Corps determined how much land within the boundary needed to be purchased as fee simple property (as opposed to merely placing a conservation easement, for example, on the property). The concept of “Navigational Servitude” – rights of

U.S. Government to regulate navigational waters for the purpose of interstate or foreign commerce was discussed. It was proposed to use this means to protect the area of the Falls that lies below the ordinary high water line, but since PL 97-137 deals with wildlife conservation and protection of the fossil beds and not navigation, it was decided that the government needed to acquire fee simple title to the area so as to ensure authority over the area.

The market study completed for the Real Estate Design Memorandum concluded that the Highest and Best Use for the NWCA would be for scenic or preservation use.

Minor revisions to the designated NWCA boundary were authorized. Lands and waters could be acquired by donation, exchange, fee simple, or easement purchase, with donated or appropriated funds, or any combination of acquisition methods. Lands already purchased for the McAlpine Lock and Dam project were included, in their entirety, in the NWCA. Two tracts located downstream of Silver Creek, on the Indiana Shoreline, were not acquired due to the potential for hazardous and toxic wastes. This slightly changed the boundary of the NWCA. The last parcel was acquired in 2004 with the majority of acquisitions occurring between 1988 and 1999.

1.4.3 Falls of the Ohio National Wildlife Conservation Area Master Plan and Environmental Assessment (1992) - Supplement 1

The Corps of Engineers entered into a lease agreement with the Indiana Department of Natural Resources (IDNR) in 1990 to allow for creation of the Falls of the Ohio Indiana State Park. The park is comprised of 60 acres leased from the Corps, along with 85 additional acres acquired by IDNR for the interpretive center, hiking trails, etc. The park and visitor center opened in 1994. The 1984 Master Plan did identify an overlook, interpretative station and other minor improvements at the NWCA on the Indiana

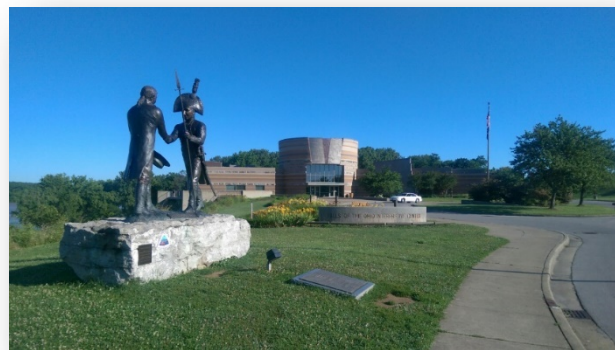


Photo 4 Falls of the Ohio State Park Interpretative Center

shore; however, once specific plans were drafted for the current Interpretative Center a supplement to the 1984 EA and Finding of No Significant Impact (FONSI) was required to assess for potential environmental impacts associated with the building.

1.4.4 Falls of the Ohio National Wildlife Conservation Area Master Plan - Operation Management Plan (1999)

The purpose of the Operational Management Plan (OMP) is to provide a framework for effective development, utilization, and administration of the WCA lands and waters for public benefit, while protecting the unique natural features of the area. The OMP outlines, in detail, the specific operation and administration requirements for natural resources and park management, consistent with the approved Master Plan. The contents of the OMP include provision for progressive and orderly stewardship of resources and their development by the Corps of Engineers and others. Functions relating to the requirements for operation, public use, preservation, five-year management goals and objectives, and enhancement of fish and wildlife habitat and other project resources are described in the OMP.

The OMP also outlines the unique management structure of the NWCA detailing USACE field office (McAlpine Lock & Dam, Louisville Repair Station and Taylorsville Lake) responsibilities, as well as the cooperative management agreement between USACE and other agencies within the NWCA boundary (IDNR, Louisville Gas and Electric and City of Louisville).

1.5 Applicable Public Laws

Administration of federal projects are regulated by multiple Public Laws (PLs) covering recreation; water resource protection and flood risk management; fish and wildlife resources; forest resources; leases, easements and rights-of-way; and cultural resources. Decisions about development on federal lands and waters must abide by the relevant regulations, be consistent with Executive Orders (EOs) and be guided by USACE documents. Appendix D provides a summary of relevant laws.

1.6 Rules and Regulations Governing the Public Use of the Falls of the Ohio National wildlife Conservation Area

Title 36 - Title 36 CFR, Chapter III, Part 331, became effective on 09 Sept 1983 and applies specifically to the NWCA. Unique to USACE projects, Congress passed specific restrictions, prohibitions and limitations on use of the lands and waters under Federal jurisdiction within the designated boundaries of the Falls NWCA in order to protect, preserve, and provide for the proper management of the significant physical and biological features of the NWCA. The full text of 36 CFR Part 331 is located in Appendix D

1.7 Location

The NWCA boundary encompasses approximately 1,400 acres of land and water, and is located in the Ohio River immediately downstream of the Kentucky and Indiana Railroad Bridge and the upper tainter gates and dam of McAlpine Locks and Dam. The Downstream boundary is the Kentucky and Indiana Railroad Bridge. The metropolitan areas of Louisville, Kentucky; Jeffersonville, Clarksville, and New Albany, Indiana surround the area. The fossilized coral reef covers approximately 220 acres when the river is at normal pool elevation. The Indiana boundary of the project was set at five feet above the ordinary high water mark (elevation 413 msl). The boundary on the Kentucky side follows the existing Government boundary for the McAlpine Locks and Dam project. The normal pool elevation of Cannelton dam is 383 feet above sea level or 30 feet below the ordinary high water elevation.

The Falls of the Ohio State Park provides two primary gateways to the NWCA from Indiana. The Falls of the Ohio Interpretive Center, located off of Riverside drive, offers foot trails as well as carry-down kayak access to the NWCA. Further downstream on Harrison Avenue, the George Rogers Clark boat ramp provides a paved surface to launch boats from a trailer, as well as carry-down access to the NWCA. Both of these sites can also be accessed from the Ohio River Greenway.

The only access to the shoreline in the NWCA from Kentucky is via the Portland-Shippingport Bridge that spans the McAlpine Locks. The bridge can be accessed from North 27th street via Northwestern Parkway, as well as the Louisville Riverwalk, which provides access to Shippingport Island and the Fisherman's Trail. The McAlpine Visitor's Area and Louisville Riverwalk provide observation locations into the NWCA, but do not offer access to the Ohio River or shoreline. The following maps provides an overview of access routes and primary entry points or "gateways" to the NWCA. The Key Features map provides orientation to amenities, as well as natural and man-made features located in and adjacent to the NWCA. The third map in the subsequent series provides the location of the NWCA within the region.

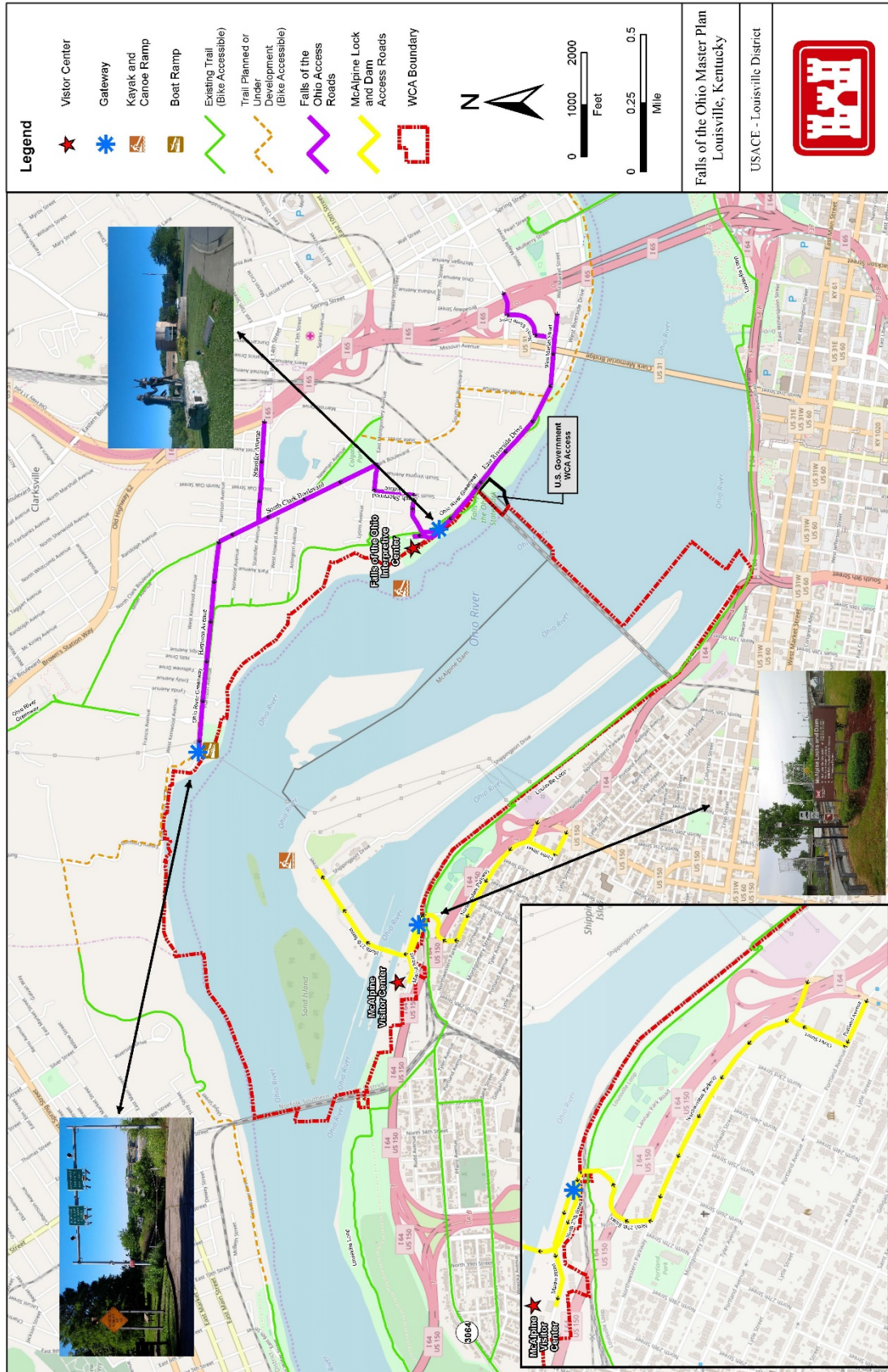
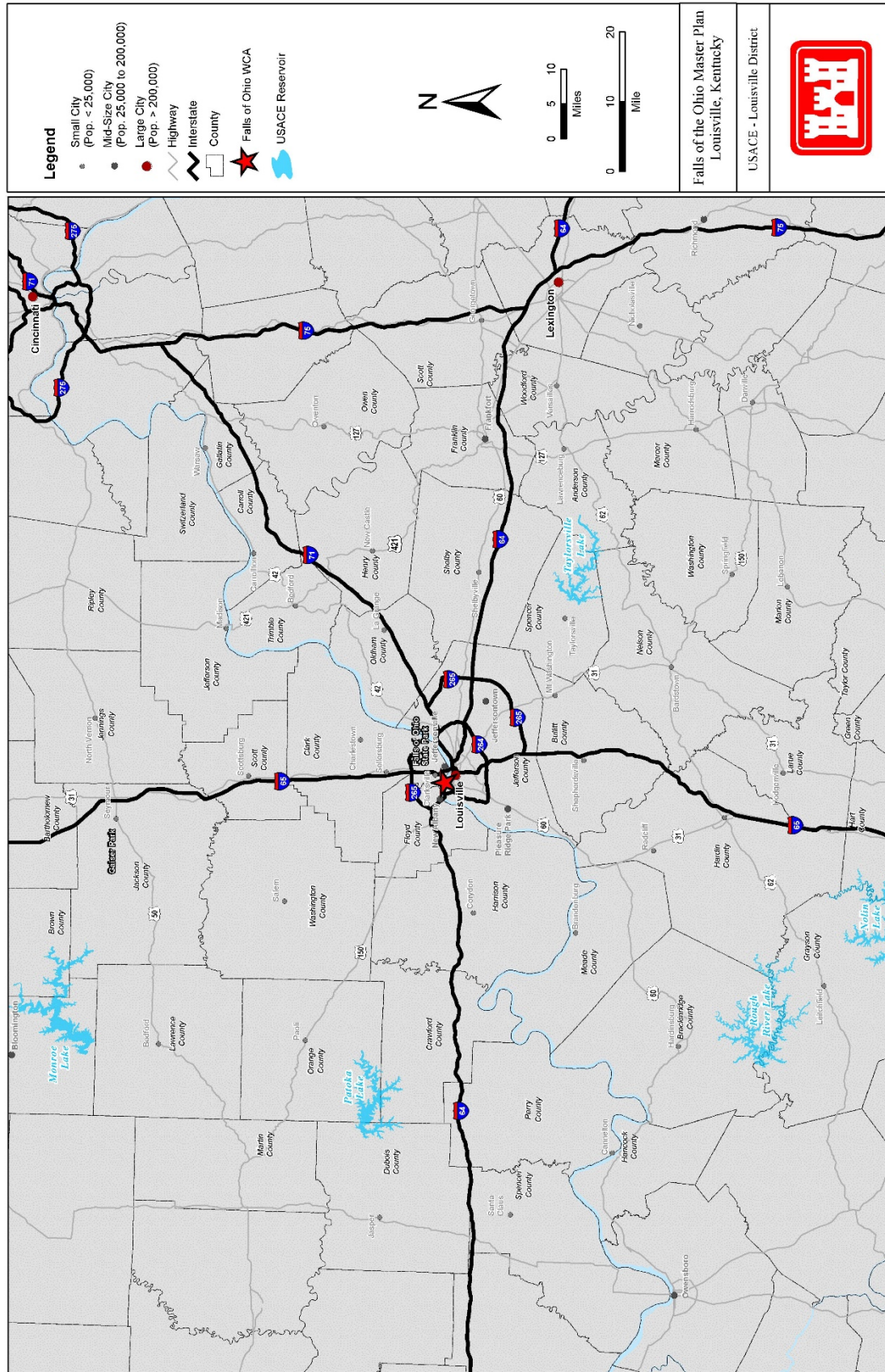


Figure 1 Access Routes and Gateways



Figure 2 Key Features (General Area)



1.8 History of the Project

The designation of the Falls of the Ohio as a Wildlife Conservation Area was preceded by many years of interest in formulating a means for protection and management of the resources there. Although the Falls of the Ohio was designated a National Natural Landmark by the United States Department of the Interior in 1966, the action provided no protective measures. In 1968, the National Park Service recommended the establishment of a commission composed of members from Kentucky and Indiana that would administer the area, but this proposal was not fully implemented. After further studies by U.S. Fish & Wildlife Service and the National Park Service coupled with strong public interest in providing for the protection and management of the area, Congress passed legislation in 1981 formally designating the area as the Falls of the Ohio National Wildlife Conservation Area. The development and administration responsibilities of the NWCA were assigned to Corps primarily because of their historic involvement in the area associated with navigation infrastructure. Table 1 presents a timeline of events.

Table 1 Timeline of Events in the NWCA

Date	Event
1966	National Park Service (NPS) report completed that evaluates the eligibility of the Falls for Natural Landmark status. Subsequently determined eligible for its geologic and paleontological significance.
1968	NPS report recommending establishment of a bi-state park commission to administer the Falls.
1970's	Nine low flow weirs, known as castillations, were cut along the concrete fixed weir between the dams upper and lower tainter gates.
1970	Interstate Park Commission was created by the legislatures of Kentucky and Indiana. Commission was never funded and park never established.
1973	Based on the 1973 Chief of Engineers Finding under Section 9, the Corps entered into a contract with the Town of Clarksville (Contract No. DACW27-74-C-0074) for a setback relocation of Harrison Avenue. In January 1976 this contract was modified to allow for additional work.
1979 (JAN)	Based on the 1973 Chief of Engineers Finding under Section 9, the Corps entered into a contract with the Town of Clarksville (Contract No. DACW27-79-C-0001) for bank protection involving placement of quarry run stone along Harrison Avenue.
1979 (AUG)	Based on the 1973 Chief of Engineers Finding under Section 9, the Corps entered into a contract with the Town of Clarksville (Contract No. DACW27-79~C-0135) for bank protection involving placement of quarry run stone along Emery Lane downstream of Mill Creek.
1980	U.S. Fish and Wildlife Service prepared a report entitled "Preliminary Assessment of the Falls of the Ohio." Evaluated the area's potential as a National Wildlife Refuge. It recommended against such a designation.
1981	National Park Services prepared a report evaluating management alternatives for the area.
1981	PL 97-376 signed into law. Established Falls of the Ohio National Wildlife Conservation Area: 1) Required Department of the Interior (DOI) to designate boundaries within one year; 2) Gave responsibility for management to USACE and required they publish regulations for use and management within one year; and 3) Authorized \$300,000 be appropriated to accomplish purposes of the Act.
1982	Department of Interior publishes final NWCA boundary in Federal Register August 12, 1982.
1983	USACE publishes draft regulations in Federal Register September 9, 1983 (Title 36 CFR, Part 331).
1984	Master Plan and Real Estate Design Memorandum completed.
1985	USACE acquired a 600 acre tract containing the fossil beds.
1987	Falls of the Ohio Foundation established.
1988	The Indiana Department of Natural Resources (IDNR) indicated their intent to become the sponsor for the project.

(Table 1 Continued)

Date	Event
1990	Indiana Department of Natural Resources, Division of State Parks established the Falls of the Ohio State
1990	USACE entered into a lease agreement with IDNR to allow for creation of the Falls of the Ohio State Park.
1991	Preservers Commission creating the approximately 10 acre Shippingport Island Rookery State Natural Area.
1992	IDNR and their consultant provide final plans for Interpretive Center and separable recreation features.
1992	In May 1992 a formal lease (Lease No. DACW27-1-92-12) was executed with the IDNR for the construction by the State of Indiana of the selected recreational facilities on the leased site and obligates the State to operate and maintain the facilities. The lease expires December 23, 2023.
1992	Construction was initiated on the Falls of the Ohio Interpretive Center.
1994	Construction of the Falls of the Ohio Interpretive Center was completed and opened to the public.
1999	Falls of the Ohio National Wildlife Conservation Area Operational Management Plan completed.
1999	Maintaining the optimal amount of water for birds, fish and navigation in the NWCA is a difficult task. The latest operating procedure was adopted in late 1999 to reduce fish strandings below the upper gates when water flow is reduced.
2000	Under authority of Section 1135 of WRDA 1986, USACE modified the fixed weir of the McAlpine Locks and Dam, to reestablish a steady water flow that historically occurred at the Falls of the Ohio before the construction of McAlpine Locks and Dam.
2004	Based on the findings of the May 2004 report "Ohio River Shoreline, Emery Lane Bank Failure, Clarksville, Indiana", a contract was awarded by the Corps to repair the bank along Emery Road under the authority and responsibility to manage the National Wildlife Conservation Area (NWCA) to perform the short-term, emergency repair. (This authority was distinct from the 1973 finding under Section 9 and did not allow the Corps to repair any roadway surface or perform any utility relocations.) Cost of the work was approximately \$1.3M. However, this project was constructed using excess rock excavation from the then ongoing reconstruction of the locks at the McAlpine project.
2011 - 2012	Construction of segments of the seven mile Ohio River Greenway Public Access Project were completed by USACE in Clarksville and New Albany. The project was authorized by Section 559 of the Water Resources Development Act (WRDA) of 1996, Public Law 104-303 and was locally sponsored by the Ohio River Greenway Commission, City of Jeffersonville, Town of Clarksville, and the City of New Albany.
2015	Assessment Report," was completed by the USACE Louisville District. The report includes findings from an investigation of bank failure and erosion issues on the north shore of the Ohio River between RM 605.5 and 606.5. The report presents a summary of prior studies, reports, and projects dating back to 1973 that address the erosion. The report concludes that the shoreline failure is likely a combination of geotechnical and hydraulic issues and that potential measures to address the problem include construction of bank revetment, shoreline walls, or dike jetties. More detailed feasibility studies were recommended.
2016	USACE completed an evaluation of alternatives to address the Falls of the Ohio outer fossil bed access. and determined that the most practical and feasible course of action to address the access issue is to utilize services from commercial vendors to offer use of personal watercraft (canoe, kayak, raft, etc.) to access the outer fossil beds when conditions are not suitable for crossing on foot.
2016	Renovations of exhibits and events space at the Falls of the Ohio Interpretive Center were completed.
2018	USACE completed an analysis, which investigated erosion between river mile 605.5 and 606.5. Conditions on the bank appear most severe when the dam is releasing all or most flow through the downstream set of tainter gates. Releasing all flow through the downstream gates occurs only at lower flow rates, but this study determined that high-flow conditions create higher velocities in the problem area than those observed low-flow conditions. This high-flow event was used to test the capability of structural alternatives to reduce velocities. Plans consisting of emergent dikes placed along the shoreline were able to reduce the velocities and could be a feasible alternative to protect the bankline.
2018	Falls of the Ohio National Wildlife Conservation Area Master Plan Update completed.

1.9 Management of the Project

The Louisville District Engineer and Chief of Operations have delegated responsibility and authority for the management of land and facilities in the NWCA to three USACE field offices:

Taylorsville Lake -The overall natural resources and park management responsibilities within the boundaries of the NWCA is assigned to Operation Division personnel stationed at Taylorsville Lake. On lands already being managed by one of the two on-site Corps facilities, Taylorsville Lake personnel will serve as an advisor and environmental reference source and as such will provide technical guidance relative to natural resources and park management. The Taylorsville Lake Project Office is located approximately 40 miles southeast of the NWCA in Spencer County, Kentucky.

McAlpine Locks and Dam - The McAlpine Locks and Dam is a major Ohio River navigation facility that encompasses 389 acres within the boundaries of the Falls NWCA. Operations Division maintains an administrative and maintenance staff located on site that is responsible for the overall management and maintenance of the McAlpine Locks and Dam facilities, including the visitor's area on the Kentucky shore.



Photo 5 View of McAlpine Locks from Shippingport Island

R3F HCF Mooring Facility –

Formerly known as the Louisville Repair Station (Photo 6), the facility is operated by the USACE Huntington District. The facility serves as a major navigation maintenance and repair facility that includes a wharf, repair boats, floating plants, and administrative and storage buildings covering approximately 11.3 acres on Shippingport Island. On site Operations



Photo 6 Louisville Repair Station

Division personnel are responsible for management and maintenance of facilities and grounds.

Three other agencies lease or own land within the NWCA boundary.

The 1999 Operational Management Plan (OMP) details how certain actions conducted by USACE and these agencies within the NWCA are to be coordinated and evaluated. Two park and recreation projects are currently in planning phases, one on the Kentucky shore (Waterfront Park Phase IV) and a second along the majority of the Indiana shoreline (Clarksville – West Riverfront Park System). The OMP should be evaluated to determine how these developments can successfully be integrated and support the successful management of resources in the NWCA.

Indiana Department of Natural

Resources – Indiana Department of Natural Resources at the Falls of Ohio State Park maintains a long-term lease agreement to manage and protect 60.14 acres. Personnel at the IDNR Falls of Ohio State Park include a property manager, office administrative staff, park ranger, nature interpreters, maintenance staff and volunteers. The Visitor Center is located immediately adjacent to Corps property; however, a portion of the visitor center, observation deck, walkways, access ramps, security lights and picnic benches are located on USACE property leased to IDNR.



Photo 7 View looking upstream from the Interpretative Center Observation Deck

City of Louisville - The City of Louisville, Department of Public Works, holds a license to construct and maintain the Louisville Riverwalk and appurtenant overlooks, over, in and upon lands within the boundaries of McAlpine Locks and Dams, which is within the boundaries of the Falls NWCA. The Louisville Riverwalk facilities are located directly along the southeastern most boundary line of the McAlpine property.



Photo 8 View from Lannan Park on the Louisville Riverwalk looking downstream



Photo 9 View from Lannan Park of Louisville Riverwalk and Louisville Repair Station



Photo 10 Aerial View of LG&E Ohio Falls Generating Station and lower tainter gates

Louisville Gas and Electric - The Louisville Gas and Electric Company owns approximately 55 acres within the area, which includes a hydropower plant and related support facilities. LG&E maintained fee title to lands within the Falls WCA boundaries. The property real estate instrument includes a restrictive easement, which basically requires Corps approval for additional construction or earthwork above elevation 442 msl. This easement however, reserves to the landowner, all such rights and privileges as may be used to operate and maintain an

existing hydroelectric plant, power

transmission lines, related facilities and appurtenances used to conduct business operations. In 2005, LG&E renewed its license with the Federal Energy Regulatory Commission to operate the hydroelectric Station. In 2017, a major rehabilitation project was completed to update and refurbish the eight existing turbine/generator, which increased generation capacity from 80 to 101 megawatts.

1.10 Land Acquisition Overview

The Corps, was directed to acquire lands, waters, and interests within the boundary as may be necessary to insure that the NWCA could be effectively managed for the purposes for which it was established. Minor revisions to the designated boundary were authorized. Lands already purchased for the McAlpine L&D project were included, in their entirety, in the NWCA. Two tracts located downstream of Silver Creek, on the Indiana Shoreline, were not acquired due to the potential for hazardous and toxic wastes. This slightly changed the boundary of the NWCA.

The NWCA extends from just above the upper tainter gates at McAlpine Locks and Dam and Shippingport Island downriver to just below the Kentucky-Indiana Terminal Railroad Bridge. The site contains a total area of 1,281.38 acres fee and 55.90 acres easement (Figure 4). Of the total acreage, 898.57 fee acres and 0.38 channel improvement easement acres were purchased for WCA purposes. The WCA consists of 776.88 fee acres located in Jefferson County, Kentucky and 121.69 fee acres and 0.38 easement acres located in Clark County, Indiana. Land acquisition was completed at 100 percent Federal cost. Recreation features have been constructed with a 50/50 cost sharing with the State of Indiana.

Of the total area, 382.81 fee acres, 55.52 easement acres and one acre license located in Jefferson County, Kentucky were acquired for McAlpine Lock and Dam (L&D) and included in the NWCA boundary. This includes a restrictive easement identified as Tract A-115-E-3 on 55.30 acres purchased by the United States of America from Louisville Gas and Electric Company (LG&E) by Warranty Deed of Restrictive Easement dated 9 July 1958, recorded 10 July 1958 in Deed Book 3513 Page No. 433 in the records of Jefferson County, Kentucky with an acquisition cost of \$64,000.00. Restrictions placed on this 55.30 acre tract include restricting any structures or facilities from being erected on the tract as well as any filling or raising the elevation of the land above elevation 442 msl, excepting from the provisions

hereof the following which are not restricted: (a) all existing building and structures on said tract or any replacement thereof; (b) all transmission line steel frame towers and poles which may be required to transmit or distribute electric energy between the Louisville Hydro-Electric plant and the mainland of Kentucky; (c) a proposed substation to be mounted on towers or posts with the platform to be not lower than elevation 465 msl, (d) a proposed warehouse to be constructed in an area adjacent to and extending upstream from the existing Hydro-Electric plant for approximately 300 feet and extending from the Ohio southerly to a line projected at right angles to the east face of the Hydro-Electric plant from the southeast corner thereof, (e) such other buildings or structures as may be authorized in writing by the District Engineer, and (f) the Hydro-Electric plant as now existing. In addition, LG&E owns property adjacent to McAlpine L&D consisting of 3.62 acres for the operation of a hydro-electric power plant. This area is excluded from the WCA boundary.

Prior to the establishment of the NWCA between 1929 and 1934, approximately 160 acres of flowage easement coincident with the NWCA property were acquired by the United States along the northern bank of the Ohio River in support of Lock & Dam No. 41 (L&D 41). In addition, 1.83 easement acres were acquired prior to January 1943 and 1.45 easement acres were acquired during 1967 for flowage, bank protection and channel improvement purposes in support of McAlpine Lock and Dam. These easements merged into fee tracts acquired for the NWCA.

The USACE currently manages the use, operation and maintenance responsibilities of adjacent McAlpine L&D Parcel 15. This parcel was originally acquired to support L&D 41 and presently contains a trail leading to an Access Point into the WCA. Current maintenance responsibilities provided by the WCA include posting signs to prevent people from walking out on the drift, posting warning signs to vacate fossil beds when sirens emit, replacing fencing as needed and displaying a bulletin board.

A summary of land acquisitions; completed real estate disposal actions; active outgrants; real property inventory; and real estate recommendations for the NWCA is located in Appendix F.

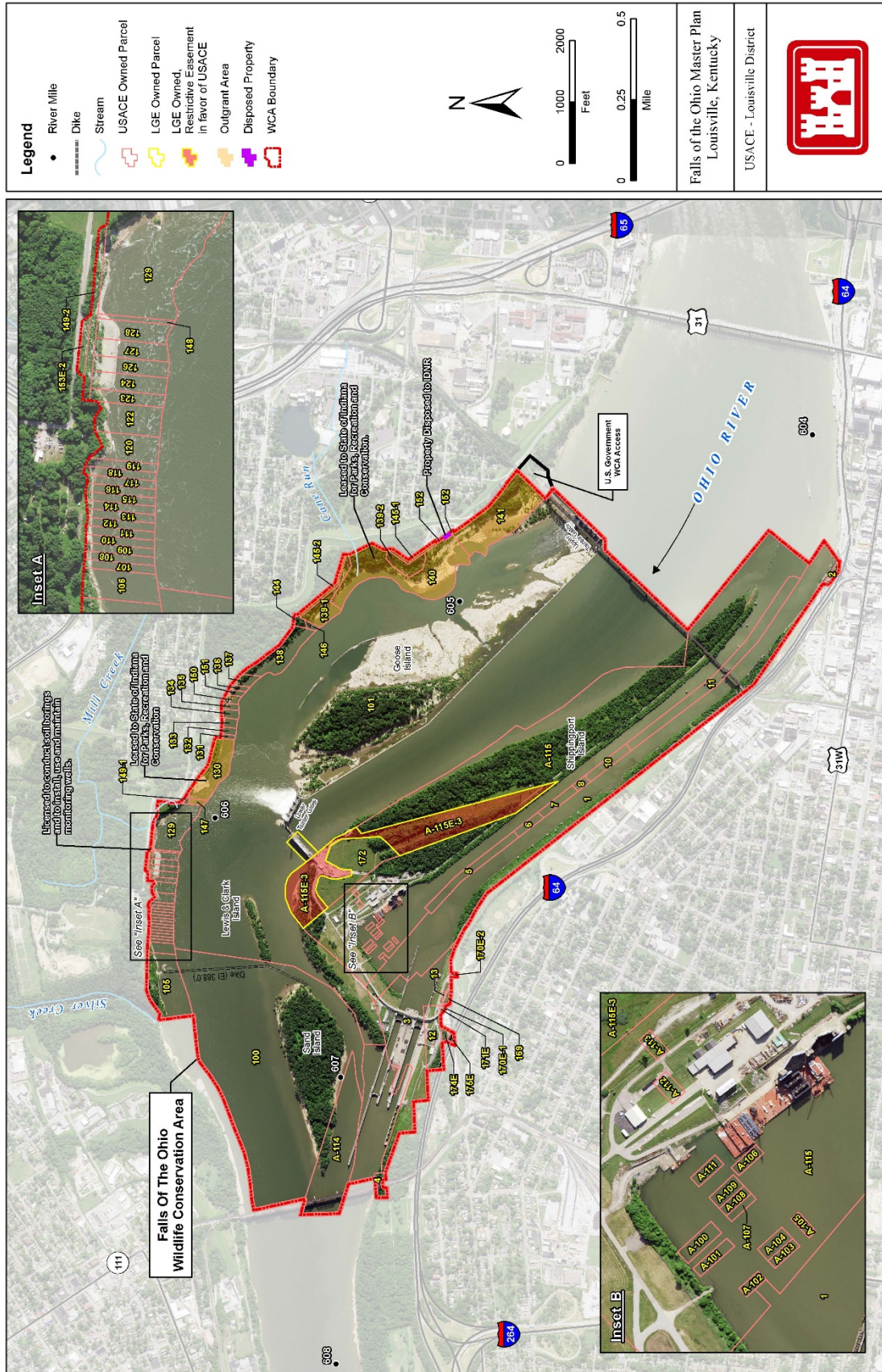


Figure 4 Acquired Parcels

Infrastructure associated with McAlpine Lock and Dam has a direct impact on flows and conditions in the NWCA. The upper pool at the NWCA is maintained at 420 feet msl by a concrete fixed weir (dam) with two sets of tainter gates. The tainter gates are manually adjusted by a hoist system and adjusted depending on river conditions in order to allow the upper pool to fluctuate within the minimum low gage and maximum high gage at the project (12.0 to 13.0 feet). The lower pool is maintained at 383 feet msl by the Cannelton Lock and Dam Project 114 miles downstream.



Photo 11 View of McAlpine Locks looking downstream

Table 2 Overview of locks, dams and generating

Lock Information	
Canal	10,200'
Lock Chamber 1	110'X1200'
Lock Chamber 2	110'X1200'
Dam Information	
Total Length	8,627'
Upper Pool	420'
Lower Pool	383'
Upper Tainter Gates	5
Lower Tainter Gates	4
Gate Height	22'
Gate Width	100'
Ohio Falls Generating Station	
Net Capacity	80 MW
Number of Units	8

These dams are operated to provide a minimum navigational pool of nine feet on the lower pool and 12 feet on the upper pool at the NWCA. Gate operations to maintain these pool levels are made by Operations Division personnel. Gate settings follow a SOP (copy available at McAlpine Dam) and are selected based upon river conditions, power generation needs for the LG&E power plant, and consultation with Engineering Division personnel in the Water Management Section of Hydrology and Hydraulics Branch, to insure a basin-wide approach to water management.

At normal pool, deep water (minimum nine feet) and slow currents characterize the navigation channel. The conditions within the remainder of the area vary greatly dependent upon current gate settings at the McAlpine Dam and power generation at the LG&E hydroelectric station. The McAlpine Dam design is such that low flows can be passed through either the five upper tainter gates or the four lower tainter gates (see Table 5). Passing the flow through the upper tainter gates allows more water to flow over the outer fossil beds.

During summer periods, with the upper tainter gates closed (August 15 – October 15), and only leakage flow, a pool of stagnate water sometimes forms from the upper to lower tainter gates. This negatively impacts the fishery and aesthetics. These low flows also leave large areas of the outer fossil beds dry during long periods of the summer, decreasing use of the area by birds. Conversely, high flows from the

lower tainter gates have sometimes caused cross currents affecting boat launching at the Clark Site boat ramp and erosion in the vicinity of Emory Crossing.

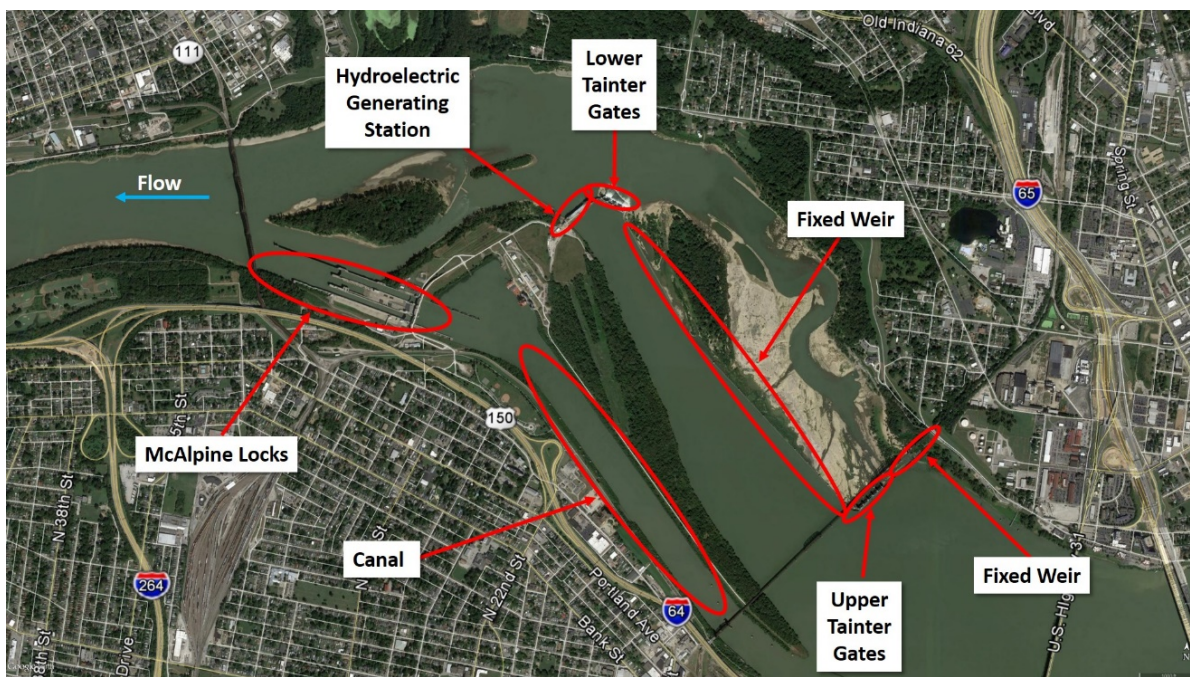


Figure 5 Aerial Overview of navigation and hydroelectric features in the NWCA

McAlpine Lock and Dam is 604.5 miles downstream from Pittsburgh, Pennsylvania (Figure 7). Operational decisions at each lock and dam between McAlpine and Pittsburgh, as well as reservoir and hydroelectric operations all influence flow conditions in the NWCA.



Figure 6 Ohio River Mainstem Navigation System

1.11 Visitation Data

There are three primary gateways that visitors use to access the NWCA: Falls of the Ohio State Park, George Rogers Clark Boat Ramp and McAlpine Visitor's Center. Formal visitor counts in the NWCA are only recorded at the entry to the parking lot at the Falls of the Ohio Interpretative Center (Figure 8). This counter was implemented while the Falls of the Ohio Interpretative Center was undergoing renovations. USACE uses the Visitor Estimation Reporting System (VERS) to report the annual number of visits to recreation area, which are displayed below in figure 8.

Falls of the Ohio Interpretative Center

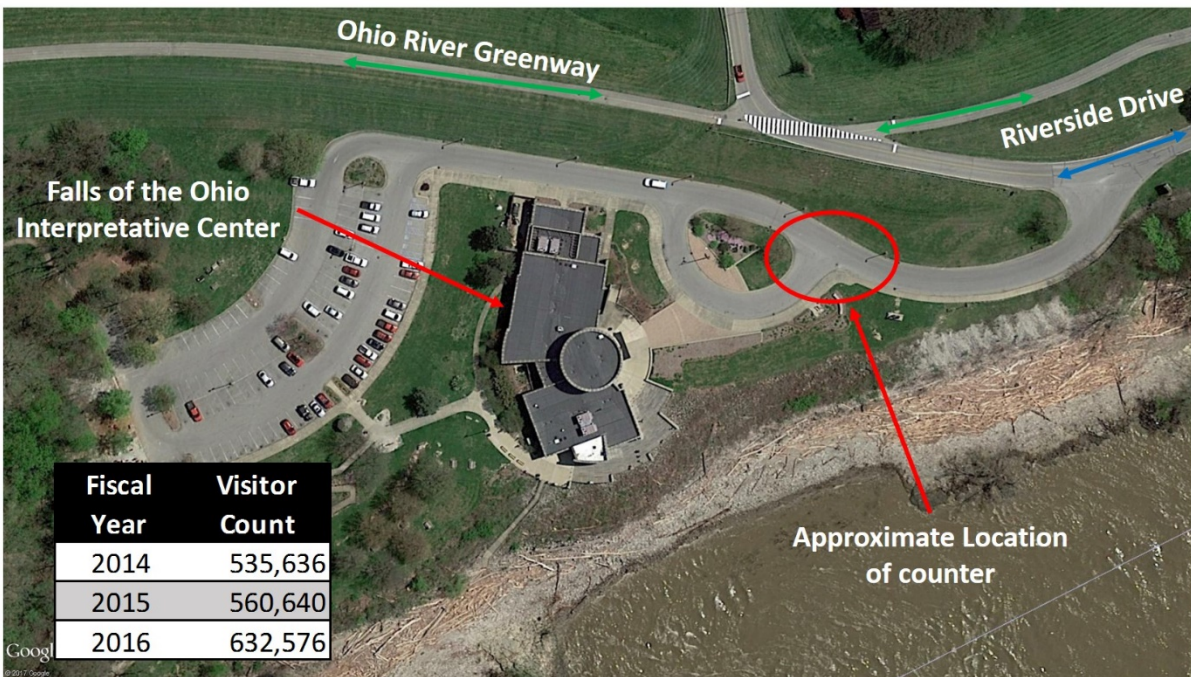


Figure 7 Visitor Counts at the Interpretative Center



Photo 12 Display inside the Interpretative Center

Prior to 2013, visitation to the NWCA was estimated by the number of ticket sales for entry to the Interpretative Center (Photo 12). The Falls of the Ohio State Park estimates that 500,000 people, including school and other tour groups, visit the Interpretative Center annually.

George Rogers Clark Home Site

The George Rogers Clark boat ramp (Photo 14), also managed by the Falls of the Ohio State Park, provides access to the NWCA via boat. The boat ramp is a feature of the George Rogers Clark Home site and provides six parking spots for vehicles along with trailers and 10 individual parking spots. There are no visitation counters at this location.



Photo 16 Location of boat ramp at the George Rogers Clark Home Site



Photo 14 The gate across the ramp is closed and a warning signal is activated when flows are extremely high



Photo 15 Clark Cabin (moved to this location in 2001)



Photo 13 Picnic shelter at the George Rogers Clark Home Site

McAlpine Locks and Dam

McAlpine Lock and Dam provides the sole entry point into the NWCA from the Kentucky Shore. At this time there are no formal visitation counts for the McAlpine Visitor's Areas or trips across the Portland-Shippingport Bridge to Shippingport Island and the Fisherman's Access Trail.

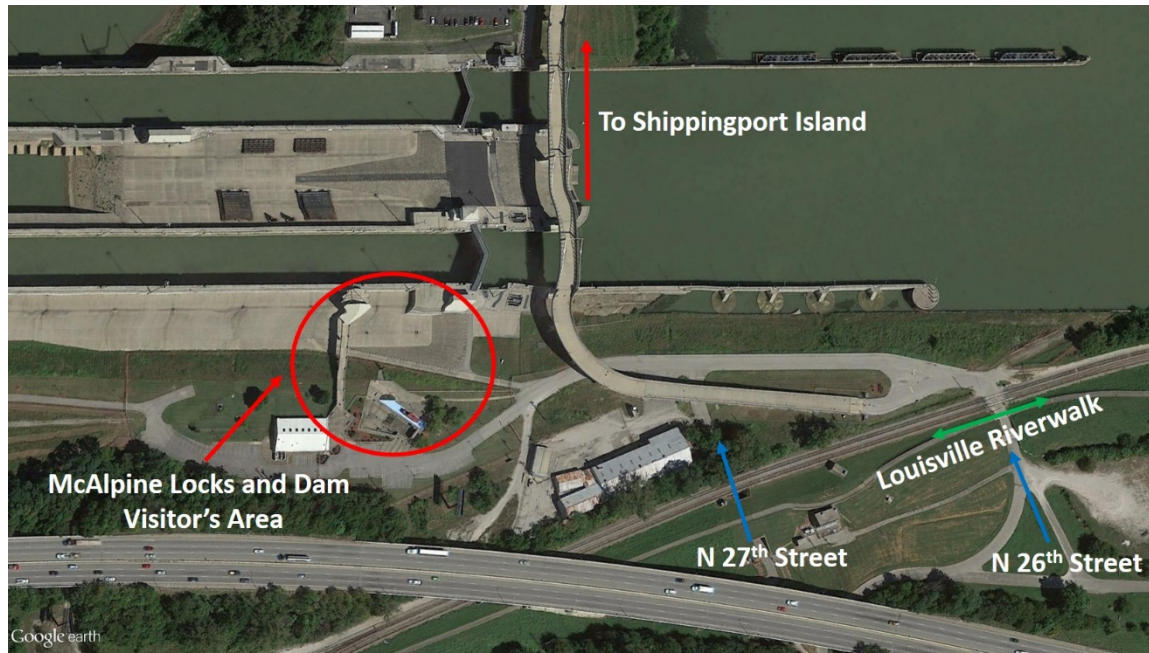


Figure 8 Location of public access points at McAlpine Locks and Dam



Photo 17 Gate leading across bridge to Shippingport Island and Fisherman's Access Trail

2.0 Public Involvement and Coordination

The NWCA boundary surrounds a unique collection of cultural and natural resources that is also home to substantial navigation and hydroelectric infrastructure. At the same time, communities on both shores of the NWCA are actively exploring opportunities to interact with and capitalize on this area as a strategic community asset. Ensuring robust public involvement to understand current and desired conditions in the NWCA, as well as long range plans for adjacent lands, is critical to inform the broad strategies identified in the Master Plan Update to effectively manage the resource.

During the public involvement process, the congressionally authorized purpose for the establishment of the NWCA was presented as the overarching framework that will guide any recommendations developed as part of the Master Plan Update. This communication was intentional to manage public expectations of the planning process and outcomes, as well as to elicit feedback that could result in actionable items.

Overall, a central takeaway from the public involvement process is that there is a large number of agencies and individuals that understand the NWCA as a critical asset to the region and are highly motivated to enhance the management of the resource. Intentional action by USACE to support and build on this current public momentum provides an excellent opportunity to further conserve and enhance the resource.

2.1 Initial Scoping

Management decisions and physical undertakings in the NWCA are ultimately determined by USACE in consultation with three agencies (IDNR, LG&E and the City of Louisville) that lease or hold land in the NWCA boundary. This group convened at the Louisville District Office in August 2017 for the initial scoping phase of the Master Plan Update. The focus of the meeting was to begin to describe existing conditions in the NWCA, identify potential data sources and outline the broader public involvement process. The discussion below provides a summary of key points from the discussion. Other information generated through the meeting informed other sections of the report.

A predominant concern voiced by USACE and LG&E attendees was a lack of security at McAlpine Lock and Dam and on Shippingport Island. Specific issues included illegal camping, campfires, firearm discharge, vandalism, vehicle break-ins and littering. It was also noted that there is no USACE personnel to patrol/enforce visitation hours or Title 36 (federal rules & regulations for parks, forests and public property). In previous encounters with the public that have remained after closing hours or conducting illegal activities, McAlpine staff have been threatened. Consequently, there needs to be visitor assistance staff in place at the NWCA before promoting fishing or other recreational activities due to safety concerns.

Heavy debris and deposition across certain areas of the NWCA was also identified as problematic. Specific areas noted included McAlpine upper castellations, Interpretive Center, Clark boat ramp and the newly constructed Louisville Fire & Rescue boat ramp on Shippingport Island. Louisville Metro Parks had specific concerns with debris on the boat ramp, as they plan to potentially use that facility in the future to support the West Louisville Outdoor Recreation Initiative (WLORI). In general, debris management is a costly activity across the NWCA.

Louisville Metro Parks, IDNR and others also expressed interest in better understanding operational decisions in the NWCA that affect river conditions. This comment centered on exploring opportunities to promote canoeing and kayaking in the NWCA, similar to blueways trails at other locations in the region (i.e. Blue River). The NWCA provides a unique experience with a mix of flatwater and whitewater, which could become a targeted outdoor recreation destination for national organizations such as Wilderness Inquiry. Proposed improvements to land-based recreation included installation of additional interpretative signage/kiosks, as well as consistent wayfinding to lead visitors through the NWCA and from adjacent multi-use trails.

Erosion and invasive species in the NWCA were also noted as major concerns by the group. There is continued erosion of the riverbank adjacent to the Clark Cabin interpretative site. Consequently, IDNR plans to move the cabin away from riverbank. Erosion is also active at Emery Crossing and USACE is completing an analysis of potential alternatives to stabilize the bank. The understory of Sand Island, as well as Shipping port Island are dominated by bush honeysuckle and other invasive plant species. Woody vegetation (i.e. Willows) has increased on Lewis and Clark Island over the past several years. IDNR expressed concerns of the potential introduction or migration of kudzu at the Falls of the Ohio State Park and Shippingport Island.

Still, there are activities underway to improve flora diversity and habitat including installation of nesting boxes and pollinator areas near McAlpine Locks and Dam. The federally endangered Short's goldenrod was found naturally occurring on a limestone outcrop (Rock Island) in the NWCA in the mid-1800's, but disappeared from the NWCA following the construction of McAlpine Locks and Dam in the early 1900's. Short's goldenrod was reintroduced to the NWCA in 1995 near the current location of the Falls of the Ohio interpretative Center, but was lost to silt, sediment, and encroachment of willows.

2.2 Public Meeting / Open House 1

Two separate meetings were held during the Master Plan scoping phase. The first meeting was held on October 17th at the Falls of the Ohio Interpretive Center (Photo 17) and the second was held on October 24, 2017 at the Portland Museum (Photo 18) in Kentucky (the presentation, comments and sign-in sheets are available in Appendix C). A meeting in each state was considered critical in order to capture feedback from varied user groups from both shorelines. The intent of these meetings was threefold: 1) introduce the public to the planning process; 2) capture existing conditions in the NWCA and 3) begin to define resources.

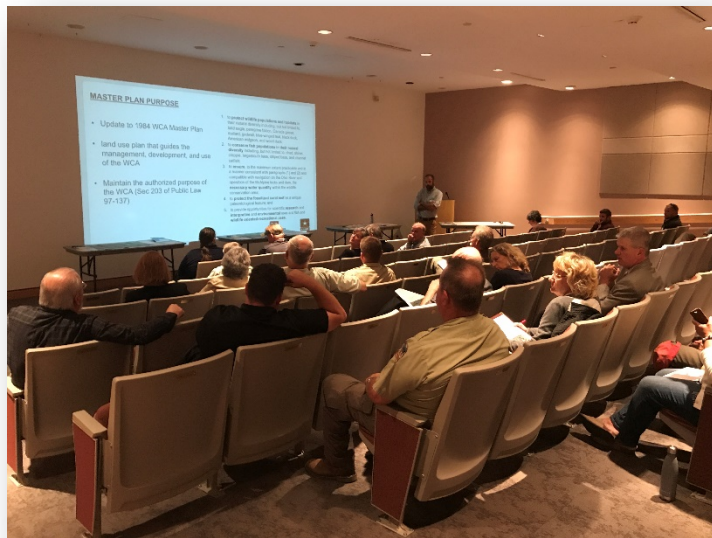


Photo 18 October 17, 2017 Public Open House at the Falls of the Ohio Interpretive Center

While the groups at each meeting were diverse, four consistent themes were offered by the public at each meeting and through written comments.

- **THEME 1: Improved Education and Outreach**
 - Better communicate the resource and unique nature of the NWCA
 - Develop and disseminate biodiversity information relating to NWCA
 - Coordinate with local universities for research and teaching opportunities
 - Provide opportunities for guided tours on Shippingport Island
 - Develop stronger connections with adjacent neighborhoods to develop a volunteer network and provide education opportunities
- **THEME 2: Ecosystem Restoration and Enhancement**
 - A baseline inventory of flora and fauna should be developed for the NWCA to better inform management decisions and future restoration activities
 - Develop strategies to manage trash and debris on the shorelines and outer fossil beds
 - Manage the shorelines for bank stabilization and improved habitat
 - Review the impact of the operation of McAlpine Lock and Dams on the fossil beds
- **THEME 3: Improved Recreational Opportunities**
 - Consider future bicycle infrastructure that will interact with the NWCA
 - Clarify locations that recreational boaters are permitted in the NWCA
 - Passive recreation appear to be the most compatible with NWCA authority
 - Explore opportunities to improve non-motorized watersport activities in the NWCA through the development of a Blueways Trail and signage.
- **THEME 4: Management**
 - Access to the NWCA should be maintained from both the Kentucky and Indiana shorelines.
 - There is a clear need for a full time USACE ranger and staff to manage visitation, cultural and natural resources in the NWCA



Photo 19 October 24, 2017 Public Open House at the Portland Museum

2.3 Public Meeting / Open House 2

A third open house was held on August 22, 2018 at the McAlpine Training Center to present the current status of the master plan update prior to releasing the report and environmental assessment for a 30-day public review. The open house also provided time for public comments, as well as questions and answers. A complete list of comments submitted by email is located in Appendix C.

A summation of general comments and questions are presented below:

- The Master Plan Update does not prohibit access to the outer fossil beds, but also does not present any recommendation to encourage additional visitation to that location in the NWCA. The results of a series of stakeholder meetings to discuss this issue are presented in Section 4.3.3 of this report.
- Debris accumulation is a serious concern (safety, aesthetic and environmental) in the NWCA. The Master Plan Update does not outline a specific strategy to address this issue; however, this document fully acknowledges the issue and is intended to serve as a starting point for USAC and adjacent partners to develop options to manage the issue.
- There have been previous efforts to establish a soft-trail from the state park extending downstream along the Indiana shoreline. Interest in expanding the current trail network still exists and expansion opportunities should be considered as the River Heritage Conservancy begins work on their master plan for the future park development on the Indiana shoreline of the NWCA.
- There are opportunities to outgrant areas in the NWCA that align with the projects authorized purpose.
- Camping is generally prohibited in the NWCA (including islands). However, depending on the purpose of the overnight stay there may be opportunities to explore this activity in more detail on a case-by-case basis.
- Full time USACE staff located in the NWCA tasked with managing visitation is a consistent need identified during every outreach meeting conducted. During the August 22, 2018 meeting USACE Operations staff indicated that a budget request for personnel has been submitted for federal fiscal year 2020.
- Due to the sensitive nature (cultural, environmental, infrastructure security) of Shippingport Island the Master Plan Update identifies the island as restricted to public access except for the Fisherman's Trail and associated parking area. This designation does not preclude future guided tours or other activities connected to the authorized purpose of the NWCA. Examples of previous tours on the Island include bird watching excursions by the Beckham Bird Club.

2.4 Coordination and Partnerships

The public involvement process provided opportunities to engage and identify active organizations on the boundary of the NWCA and better understand how their planned actions may impact how the resource is managed. Below is a listing of those organizations.

Kentucky Organizations:

- Louisville Waterfront Development Corporation
- Louisville Metro Parks
- Louisville Natural Areas
- Portland Museum
- Louisville Grows
- West Louisville Outdoor Recreation Initiative

- Viking Canoe Club
- Louisville Area Canoe & Kayak Club
- River City Paddlesports
- River Fields
- Kentucky Waterways Alliance

Indiana Organizations:

- Ohio River Heritage Conservancy
- Town of Clarks City Parks
- Ohio River Greenway Commission
- Falls of the Ohio Foundation

Regional & National Organizations

- American Whitewater

3.0 Resource Analysis

This section of the Master Plan presents an analysis of existing conditions of physical and natural resources at the Project. The information in this section is intended to facilitate a better understanding of the natural resource capabilities, suitability, and constraints relative to future Project development and natural resource-related management activities and to support development of the resource objectives and subsequent land classification decisions.

3.1 Physical Environment

The discussion of the physical environment of the Project area includes the following natural resources:

- Surface water;
- Wetlands;
- Groundwater;
- Physiography and topography;
- Geology, soils and minerals;
- Historic and pre-historic resources; and
- Scenic elements.

Existing conditions of each of these natural resources are described in the subsections below, followed by a brief analysis of the suitability of that resource for project development.

3.1.1 Surface Water

Surface water includes water sources that are present at the ground surface. For the NWCA, surface waters include the Ohio River and associated tributary streams.

Ohio River

The Ohio River is one of the nation's great natural resources. The Ohio not only provides drinking water for over five million people, but serves as a warm water habitat for aquatic life, provides numerous recreational opportunities, is used as a major transportation route, and is a source of water for the manufacturing and power industries. The headwaters of Ohio River begin in Pittsburgh, Pennsylvania at the confluence of the Allegheny and Monongahela Rivers and flows southwesterly for 981 miles, joining the Mississippi River near Cairo, Illinois. Nineteen high-lift locks and dams installed by the USACE for navigation purposes maintain a nine-foot minimum river depth and regulate flow, facilitating the transport of more than 230 million tons of cargo on the river every year. The river has an average depth of 24 feet with an average width of 0.5 miles. Long-term monthly average flows in the Ohio River, depending on location and time of year, range from 14,000 to 497,000 cubic feet per second (cfs). The McAlpine pool is 72.9 miles long and is bounded Markland Locks & Dam on the upstream end. Downstream of McAlpine Locks & Dam, the Cannelton pool is 113.9 miles long.

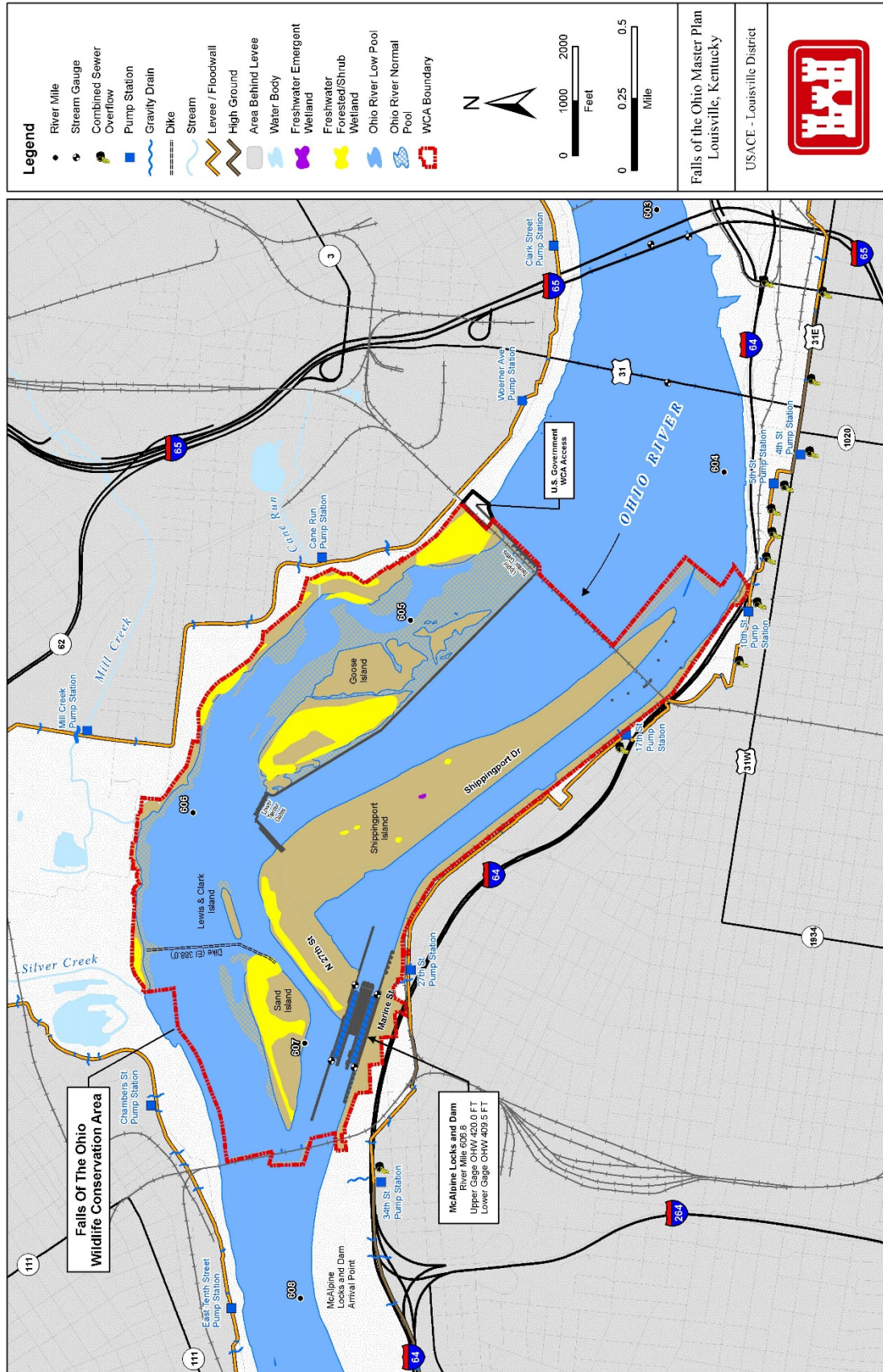


Figure 9 Hydrology Map

Tributaries

The NWCA encompasses approximately three miles of the Ohio River, between the upstream bounds near the L&I Railroad Bridge and the downstream bounds near the K&I Railroad Bridge. Two tributaries- Silver Creek and Mill Creek, flow into the Ohio River within the boundary of the NWCA on the Indiana side. Silver Creek has a drainage area of 152 square miles and Mill Creek drains approximately 3-4 square miles. A few smaller, intermittent and ephemeral streams can be found around the border of the NWCA.

Water Quality

The Ohio River Valley Water Sanitation Commission (ORSANCO) is a quasi-regulatory agency created to control pollution of the Ohio River. The agency is responsible for setting baseline water quality standards for the Ohio River. Ohio River states (Ohio, Kentucky, Illinois, Indiana, West Virginia, and Pennsylvania) may then elect to adopt those standards or more strict ones. All must comply with Clean Water Act regulations and are subject to United States Environmental Protection Agency (USEPA) approval.

According to ORSANCO (2016), an assessment of water quality and biota data collected from 2010 – 2014 at RM 603.3 - 608.1, indicated impairments for contact recreation caused by *E. coli*, and impairments for fish consumption caused by polychlorinated biphenyls (PCBs) and dioxins. The data indicated standards were met for aquatic life use and public water supply for the same stretch of river. Important trends detected in data included increasing phosphorus concentrations at most Ohio River monitoring stations and increases in chloride concentrations at nearly all stations, including tributaries.

Combined sewer overflows (CSOs) and other non-point sources have been identified as significant causes of bacteria problems in the Ohio River, particularly during heavy rain events. The Louisville Metropolitan Sewer District (MSD) has approximately 84 CSOs upstream of the NWCA (MSD 2017), and Jeffersonville, Indiana has six active CSOs upstream of the NWCA (IDEM 2017).

ORSANCO operates bacteria monitoring programs to assess the degree of contact recreational use support during only during the "contact recreation season" (May-October). The agency's standard for *E. coli* state that measurements should not exceed 130/100mL as a 90-day geometric mean (at least five samples required per month). Data from the stretch of river monitored at Louisville indicated a classification of "partially supporting - impaired", for which the criteria were exceeded 11-25 percent of the time

The main stem of Silver Creek- from its confluence with the Ohio River from the mouth of the Sinking Fork- was included on Indiana's 2014 303(d) List of Impaired Waters due to high levels of PCBs and/or *E. coli*. The 2007 Silver Creek Watershed Management Plan cited increased run-off caused by rapid population growth and increased impervious area in Clark and Floyd counties as one of the main factors affecting the condition of Silver Creek.

3.1.2 Implications of Surface Water Resources for Project Development

The entirety of the NWCA is included in the regulatory floodway and is subject to extreme water velocities during high-water events on the Ohio River (see Figure 12). These conditions limit future development potential of the area. At low and normal flow, the Ohio River below McAlpine's upper tainter gates offers excellent paddling opportunities to recreational users of the NWCA. During higher flows, whitewater kayakers frequent the turbulent water created by the fossil beds. Future development activities should focus on the opportunities provided by surface waters by improving or facilitating recreational and educational opportunities for the public and enhancing wildlife habitat.

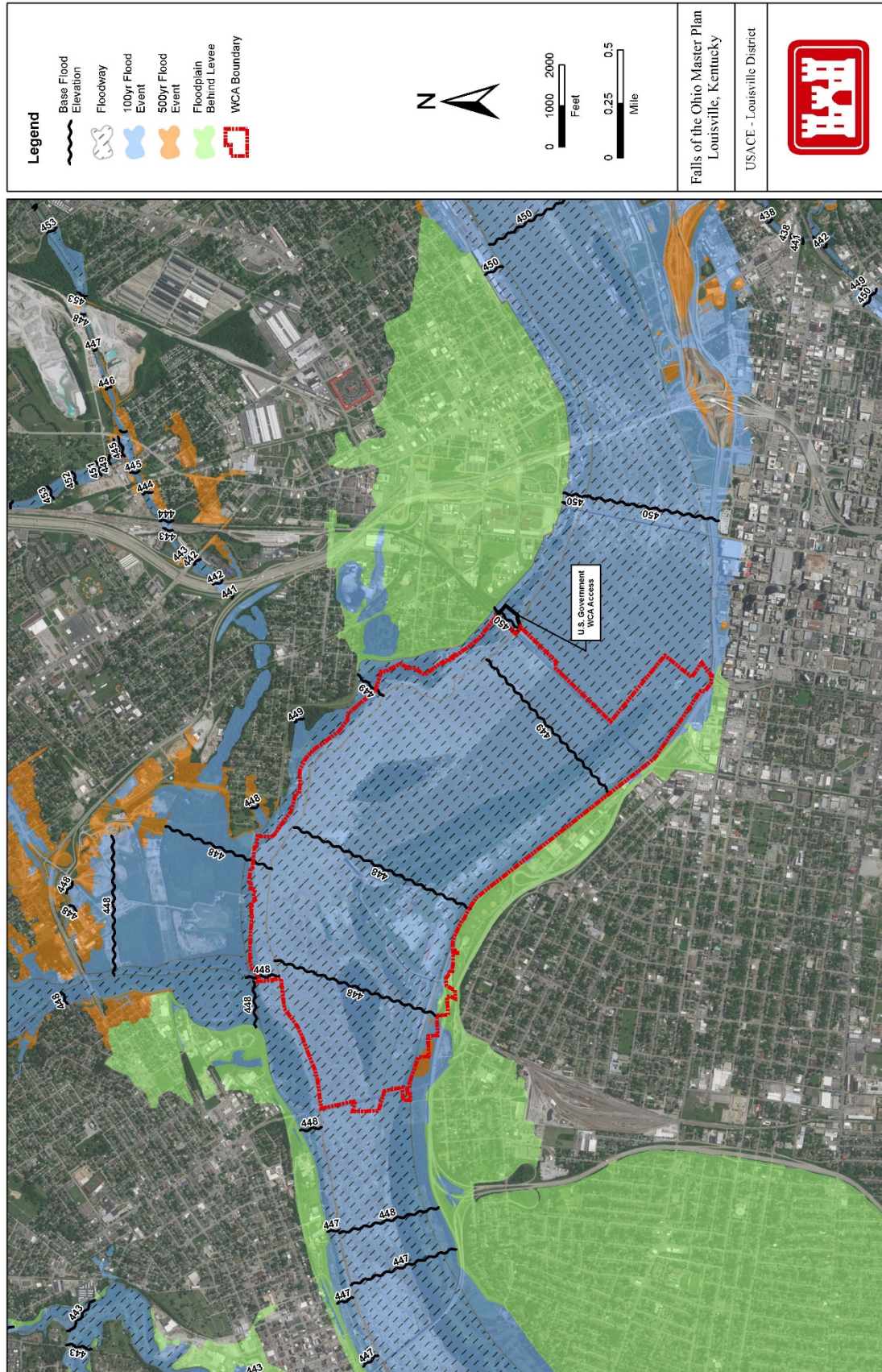


Figure 10 Flood Zone Map



Figure 11 USFWS National Wetlands Inventory Map

3.1.3 Wetlands

Approximately 92.5 acres of freshwater forested/shrub wetland, as classified by the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI), exist within the NWCA. The largest and most developed wetland is on Goose Island, located below the upper and lower tainter gates of the dam. Sand Island, located north of the McAlpine lock, is mostly comprised forested wetland, as is the northwestern edge of Shippingport Island. Several small depressions on Shippingport Island have developed into wetlands, including one freshwater emergent wetland with an area of approximately 0.19 acres (see Figure 13 above). Smaller marsh areas are found near seeps and springs in the sandbar below the K&I Railroad Bridge and along the river at the Clark Home site.

According to the Falls of the Ohio State Park Natural Resource Management Plan (2016), plants that are characteristic of this environment include: water willow (*Justicia americana*), common arrowhead (*Sagittaria latifolia*), Virginia bugleweed (*Lycopus virginicus*), primrose willow (*Ludwigia peploides*), nodding smartweed (*Polygonum lapathifolium*), nodding-bur marigold (*Bidens cernua*), and small bulrush (*Scirpus atrovirens*). Scattered areas of non-native purple loosestrife (*Lythrum salicaria*) and garden loosestrife (*Lysimachia vulgaris*) add color to the landscape along with large pink blossoms of the swamp rose mallow (*Hibiscus moscheutos*). Commonly entangling itself over large patches of vegetation, dodder (*Cuscuta gronovii*) is also found in this habitat.

Wetland areas in the NWCA are important habitat for migrating waterfowl. Birds commonly found in this area are the same birds found in the river community listed above. A colony of beavers (*Castor canadensis*) is established on the Goose Island marsh along with muskrats (*Ondatra zibethicus*) and reptiles like the midland water snake (*Nerodia sipedon pleuralis*). Amphibians include the common southern leopard frog (*Rana sphenoccephala utricularia*) and the minute cricket frog (*Acris* species).

3.1.3.1 Implications of Wetland Resources for Project Development

Under Executive Order (EO) 11990, Federal agencies, including the USACE, are tasked with the responsibility to preserve and enhance wetland resources. Wetlands can represent both a constraint and an opportunity in regard to project development. Wetlands are a constraint because they are a sensitive environmental resource which should be preserved, and this requirement limits development opportunities for high intensity/density recreational activities.

In the case of the NWCA, the intact forested and shrub wetland areas located on each of the islands and along the Indiana shore will limit development potential in the area. These areas should be avoided for any future project development.

As an opportunity, the wetlands found in the NWCA provide specialized habitat for select flora and fauna that would not otherwise thrive in this locale. Wetlands can provide potential recreational opportunities such as wildlife viewing, bird watching, and interpretive and educational activities due to the diverse wildlife associated with them.

Prior to the implementation of any proposed project development recommendations that could affect wetlands, wetland delineations would need to be conducted, potential wetland impacts evaluated, including mitigation for unavoidable impacts, and water quality certification obtained from the corresponding state agency, as necessary.

3.1.4 Groundwater

Both bedrock and unconsolidated aquifers are present in and around the NWCA. The following information on these systems was gathered from maps produced from the Indiana Department of Natural Resources, Division of Water. According to Maier (2006), the NWCA contains several types of unconsolidated aquifer systems, including the Unglaciaded Southern Hills and Lowlands and the Dissected Till and Residuum Aquifer System; the Alluvial, Lacustrine, and Backwater Deposits Aquifer System; and the Ohio River Outwash Aquifer System.

The Unglaciaded Southern Hills and Lowlands and the Dissected Till and Residuum Aquifer System systems are mapped as one system because they are similar in composition and in aquifer characteristics. The combined systems consist of either pre-Wisconsin till deposits of variable thickness with very thin interbedded layers of outwash sand and gravel. Together, they have the most limited ground-water resources of the unconsolidated aquifer systems mapped in Floyd County, Indiana. This aquifer system is generally thin and not very productive. Typical well yields are expected to be less than five gallons per minute (gpm). Because of the low permeability of the surface materials, these aquifer systems are not very susceptible to contamination from surface sources.

According to Grove (2006), the Alluvial, Lacustrine, and Backwater Deposits Aquifer System is made up of heterogeneous bodies of alluvial, colluvial, and lacustrine materials within valley bottoms and terraces of some larger stream tributaries to the Ohio River. The unconsolidated deposits primarily come from two sources. One source is alluvium, deposited by the streams along with colluvium eroded from the valley walls and upland areas. The second major source is glaciolacustrine deposits that were formed in bodies of relatively stagnant lake water and are marked by soft silt and clay. In places, particularly in downstream areas near the Ohio River, this system exceeds 50 feet in thickness. Wells constructed in this system in Clark County would not typically support high-capacity usage. This aquifer system is generally marked by thick surface deposits of soft silt and clay that have low susceptibility to surface contamination in downstream areas such as the NWCA.

The Ohio River Outwash Aquifer Subsystem is mapped parallel and adjacent to the Ohio River Outwash Aquifer System where the topographic position is higher and thickness of saturated outwash materials is considerably less than the main outwash system. In Clark County, Indiana, the Ohio River Outwash Aquifer Subsystem has the potential to meet the needs of domestic and some high-capacity users. This system is generally 25 to 70 feet thick, with 50 feet of continuous sand and gravel in places. Reported well yields range from 5 to 300 gpm, with static water levels between 16 to 35 feet below the surface. Areas within this aquifer system that have overlying clay or silt deposits are

moderately susceptible to surface contamination; whereas, areas that lack overlying clay or silt deposits are highly susceptible to contamination.

Bedrock aquifer systems within the NWCA include the New Albany Shale Aquifer System and the Silurian and Devonian Carbonates Aquifer System. The New Albany Shale Aquifer System is an extremely limited ground-water resource. The outcrop/subcrop area for the New Albany Shale in Floyd County is present along a narrow strip from Silver Creek continuing south along the Ohio River. This aquifer system consists mostly of shale and minor amounts of dolomite and dolomitic quartz sandstone. The New Albany Shale in Floyd County has a maximum thickness of 120 feet and generally increases in thickness as it dips to the southwest beneath younger rock formations. Depth to bedrock is about 5 to 25 feet but is about 100 feet near the Ohio River where thick outwash deposits are present.

Total well depths in this system are generally 40 to 70 feet with 20 to 60 feet of penetration into bedrock. Typical yields are 5 gpm or less. Static water levels range from 25 to 55 feet below ground surface and susceptibility to contamination introduced at or near the surface is low.

The Silurian and Devonian Carbonates Aquifer System consists primarily of middle Devonian age carbonates of the Muscatatuck Group and underlying Silurian carbonates. The maximum thickness of this system is about 250 feet. The depth to the bedrock surface is typically less than 30 feet on the uplands, but is greater than 100 feet in the Ohio River Valley. Water wells completed in this system are generally capable of meeting the needs of domestic users. Typical yields for domestic wells in this system range from 1 to 10 gpm. Static water levels commonly range from 10 to 45 feet below land surface. This aquifer system has a low susceptibility to surface contamination (Grove, 2006).

3.1.4.1 Implications of Groundwater Resources for Project Development

Several aquifer systems converge near the NWCA, however most generally offer low water yields and may not be a viable resource to provide potable water for development at the Project. Any future development would likely require connection to the existing water distribution system.

3.1.5 Physiography and topography

According to Homoya, et al. (1985), the NWCA lies within the Big Rivers Natural Region. This region consists of rivers where average flow is 7,000 cubic feet per second or greater, and includes all of the Ohio River bordering Indiana and lower sections of the White and Wabash rivers. According to the IDEM (2016), the Falls of the Ohio State Park is also included in the Scottsburg Lowland physiographic region of Indiana. This region is generally defined by underlain Devonian/Mississippian-age shale that provides little resistance to erosion; however, it should be noted that most of the bedrock underlying the Falls of the Ohio is limestone, which provides more resistance to erosion than does shale. Perhaps for this reason, some people have sub-divided the Scottsburg Lowland into two regions, the northern part being

the Scottsburg Lowland and the southern part being the Charlestown Hills region. According to this division, the Falls of the Ohio State Park would be located in the Charlestown Hills physiographic region of Indiana (Gray, 2000).

3.1.5.1 Implications of Physiography/Topography for Project Development

The majority of dry land within the NWCA exists on the islands in the Ohio River. The shorelines on both Kentucky and Indiana are generally too steep for development, but can offer interesting and challenging opportunities for hiking and wildlife or scenic viewing, as well as other opportunities if properly integrated with site topography. The steep, wooded slopes also provide wildlife habitat and visual buffers, and add scenic quality to the overall project.

3.1.6 Geology, soils and minerals

The Falls of the Ohio is the only outcropping of bedrock along the length of the Ohio River. The area is so named because the bedrock forms a natural series of rapids in which the river falls 26 feet in 2.5 miles (Greb et al., 1993). According to the IDNR (2016), the geology of the Falls of the Ohio dates back to about 390 million years ago to the Devonian period when the remains of marine organisms were deposited and have become the Devonian fossils at the Falls of the Ohio.

The Devonian rocks exposed in the Falls area include the Jeffersonville Limestone, the North Vernon Limestone, and the New Albany Shale, in ascending order (Droste and Shaver, 1986). The Jeffersonville Limestone overlies the Silurian strata, consisting of either the Louisville Limestone or Wabash Formation. Since the completion of the dam and locks, however, most of this important outcrop has been permanently flooded. Bedrock is no longer exposed in the river bed at Jeffersonville, and the limestone bedrock ledges that are still accessible are entirely within the cities of Louisville, Kentucky and Clarksville, Indiana. The bedrock exposed at the Falls of the Ohio (including the outcrop just west of the mouth of Cane Run Creek) encompasses approximately 1 foot of Louisville Limestone, a complete (35 feet thick) section of Jeffersonville Limestone, and a thin, largely covered section of the Silver Creek Member of the North Vernon Limestone. Unconsolidated sand, silt, and gravel (predominantly Quaternary outwash and alluvial sediments) are also present at the Falls (Hendricks, et al., 2005).

Much of the geology of the park is a result of glaciers that existed from about 2 million to 10,000 years ago. Glacial melt water carved out the Ohio River basin, and the eroding action of the Ohio River exposed the Devonian limestone fossil beds. The bedrock that is not exposed is covered by unconsolidated material at an average depth of 75' with a maximum depth ranging to 200' deep. The average elevation of the bedrock surface above mean sea level is 300 feet with a maximum elevation at 400 feet (IDNR, 2016). Since 1820, some 600 species of fossils (including corals, stromatoporoids, brachiopods, crinoids, and other marine invertebrates) have been reported from the Falls (Hendricks, et al., 2005).

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, several soil series/types are found within the NWCA. The Urban land-Udorthents complex is the predominate soils,

occurring on approximately 248 acres within the NWCA, including the entirety of Shippingport Island. Goose Island is comprised totally of Chagrin-Nelse-Wheeling complex, while Sand Island consists of the Chagrin-Nelse-Wheeling complex and Combs fine sandy loam. The majority of the Indiana shoreline within the NWCA consist of the Udifluvents, cut and filled - Urban land complex. The NRCS soil map is located below (Figure 14).

The surficial material of Ohio River basin near the Falls NWCA have been identified by the U.S. Geological Survey (USGS, 1993) as “potential” and/or “low potential” resources for sand and gravel. "Potential resource" indicates that the surficial unconsolidated deposits are likely to contain economic concentrations of sand and gravel, "low potential" indicates that the surficial unconsolidated deposits may contain economic concentrations of sand and gravel (Gray, 1973). The low potential resource area is located downstream of the George Rogers Clark Home Site, while the area upstream of the home site is considered as a potential resource for sand or gravel. These areas were simply “identified as areas where the geology permits the existence of mineral deposits (mineral resource potential) of a specific type...” There are no plans to utilize the resource for economic benefit or any other purposes.

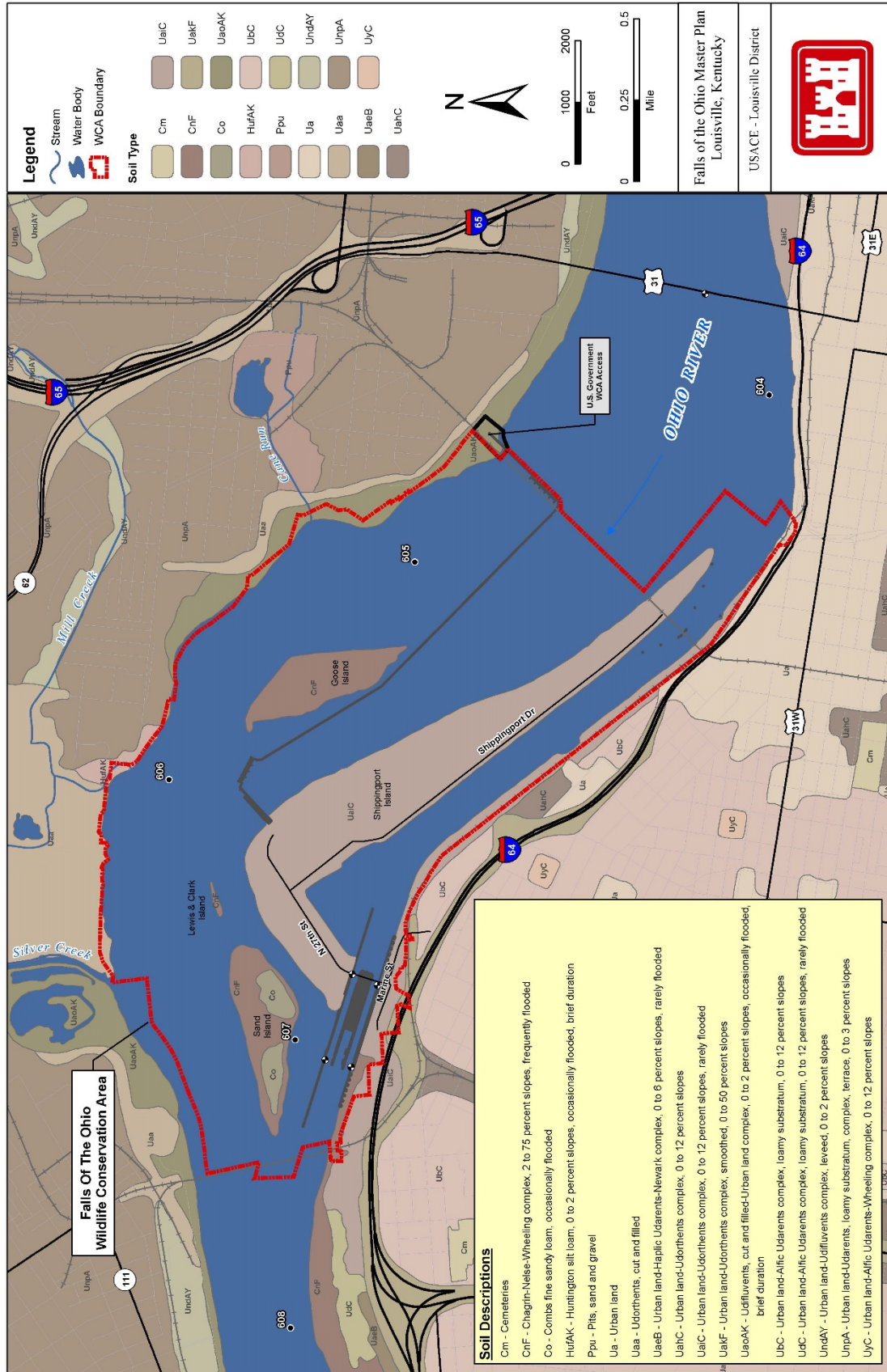


Figure 12 NRCS Soil Map of the NWCA

3.1.7 Historic and pre-historic resources

The Falls of the Ohio area has a rich cultural and natural history. The area was used as a crossing point for animals, and as a hunting area for Native Americans. In the river's natural state, boats could traverse the falls during periods of high water only, so the area became a stopping point while goods were unloaded and portaged, thus creating the towns of Louisville, Clarksville and Jeffersonville. When there was enough water, boats could attempt to run one of three chutes, or passages through the Falls, but this required expertise and boats often wrecked during the attempt. In 1830, the 1.9-mile privately owned and operated Portland Canal, with a three-flight lock at the lower end, was finished. By 1930, a new concrete and steel dam was built in conjunction with a hydroelectric plant project of LG&E. The dam was constructed in an "L" shape, extending from the Indiana shore and gave the Falls area its present look. In 1961, construction was finished on McAlpine's first 1,200-foot long lock. In 1996, construction began on a multi-phase project to improve the McAlpine facility, including a new operations building, a second 1,200-foot long lock, a new bridge over the locks, and a heavy-lift crane. All project features, including the visitor center and overlook were completed in 2009.

3.1.8 Scenic Elements

The Falls of the Ohio State Park offers excellent views of the NWCA from the observation deck of the park's Interpretative Center and from the shore near the George Rogers Clark Home Site. High water events on the Ohio River make for riveting views of the waves and rapids formed from water flowing over the fossil beds. During normal and low-flow conditions, the river at the fossil beds more resembles a meandering stream and wildlife watching opportunities can be excellent during this time, especially for the numerous bird species attracted to the area. The vegetation of the NWCA offers changes in color, texture, and size that vary by topography, vegetation type, and season. Fall foliage forms a colored collage on the islands and along the shores that create a colorful viewshed. The USACE observation deck provides an elevated view and great perspective of McAlpine Locks and Dam on the Kentucky side of the NWCA.

3.1.8.1 Implications of Scenic Elements for Project Development

The NWCA offers unique scenic qualities and provides opportunities for natural scenic vistas within sight of downtown Louisville. Debris consisting mainly of driftwood, but also including various forms of garbage, are a chief complaint of park visitors and staff. The debris can inhibit access to some areas of the shoreline and lessen the aesthetic appeal of the area. Improvements in accessibility, directional signage and supporting facilities, and maintenance could enhance such opportunities.

3.2 Biological Environment

This section provides a summary of the biological resources of the Project area and potential planning constraints posed by these resources. The biological environment includes vegetation,

terrestrial wildlife, aquatic resources, threatened and endangered species that may inhabit the Project, and critical and sensitive wildlife habitat.

3.2.1 Vegetation

According to the IDNR (2016), a flora survey of the Falls of the Ohio State Park and NWCA was completed in 1994 and again in 2002 to include the then newly acquired Buttonbush Woods area of the park. These surveys, along with more recent records, documented 328 plant species, eight of which are rare or threatened in Indiana. A complete list compiled by the IDNR in December of 2015 is located in Appendix B. The 1994 survey may be more representative of the flora found in the NWCA currently, as the Buttonbush Woods Area is not included in the NWCA. The 1994 survey recorded 204 species in 65 families. Of those species, 156 were herbaceous and 48 were woody species. One hundred forty-one of the 204 species were native, while 63 species were introduced (IDNR, 2016).

Plant communities of note within the NNWCA include nearly 19 acres of dense sandbar willow (*Salix interior*) along the Indiana shore near the upper gates, and the 43-acre cottonwood stand on Goose Island. Shippingport and Sand islands have healthy stands of deciduous bottomland tree species accustomed to growing on the banks of rivers and streams including, but not limited to, sycamore (*Platanus occidentalis*), cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), and green ash (*Fraxinus pennsylvanica*). Invasive Japanese honey suckle (*Lonicera* sp.) is pervasive among the understory of Shippingport Island.

The IDNR (2016) listed four invasive species of concern at the State Park: garlic mustard (*Alliaria officinalis*), purple loosestrife (*Lythrum salicaria*), Japanese honeysuckle (*Lonicera japonica*), and Japanese Chaff Flower (*Achyranthes japonica*). Japanese honeysuckle is also pervasive in the understory of Shippingport Island. Japanese siltgrass (*Microstegium vimineum*) and Japanese knotweed (*Fallopia japonica*) have also become established within the NWCA.

3.2.1.1 Implications of Vegetative Resources for Project Development

Vegetative resources have capabilities to enhance and support recreational opportunities and development at the NWCA. Forests and vegetated areas enhance the Project's scenic quality, as well as the experience for visitors, by providing a quality, aesthetically pleasing natural setting and landscape buffer. The forested areas provide habitat for a variety of wildlife, affording wildlife viewing, eco-tourism opportunities.

As previously discussed, exotic and invasive plant species are a part of the existing ecosystem in the Project area. These plants have the ability to rapidly disrupt and dominate the vegetative landscape if not aggressively managed, dominating the competition with native species for space, water, and sunlight. Through time, the native plant species will be replaced and the ecology altered. Additionally, the interdependence and connectivity between the flora and fauna will be out of balance, and the fauna may relocate to find the native vegetative resource required for preferred food, shelter, or habitat structure. Typically, once the habitat structure and the vegetative composition of an area changes and the fauna seek out alternative niches, it becomes increasingly difficult to reintroduce these species back

into previously inhabited areas. The consequences of such changes in habitat structure and floral and faunal composition may result in negative impacts for recreational opportunities.

3.2.2 Terrestrial Wildlife

Terrestrial wildlife is defined as animals that are found on land and in the air and includes amphibians, birds, mammals, and reptiles. The project area supports a diverse array of bird, mammal, amphibian, and reptile species. Table 6 lists some of the common species of mammals, reptiles and amphibians that can be found within the NNWCA. This is not a complete list, as it is based on observations and not formal surveys. Brainard Palmer-Ball created a comprehensive checklist of birds of the Falls of the Ohio for the IDNR (2016). The checklist includes 273 species and is included in Appendix B.

Table 3 Species commonly occurring within the NWCA

Taxonomy	Common Name	Scientific Name
Mammals	raccoon	<i>Procyon lotor</i>
	opossum	<i>Didelphis marsupialis</i>
	beaver	<i>Castor Canadensis</i>
	muskrat	<i>Ondatra zibethicus</i>
	groundhog	<i>Marmota monax</i>
	eastern chipmunk	<i>Tamias striatus</i>
	eastern woodrat	<i>Neotoma floridana</i>
	red fox	<i>Vulpes vulpes</i>
	white-tailed deer	<i>Odocoileus virginianus</i>
	fox squirrel	<i>Sciurus niger</i>
	gray squirrel	<i>Sciurus carolinensis</i>
	eastern cottontail rabbit	<i>Sylvilagus floridanus</i>
	deer mouse	<i>Peromyscus maniculatus</i>
	coyote	<i>Canis latrans</i>
Reptiles	midland watersnake	<i>Nerodia sipedon pleuralis</i>
	spiny soft-shelled turtles	<i>Trionyx spinifer spinifer</i>
	eastern box turtle	<i>Terrapene carolina</i>
	common snapping turtle	<i>Chelydra serpentina</i>
	red ear slider	<i>Trachemys scripta elegans</i>
	five-lined skink	<i>Eumeces fasciatus</i>
	northern fence lizard	<i>Sceloporus undulatus hyacinthinus</i>
	eastern garter snake	<i>Thamnophis sirtalis sirtalis</i>
	black rat snake	<i>Elaphe obsoleta obsoleta</i>
	black racer	<i>Iuber constrictor constrictor</i>
	rough green snake	<i>Opheodrys aestivus</i>
Amphibians	southern leopard frog	<i>Rana sphenoccephala utricularia</i>
	cricket frog	<i>Acris sp</i>
	bullfrog	<i>Rana catesbeiana</i>
	spring peeper	<i>Pseudacris crucifer</i>
	wood frog	<i>Rana sylvatica</i>
	mudpuppy	<i>Necturus maculosus</i>
	Fowler's toad	<i>Bufo woodhousei fowleri</i>

3.2.2.1 Implications of Terrestrial Wildlife Resources for Project Development

Recreational activities that are supported by terrestrial wildlife include wildlife viewing and birding (neotropicals and year-round species). Terrestrial wildlife also provides potential opportunities for eco-tourism. To maximize potential, Project resources should be managed with diversity as a key objective.

Stakeholders of the NWCA have specifically voiced concern for protection of raptor species and the established black-crowned night heron (*Nycticorax nycticorax*) rookery on Shippingport Island.

A ten-acre tract of land on Shippingport Island is one of 76 ecologically significant areas in Kentucky recognized as a Registered Natural Area by the Kentucky State Nature Preserves.

The area is known as the Shippingport Island Rookery State Natural Area and is one of only two known nesting sites for the black-crowned night heron, and the only known nesting site for the cattle egret in Kentucky. Since the original designation the location of the rookery has shifted towards the eastern portion of the island.

The Kentucky Natural Areas Registry is a voluntary, non-regulatory program designed to provide recognition for sound stewardship and awareness of the ecological significance of a landowner's property. Under the terms of the registry agreement, reached in 1991, the Corps agreed not to alter the designated area in a manner detrimental to its ecology and to notify the commission if they are interested in selling the land or if the area is threatened in any way.

Wildlife management provides opportunities for stewardship, support for declining species, and preservation of habitat. The USACE's Environmental Stewardship and Maintenance Guidance and Procedures pamphlet (USACE, 1996), is a natural resources management tool that aims to ensure the conservation, preservation, or protection of resources for present and future generations by focusing on sustaining ecosystems.

3.2.3 Aquatic Resources

Aquatic resources refer to animal life in surface waters including streams, wetlands, and the lake. The IDNR Falls Master Plan (2016) cites a publication by Pearson and Pearson (1989) that listed 131 species of fish occurred in the middle Ohio River (RM 328-654) between 1800 and 1970. The list included 10 introduced species, including the silver carp (*Hypophthalmichthys molitrix*), which has since proliferated throughout the several large river systems in the U.S., including the Ohio River. A closely related species, bighead carp (*Hypophthalmichthys nobilis*), have also since invaded the Ohio River. These species, known collectively as Asian carp, have been verified as far upstream as Huntington, West Virginia (Nico et al., 2017) and pose a significant threat to the health of the Ohio River ecosystem through overconsumption of plankton. According to the KDFWR, McAlpine Dam acts as a partial barrier to upstream movement of the carp until the dam is overtopped in high flow events, and the Critical Species Investigations Group of KDFWR routinely remove Asian carp from the Ohio River at the Falls. (J. Crosby, personal communication, August 31, 2017).

Despite issues with invasive species and variable water quality, the Falls of the Ohio offer excellent and unique habitat to fish of the Ohio River. The area is a popular fishing location for anglers targeting sauger (*Sander Canadensis*), white bass (*Morone chrysops*), and catfish. According to KDFWR, the Falls also supports a healthy population of blue sucker (*Cycleptus elongates*), freshwater drum (*Aplodinotus grunniens*), shiners (*Notropis* sp.), and many other nongame fish species. The list of fish species accumulated by Pearson and Pearson (1989) is located in Appendix B.

Manipulation of the river channel for navigation, along with the expansive solid limestone substrate has resulted in less than desirable habitat for mussels at the Falls of the Ohio. Because of this poor habitat, no formal mussel surveys have been completed at the NWCA. According to IDNR (2016), only Asian clams (*Corbicula fluminea*) and zebra mussels (*Dreissena polymorpha*) - both non-native, invasive species- can be found commonly within the NWCA. These mussels compete for many of the same resources as the native mussels and invertebrates, which in turn, can reduce native species population, including fish. Additionally zebra mussels can pose economic threats by clogging intake valves and pipes.

3.2.3.1 Implications of Aquatic Resources For Project Development

Aquatic resources of the NWCA support fish and wildlife habitat, recreational fishing, boating, canoeing, and kayaking. During releases from the upper tainter gates, water flows over the exposed fossil beds and creates a very unique paddling experience within sight of downtown Louisville. These resources should be considered an opportunity rather than a constraint when planning for future development activities in or around the NWCA.

No specific measures have been implemented to reduce the population of zebra mussels at the Project area. Detailed guidance for chemical control is provided by the USACE in the January 2000 Zebra Mussel Chemical Control Guide, however this method would likely be ineffective in a dynamic, lotic system like the Ohio River. Care should be taken to control the spread of zebra mussels. Zebra mussels are known to attach to boat hulls and motors. Boaters should be advised to remove any mussels that are attached to the hull, rinse the boat with freshwater, and allow the boat to dry in the sun for five days before launching the boat in a different water body. Additionally, boaters should remove any aquatic plants from the boat, trailer, or other equipment; drain water from motor, livewell, bilge, transom, etc.; and dispose of unused bait in the trash.

Asian carp have the potential to cause enormous damage to native species because they feed on plankton required by larval fish and native mussels (Laird and Page 1996). They may also be potential competitors with adults of some native fishes, such as gizzard shad, that also rely on plankton for food (Pflieger 1997). When startled, silver carp are known to jump out of the water at high speeds, which can injure boaters and damage boating equipment. All reasonable means of eradicating Asian carp should be employed to protect native species of the Falls and the future of recreational fishing and boating activities in the NWCA.

3.2.3.2 Threatened, Endangered, and Species of Special Concern

Under the Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531-1544), endangered species are defined as any species in danger of extinction throughout all or portions of its range. A threatened species is any species likely to become endangered in the foreseeable future.

Official lists of federally protected species were generated using the USFWS automated IPaC (Information for Planning and Consultation) website. Lists from both the Indiana and the Kentucky Ecological Field Offices were generated and are included in Appendix B. The list included 15 species that could potentially be affected by activities within the NWCA. The presence of a species on the list does not indicate presence within the NWCA. According to the IDNR (2016), the least tern (*Sterna antillarum*)

has been recorded on an occasional basis at the Falls in the spring, summer, and fall. Due to the conditions mentioned in the previous section, there is no evidence to suggest that any of the listed mussel species presently occur within the bounds of the NWCA. It is likely the area contains some suitable habitat for the Indiana bat and gray bat, as these species are known to roost in the cavities or exfoliating bark both living and dead trees during the summer months. No designated critical habitat within the NWCA. Although not included in the list below, the federally endangered Short's goldenrod (*Solidago shortii*) is a species of interest for the IDNR. The rare plant was discovered at the Falls in 1840 and may have been present until the early 1900's when the locks and dam were constructed (IDNR, 2016). There was an unsuccessful attempt to reintroduce the species at the Falls in 1995.

Table 4 Federally listed species that could potentially be affected by activities within the NWCA

Taxonomy	Common Name	Scientific Name	Status
Mammals	gray bat	<i>Myotis grisescens</i>	Endangered
	Indiana bat	<i>Myotis sodalis</i>	Endangered
	northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Birds	least tern	<i>Sterna antillarum</i>	Endangered
Mussels	clubshell	<i>Pleurobema clava</i>	Endangered
	fanshell	<i>Cyprogenia stegaria</i>	Endangered
	northern riffleshell	<i>Epiblasma torulosa rangiana</i>	Endangered
	orangefoot pimpleback	<i>Plethobasus cooperianus</i>	Endangered
	purple cat's paw	<i>Epioblasma obliquata obliquata</i>	Endangered
	rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	Threatened
	ring pink	<i>Obovaria retusa</i>	Endangered
	rough pigtoe	<i>Pleurobema plenum</i>	Endangered
	sheepnose mussel	<i>Plethobasus cyphus</i>	Endangered
	spectaclecase	<i>Cumberlandia monodonta</i>	Endangered
Plants	running buffalo clover	<i>Trifolium stoloniferum</i>	Endangered

3.2.3.3 Implications of Threatened and Endangered Species for Project Development

Any future development action within the NWCA will be subject to the required seasonal restrictions on timber clearing to protect roosting bats. Tree harvests over three inches in diameter at breast height are restricted within five miles of known Indiana bat locations from April 1 through September 30. Around known hibernacula, restrictions may be more extensive. Future developmental actions within the NWCA will be also be assessed to determine potential impacts to the rusty patched bumble bee, in compliance with the ESA.

3.2.4 Critical Habitat

In Section 7 of the Endangered Species Act (16 U.S.C. § 1536), critical habitat is defined as an area that is essential to the conservation of a species, although the area need not actually be occupied by the species when it is designated. The loss of critical habitat is one of the most common problems facing

threatened and endangered species. There is no designated critical habitat under Section 7 of the Endangered Species Act present within the NWCA.

3.2.4.1 Implications of Critical Habitat for Project Development

As no critical habitat has been identified at the NWCA, project development will not be constrained by this environmental consideration.

3.2.5 Environmentally Sensitive Areas

Environmentally sensitive areas are typically areas that are designated as special status or protected by Federal or State statutes or legislation. Extremely rare or unique natural resource features may also be considered as potential environmentally sensitive areas. Examples of environmentally sensitive areas include protected critical habitat, threatened and endangered species, Section 106 cultural resources, and wetlands. Figure 25 identifies the environmentally sensitive areas identified at the NWCA.

Locations of archaeological resources are not disclosed to safeguard the integrity of these sites. Environmentally sensitive resources include wetlands and Section 106 archeological and historic resources (not shown on Figure 25). The exposed fossil beds at the NWCA represent a unique resource of the area and protection of the beds should be the main priority in future management decisions.

3.2.5.1 Implications of Environmentally Sensitive Areas for Project Development

Preservation of these areas and significant development restrictions may apply to these resources and restrict development options; however, these sites may provide interpretative, educational, or eco-tourism opportunities.

4.0 Recreation Program Analysis

4.1 Introduction

The NWCA represents a unique recreational asset that is currently under-utilized in the heart of a major urban area. The majority of recreational visits are concentrated at the Falls of the Ohio Interpretive Center and exposed fossil beds directly below the center. As with most facilities in the region, the summer months and early fall see the most recreational activity.

The majority of lands and waters contained within the NWCA boundary are allocated for navigation, hydroelectric generation and conservation. However, there are five areas in the NWCA designated specifically for land-based public recreation and are managed by four separate entities. Depending on river elevations in the NWCA, there are also approximately 400 acres of open water on the Ohio River available for recreational boating, which are fully separated from the navigation channel.

4.2 Recreational Areas Overview

There are six formal recreation areas (Table 8) of varying size dispersed throughout the NWCA which provide a range of passive and active experiences for visitors. Additional locations in the NWCA receive frequent visitation, but no formal management or programming has been developed for those areas.

Table 5 Formal Recreation Areas in the NWCA

Recreation Area	Managing Agency	Approximate Size (within NWCA Boundary)
Clark Homesite	IDNR	4.5 Acres
Falls of the Ohio State Park	IDNR	55.5 Acres
Ohio River Greenway	Town of Clarksville	500 Feet
McAlpine Visitor's Area	USACE	1 Acre
Fisherman's Access Trail	LG&E / USACE	150 Feet
Louisville Riverwalk	City of Louisville	1.75 Miles

There are approximately 2.3 miles of shoreline on the northern boundary of the NWCA in Indiana. Recreation areas on the Indiana shore include the Falls of the Ohio State Park and the Clark home site, which are linked by the Ohio River Greenway. Both locations are managed by IDNR and their total footprint extends outside of the NWCA boundary. The Town of Clarksville manages the Ohio River Greenway (multi-use trail) through these two locations.

The shoreline of the southern boundary of the NWCA is approximately 2.5 miles and includes the McAlpine locks as well as the Portland Canal. Recreation areas located on the Kentucky shoreline include the McAlpine Visitor's Area (managed USACE) and the Louisville Riverwalk (managed by the City of Louisville).

The NWCA includes four islands (Shippingport, Sand, Goose and Lewis & Clark) totaling approximately 270 acres. The Fisherman's Trail located on Shippingport Island is the only formal recreation area located on the islands. The trail is managed by LG&E and the trailhead is managed by USACE. The map below provides an overview of recreational amenities and their location in the NWCA.

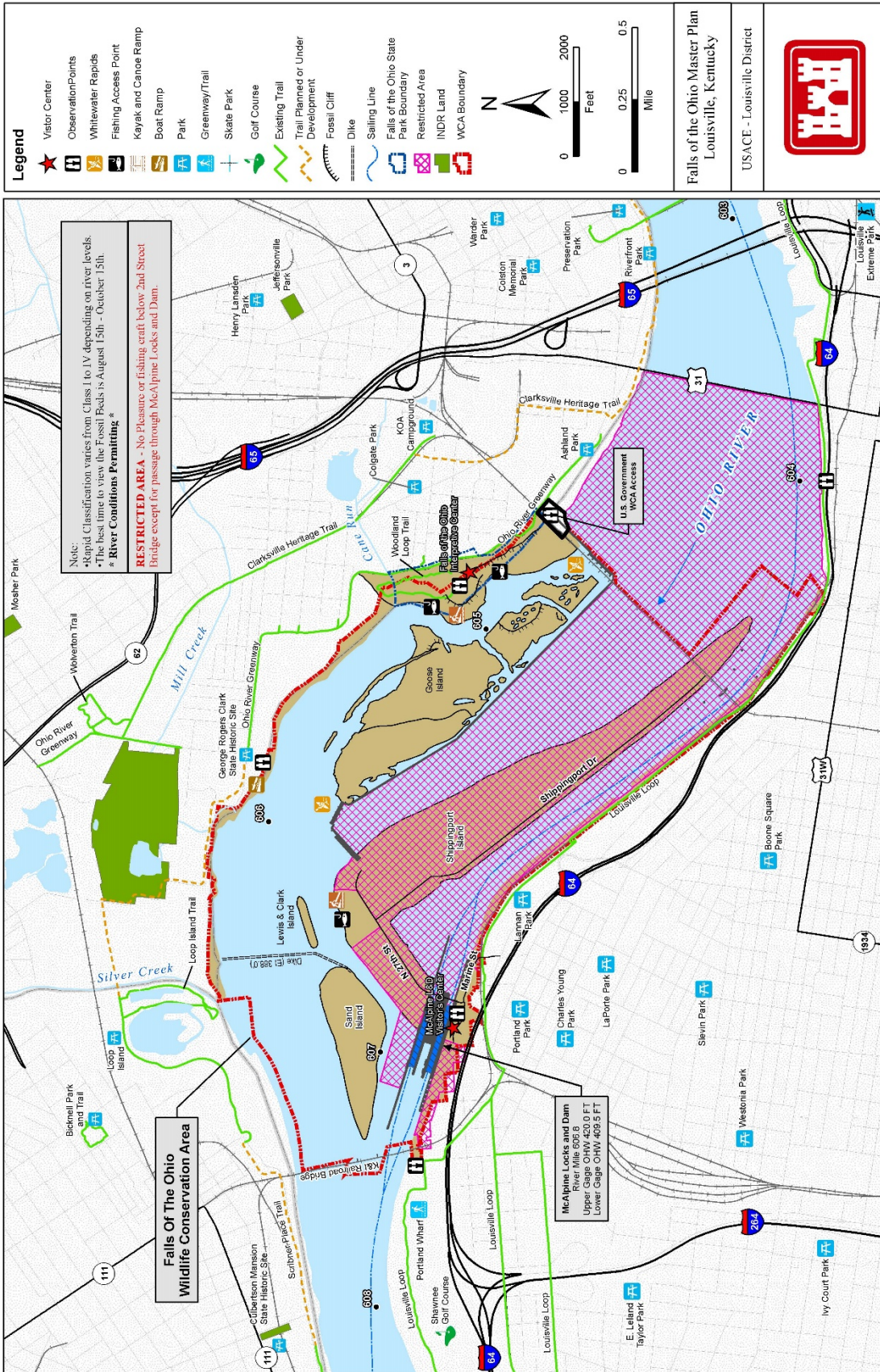


Figure 13 Recreation Opportunities in the NWCA

4.2.1 Formal Recreation Areas in the NWCA

4.2.1.1 Falls of the Ohio State Park – Visitor Center / Interpretive Area

The visitor center/interpretive center lies immediately adjacent to NWCA lands with a portion of the building and back deck of the center actually lying on NWCA lands. Facilities provided by the Indiana Department of Natural Resources in this area include the Visitor Center, which houses interpretive exhibits that explain the geological history of the area, the historical use of the area by man including the story of navigation on the Ohio River, and the natural resources of the area. Additional facilities available in this area include:

- Two sets of steps and an accessible ramp leading to the fossil beds;
- Ten picnic tables;
- Ten park benches ;and
- The 0.5 mile Woodland Loop hiking trail.

This area is the major access point for the entire NWCA and is utilized heavily by school groups, shoreline fishermen, and persons wishing to view the fossil beds and birdwatchers.

4.2.1.2 Falls of the Ohio State Park – George Rogers Clark Home Site

The site, which lies adjacent to and partially on NWCA lands, provides picnic tables, small shelter and a boat ramp with an accessible loading facility. This is the only public boat ramp available to trailers in the NWCA and is a major entry area for boaters using the NWCA.

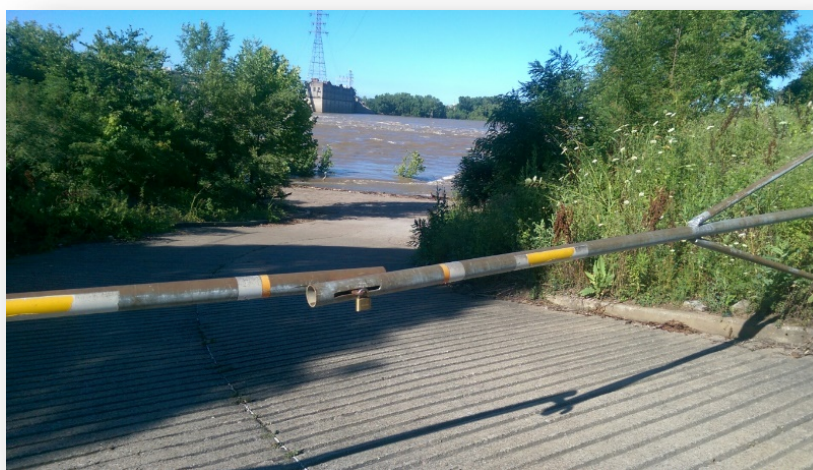


Photo 21 Boat ramp gate closed during hazardous flows in the NWCA

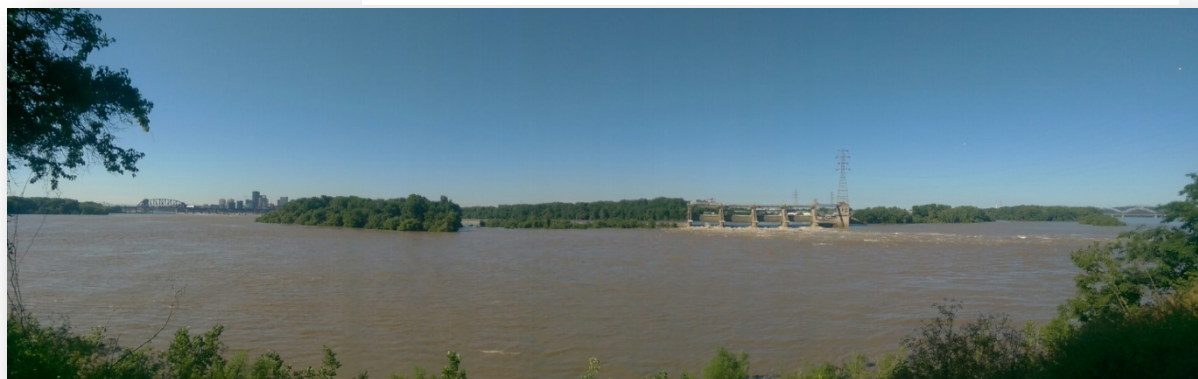


Photo 20 Cabin at the Clark Home Site provides sweeping views into the NWCA



Photo 22 Multiple picnic tables are available with views of the NWCA and Louisville skyline in the background

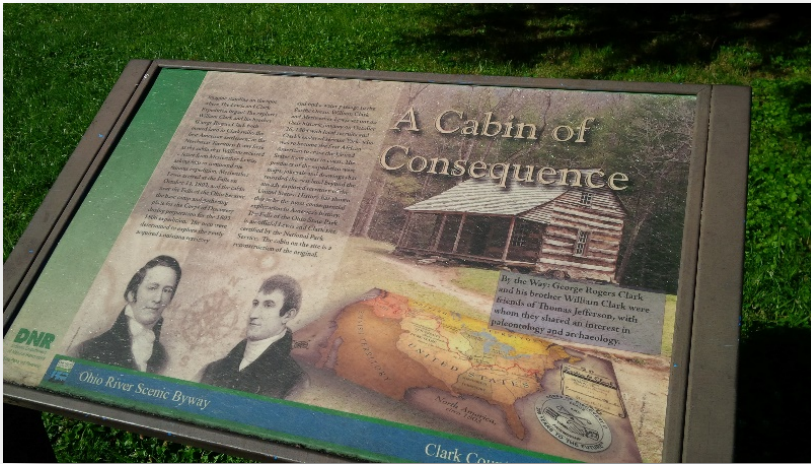


Photo 23 Interpretive Kiosk at the Clark Home Site



Photo 24 Monument and reconstructed cabin at Clark Home Site

Separated from the main part of the Falls of the Ohio State Park, the 76 acre George Rogers Clark home site was home to the American Revolutionary War hero from 1803 to 1809. Known for almost 200 years as “Clark’s Point,” it is situated in a sharp curve enabling sweeping views of the NWCA and downtown Louisville. In 2001, a cabin with about the same dimensions of Clark’s original home was erected. It was built in 1830 near Osgood, in southeastern Indiana.

The Clark home site is also an integral part of the Lewis and Clark expedition story. Meriwether Lewis met William Clark here, and together they recruited the “nine young men from Kentucky” that formed the core of the Corps of Discovery that departed October 26, 1803.

The Clark Home site is on the National Registry of Historic Places for an Archeological Site, and the park is on the proposed plan for the Ohio River Greenway, which will create a park-like setting along the banks of the Ohio River connecting Jeffersonville, Clarksville, and New Albany.

4.2.1.3 Ohio River Greenway

The Ohio River Greenway project is a seven-mile multi-use trail along the Ohio River in Southern Indiana connecting Jeffersonville (eastern most point) with New Albany. The longest completed segment of the Greenway (1.94 miles) runs along the Falls of Ohio in Clarksville, which includes views of the Falls and fossil beds.

Design work continues on the segment west of George Rogers Clark Cabin. The Mill Creek segment in Clarksville was the first part of the Ohio River Greenway Federal Project. The path will continue along Harrison Avenue and Emory Crossing Road. This path will use an abandoned rail road continuing across Silver Creek to the Loop Island Wetlands in the eastern edge of New Albany's Greenway segment.



Photo 25 Parking area east of the NWCA



Photo 26 Parking area at the Louisville & Indiana Railroad Bridge



Photo 27 Alignment and current status of the Ohio River Greenway

4.2.1.4 McAlpine Visitor's Area

The McAlpine Locks and Dam Visitor Area is located at 805 North 27th Street, Louisville, KY 40212. From I-64 West, take the 22nd Street Exit. At the bottom of the ramp, turn right onto Northwestern Parkway. Head straight and turn right onto 27th Street.

There is a small metal sign "McAlpine Locks and Dam" at 27th Street. Follow the road to the right and go through the levee and across the railroad tracks. Please watch for pedestrian and bike traffic along the Riverwalk.



Photo 28 Picnic tables and interpretive displays at the McAlpine Locks and Dam Visitor's Area

Follow the signs to the visitor area. McAlpine is accessible via the Louisville Riverwalk.

At the outdoor interpretive center, there are recorded audio messages - a self-guided tour - about the locks and dams, navigation and history of the area at kiosks along the cantilevered pavilion that extends out over the lock chamber. You may see barge tows passing through.



Photo 29 Interpretive kiosks leading to overlook of lock chamber



Photo 30 Bike rack at the McAlpine Locks and Dam Visitor's Area

4.2.1.5 Louisville Riverwalk

This is a blacktop pathway that traverses sections of the southeastern most portion of the NWCA on the Kentucky shoreline. Bikers, hikers, walkers and runners heavily utilize this area. This is a major lunchtime destination for exercisers who work in the downtown Louisville area. This segment of multi-use trail is a portion of the larger Louisville Loop, which is a planned 100-mile trail system that will eventually encircle the City of Louisville and link parks, neighborhoods civic attractions and recreation opportunities.



Photo 32 Louisville Riverwalk crossing N 26th Street at McAlpine Locks and Dam



Figure 14 Overview of the 100-mile Louisville Loop on Jefferson County, Kentucky



Photo 31 Interpretative kiosk on the Louisville Riverwalk at Lannan Park

4.2.1.6 Fisherman's Access Trail / Louisville Fire & Rescue Boat Ramp

The Fisherman's Access Trail is located on the western bank of Shippingport Island and can be accessed by crossing the Portland-Shippingport Bridge that spans the two McAlpine lock chambers. Fourteen parking spaces are available at the trailhead along with benches, information board and trash receptacles. The 125 foot trail provides access to the Ohio River shoreline and was constructed by LG&E with support from local Boy Scout troops. The trailhead also serves the Louisville Fire & Rescue boat ramp which was constructed in 2016 to provide quicker emergency response times to the lower Cannelton Pool. The gated ramp does not accommodate launches from boat trailers; however, canoes

and kayaks can be carried-down to the Ohio River shoreline from this location. Currents at this location are influenced by multiple factors including lock, dam and hydroelectric operations resulting in unpredictable and extreme caution should be taken when boating in this area of the NWCA.



Photo 35 Parking area at the Fisherman's Access Trail and Louisville Rifer & Rescue boat ramp



Photo 34 Ohio River shoreline on the western edge of Shippingport Island



Photo 33 Gate at Louisville Fire & Rescue boat ramp



Photo 36 Fisherman's Access Trail

4.2.2 Informal Recreation Areas in the NWCA

4.2.2.1 Upper McAlpine Tainter Gates – Indiana Shoreline

Available at this area is an undeveloped viewing area overlooking the Indiana abutment of the McAlpine Dam. Leading from the viewing area is an undeveloped pathway that provides access to the fossil bed area. Foot access to the outer fossil beds is from this area and across the apron of the dam immediately downstream of the tainter gates. This is a major access point for shoreline fishermen. An environmental restoration (Section 1135) project completed in 2000 created a series of 3.25-foot deep notches along 151 feet of the McAlpine fixed weir. The project created a waterfall effect over the dam, as well as a small wetland area downstream of the dam. The additional viewing opportunities provided has increased the usage of this area.



Photo 38 Notches in the McAlpine Dam fixed weir

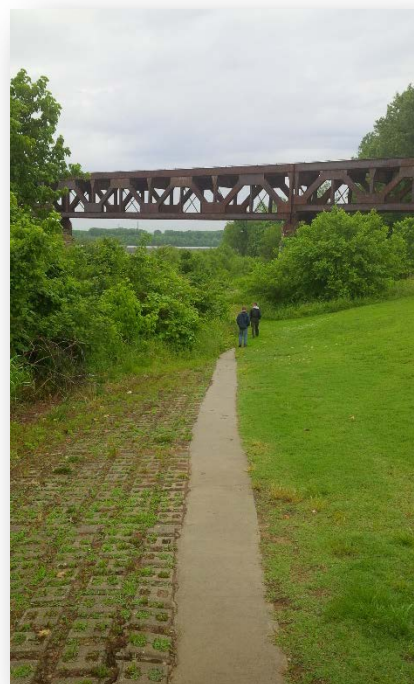


Photo 37 Trail leading to Upper Tainter Gates



Photo 39 View looking downstream at upper tainter gates and fixed weir

4.2.2.2 Sand Island/Goose Island /Lewis & Clark Island

No constructed recreational facilities are available here, however; birders, kayakers, picnickers and fishermen use the sandy beach areas.

There are two hills on Sand Island with elevations up to 430+ msl. The northern portion of the island has moderate slopes that extend to a sandy beach area near the water line. The southern portion has severe slopes extending to the water

line. Vegetative cover includes a narrow strip of sandbar willow near the beach area. The remainder of the island is covered with typical riparian forest dominated by large cottonwoods, silver maple and boxelder.



Photo 40 Channel between Shippingport Island and Sand Island

4.3 Current Recreation Activities in the NWCA

This section provides a detailed list of recreational activities that are available at the NWCA and some key statistics related to recreational participation at the project. Table 9 below provides an overview of activities and their location in the NWCA.

Table 6 Overview of recreation activities in the NWCA

Activity	Name	Area	Description
Hiking / Walking	Woodland Loop Trail	Falls of the Ohio State Park	0.5 mile soft surface trail
	ADA Ramp	Falls of the Ohio State Park	Short paved ramp leading to fossil beds
	Ohio River Greenway	IN Shore	Adjacent to northern NWCA boundary
	Louisville River Walk	KY Shore	Passes through southern NWCA boundary
	Fisherman's Trail	Shippingport Island	Short trail to fishing area on Shippingport Island
Boating	Clark Boat Ramp	IN Shore	Double lane ramp with turnaround
	ADA Ramp	Falls of the Ohio State Park	Canoe/kayak carry down only
	Louisville Fire & Rescue Boat Ramp	Shippingport Island	Canoe/kayak carry down only
Fishing	Clark Boat Ramp	George Rogers Clark Home Site	Access at boat launch
	ADA Ramp	Falls of the Ohio State Park	Access at Fossil Beds
	Louisville Fire & Rescue Boat Ramp	Shippingport Island	Access at boat launch
	Upper McAlpine Tainter Gates	IN Shore	Access from Ohio River Greenway
	Fisherman's Trail	Shippingport Island	Access at trail terminus
Picnicking	McAlpine Visitor's Area	McAlpine Locks	Four picnic tables, restrooms, bike rack
	George Rogers Clark Home Site	George Rogers Clark Home Site	Multiple picnic tables, grill, shelter
	Interpretive Center	Falls of the Ohio State Park	multiple picnic tables, restrooms, grill

4.3.1 Recreational Boating

Conditions for non-motorized recreational boating in the NWCA vary greatly depending on current Ohio River flows, generation at the LG&E hydroelectric plant and operation of the McAlpine Dam. A detailed analysis and evaluation of these controlling factors has the potential to increase paddle sport opportunities through providing participants with an improved understanding of flows through the NWCA, as well as consideration of operational changes.

The double lane boat ramp at the George Rogers Clark provides the only launching location for boats on trailers in the NWCA. The Jaycees Boat Ramp in New Albany is located approximately 1 mile downstream from the NWCA and also provides launching for boats on trailers. The Greenwood Boat Ramp is the closest launch in Kentucky that can accommodate trailers and is located 11.5 miles downstream from the NWCA. Access to the NWCA from upstream boat ramps requires transit through the McAlpine Lock & Dam, limiting the number boaters who access the area from this stretch of the Ohio River.

Canoe and kayak carry down options are available at two locations in Indiana: Falls of the Ohio State Park (ADA ramp) and the ramp at George Rogers Clark home site. The only location for canoe and kayak carry down access is located on Shippingport Island at the Louisville Fire & Rescue boat ramp. This concrete ramp was installed in 2017 to provide quicker emergency response times to Cannelton Pool.

In the NWCA, River City Paddle Sports assists the Metro Louisville Mayor's office with the annual Mayor's Hike Bike and Paddle. On Labor Day, up to 1,000 paddlers go through McAlpine locks as part of the event sponsored by the Metro Louisville Health Department, which "celebrates active lifestyles, outdoor education and nature exploration."

River City Paddle Sports also sponsors an annual race called the Louisville 50. An adventure program that goes 50 miles from Westport to West Point. The NWCA is located at the halfway mark. River City Paddle Sports also provides canoe trips – using 30-foot voyager canoes, leaving from the Jaycee Boat Ramp in New Albany with a purpose of exploring the outer banks of the Falls of the Ohio and other features of the NWCA.



Photo 41 Paddlers locking through McAlpine during the Louisville Hike Bike and Paddle event held annually

During certain flow conditions, the limestone ledges and water releases from infrastructure in the NWCA draw participants from the whitewater boating community. While the NWCA offers the only whitewater on the entire Ohio, the predictability and consistency of existing whitewater surf features in the NWCA (Figure 16) limits the full realization of this recreational opportunity. User groups such as American Whitewater and the Viking Canoe Club are two organizations that have offered assistance in better understanding the recreational needs of the whitewater boating community in the NWCA.

Figure 15 Wave and surf features in the NWCA identified by American Rivers



4.3.2 Interpretation

Corps of Engineer objectives for interpretive services are set forth in ER 1130-2-550, dated 15 Nov 96, revised 15 AUG 2002. The objective of the interpretive program at the NWCA is to provide environmental and historical education through interpretation of the natural resources, paleontological resources and history of this unique area and to improve visitor safety through the use of interpretive techniques.

The USACE interpretative services at the NWCA are limited on the Indiana shoreline to providing visitor information at a bulletin board located at the McAlpine Dam. Typical information provided is related to water safety, rules and regulations governing the area, the Corps' role in Ohio River navigation, history

of the WCA, and natural resources/wildlife of the area. A cooperative effort, with IDNR, to develop additional interpretive signage is ongoing. Interpretative services on the Kentucky Shore are located at the McAlpine Visitor Area where there are recorded audio messages - a self-guided tour - about the locks and dams, navigation and history of the area at kiosks along the cantilevered pavilion that extends out over the lock chamber. Additional displays include sandstone from the 1931 lock as well as a history of navigation on the Ohio River System and tributaries.

Indiana Department of Natural Resources (Falls of the Ohio State Park) – The Interpretive Center of the Falls of the Ohio State Park lies immediately adjacent to the WCA. This is the focal point for interpretive activities on the Indiana Shoreline.

The Falls of the Ohio Interpretive Center is a 16,000 square foot facility and contains:

- 2,000 square foot exhibits gallery
- 14 minute movie about the 400-million year history of the Falls area
- A movie about the regional connection to the Lewis and Clark expedition
- Kids Corner - an activity area for preschool to first grade children
- Coral reef and Ohio River fish aquariums
- Classroom-library used for student labs, teacher in-service programs and public programs
- Gift shop that features educational items related to the Falls area
- Restrooms
- River and wildlife observation rooms
- Temporary exhibit gallery, changing three times per year. Themes alternate between geology, life science-nature and history-prehistory.

Exhibit themes include:

- Geology & paleontology
- Modern and ancient coral reefs
- Flora and fauna at the Falls
- Archaeology
- History at the Falls, including local industry and commerce from the 17th century to today
- Human changes at the Falls
- Surveying and mapping
- Process that led to the establishment of the Falls of the Ohio National Wildlife Conservation Area and Indiana State Park

4.3.3 Fossil Viewing

Geologically, the Falls is world-renowned because of the great abundance and variety of well-preserved fossilized corals and associated species found in the Devonian period limestone formations, and in the unique manner in which they are displayed. Formed between 350 million-400 million years ago, the fossils are exposed in large horizontal layers which have been polished by the moving silt and water of the Ohio River. Geologists and paleontologists have studied the fossil corals at the Falls since the early 19th Century. More than 600 species have been identified there, with about two-thirds classified as "type specimens," that is, described for the first time. Species collected at the Falls are found in museums and educational institutions around the world.

Due to releases from the upper tainter gates, the outer fossil bed and the exposure on the Indiana bank are under water approximately nine months of the year. These periods of high river flow occur primarily during fall, winter and early spring months. During the summer months, seepage from the upper gates and flowage through a series of castillations cut along the top of the fixed weir cause water to flow across the fossil bed in a number of areas.

There have been multiple discussions between USACE and stakeholders following the installation of castillations on the fixed weir on the upper McAlpine Dam through a Continuing Authorities Program Section 1135 project. The castillations consist of eight notches that allow approximately 200 cfs of water flow at normal pool. These provided a stable water source to the 23 acres of sediment over the upper fossil bed area and to the 200 acres of open water, which enhances habitats and biodiversity by providing nesting, brooding, roosting, breeding and a stopover area. Increased vegetation provides a refuge that birds can fly to when disturbed by people on the fossil beds.

There have been some concerns that the 1135 project has limited access to the outer fossil beds. In 2016, following a public planning process, USACE determined that access to the outer fossil beds could best be achieved by the use of commercial vendors to provide and operate rafts. Rafts seem to be the most appropriate choice of watercraft, as multiple people can be transported simultaneously to and from the outer fossil bed area. Further discussion and evaluation of feasibility, including concerns regarding logistics and liability, will need to be addressed. An option for the Falls of the Ohio volunteer groups may be to purchase a raft(s) and hire operators if necessary to transport visitors for scheduled trips to the outer beds.

4.3.4 Birding

The Falls is resplendent with bird species. Since prehistoric times, shore birds of great variety have flocked to the area, and more than 260 species have been recorded there, many only stopping off in their seasonal migratory patterns. The birds are attracted to the area by the potholes in the reef which provide a food source. In addition to Canadian geese, mallard, blue-winged teal, black duck, and wood duck and other common species, herons and egrets have been observed at the Falls. In addition, American bald eagle and Artie peregrine falcon have been spotted there. Locations for bird watching are available through the NWCA, with primary locations at the Interpretative Center that provide unobstructed views to the outer fossil beds and Shippingport Island.

In 1984-1985 the Corps of Engineers partnered with the Kentucky Nature Preserve Commission to conduct a year-long resident and migrant bird study at the Falls of the Ohio. Brainard Palmer-Ball, Jr., the principal investigator, observed 225 species of birds during the study (see Appendix B for checklist). Several species were sighted that had not been recorded before, including the Barred Owl, Alder Flycatcher and Eastern Bluebird, bringing the total known species count for the Falls area to 262.

Along with documenting the occurrence of bird species, the study looked at the use of the area by water birds relative to the varying flow conditions. Some species, especially the herons and shorebirds, were highly dependent on favorable water levels. At low and moderate flows of the Ohio River, which generally occur only about 3 months out of the year, the McAlpine area provides diverse habitats, including relatively shallow, swift flowing riffles, shallow pools, and exposed sand bars and fossil shelves which are ideal for feeding and resting for shore and wading birds.

4.3.5 Hiking

The only soft surface trail in the NWCA is located at the Falls of the Ohio Interpretative Center. The Woodland Loop Trail is 0.5 miles in length and provides access to Cane Run and Ohio River Shoreline. The area is often covered with driftwood and debris making hiking difficult. More than 230 species of flowering plants have been found at the Falls of the Ohio, and some of these can be seen along this Woodland Loop Trail, as it passes through two diverse habitats: Upper and Lower Woodlands.

4.3.6 Fishing

Fishing is allowed throughout the NWCA in all publicly accessible areas. Popular locations include from the Indiana bank adjacent to Riverside Drive, along the bank of Sand Island and on an area between the locks and the hydro-power plant on Shippingport Island. Boaters fish the area either by drifting or tying to shoreline trees. The area is most heavily used by fishermen during the sauger run each spring.

Although not a recreational activity, a limited amount of commercial fishing previously occurred in the area; however, it is no longer permitted under current regulations. During establishment of the NWCA, fifteen persons who had historically fished commercially within the "Falls" area were given authorization to continue this activity. Once these commercial operations ceased, no new additional permits were granted.

4.3.7 Biking

The NWCA can be accessed on both the Indiana and Kentucky Shorelines by multi-use trails. The Indiana shore is served by the Ohio River Greenway and the Kentucky Shore, as well as Shippingport Island can be accessed by the Louisville Riverwalk.

4.3.8 Picnicking

Picnic tables are provided at the McAlpine Visitor's Area, Interpretive Center and Clark Home Site.

4.4 Louisville Area Visitation

According to the Louisville Convention & Visitors Bureau, the Louisville area hosts more than 24 million visits annually for an estimated economic impact of \$1.6 billion per year, which supports approximately 26,000 local tourism-related jobs. In total, 86.6 percent of Louisville visitors surveyed came to the city primarily for leisure purposes, while the remaining 13.4 percent came for business, conventions/group meetings and government travel. In total, top reasons included a weekend getaway (24.2%), attending a special event/exhibition/concert (20.7%) or vacation (16.0%). (Greater Louisville Convention & Visitors Bureau – Louisville Visitor Profile – January 2016)

Louisville's visitors engage in a range of activities during their trip to the area, with the most popular being dining in restaurants (52.9%), visiting museums (40.4%), shopping (31.7%) and bourbon tasting (21.7%). Other activities included distillery tours (14.2%), visiting a State or local park (13.6%) and attending other festivals or special events (12.4%).

4.5 Recent Recreation Trends in the NWCA

There are national and regional variables that affect the way people spend their leisure time. From year to year the overall number of visitors to the NWCA change due to these variables. During the period of time when this report was being produced, VERS data was not available for each recreation area. When more recent data is available, it will be inserted into this section and provide more detail for visitor projections.

4.6 Area of Influence

The following section provides an overview of the area of influence of the NWCA. The area of influence is defined as the area where the majority of people who visit the NWCA live. Determining the area of influence and evaluating the demographic characteristics of the area are important aspects of identify future recreational demands at the NWCA.

4.6.1 Identifying the Area of Influence

While the NWCA offers natural features that are unique and of national significance, current visitation is primarily accounted for by local trips. Consequently, the Louisville /Jefferson County, KY-IN Metropolitan Statistical Area (MSA) is used to define the NWCA primary area of influence and provides more accurate demographic forecasts based on readily available information from sources such as the Kentucky State Data Center, U.S. Bureau of Labor Statistics and U.S. Census Bureau. The primary area of influence generally represents an approximately 30 minute or less drive to the NWCA.

The U.S. Office of Management and Budget identifies MSAs that are composed of an urban center (minimum of 50,000 people) and adjacent counties that display linkages through employment and commuting patterns. The Louisville/Jefferson County, KY-IN MSA, includes twelve counties – seven in Kentucky (Bullitt, Henry, Jefferson, Oldham, Shelby, Spencer and Trimble) and five in Indiana (Clark, Floyd, Harrison, Scott and Washington).

A secondary area of influence extending beyond the Louisville/Jefferson County, KY-IN MSA was not developed. Counties peripheral to the Louisville/Jefferson County, KY-IN MSA, i.e. within a sixty minute drive of the NWCA, have low population densities. It could be expected that visits which originate from these areas would not occur at rate that would influence current or forecasted recreational demand. Secondary areas of influence should be considered at the regional level with a focus on specific user-groups and are detailed in the Recreational Demand Analysis presented in Section 4.12.

4.6.2 Demographic Characteristics of the area of Influence

The NWCA boundary (Figure 17) encompasses nearly 1,400 acres of land and water located in the center of the Louisville/ Jefferson County KY-IN Metropolitan Statistical Area (MSA). In 2015 the Louisville/ Jefferson County MSA had an estimated population of nearly 1.3 Million people and is projected to reach 1.5 Million by 2040 (Kentucky State Data Center, 2015). This represents an approximately 15% population increase across the MSA with growth in Kentucky suburban counties (Spencer, Oldham and Shelby). Jefferson County shows the largest increase in population with an additional 131,000 residents by 2040 (Table 10). For comparison, Kentucky's population is forecasted to increase by 10% by 2040 (Kentucky State Data Center, 2016) and Indiana expects to see an increase of 15% (STATS Indiana) during the same time period.

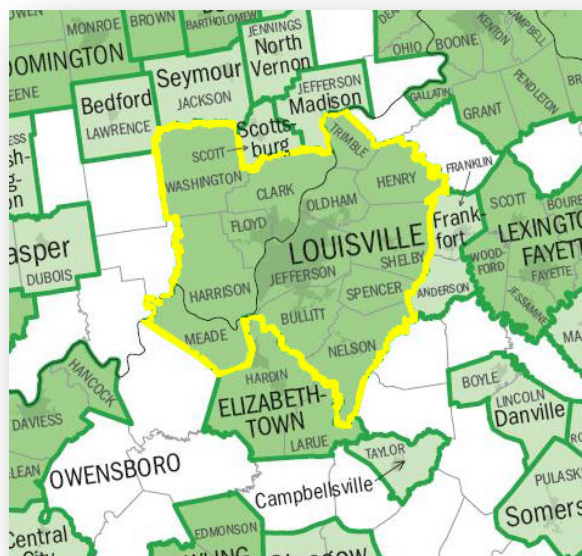


Figure 16 Louisville MSA

Table 7 NWCA area influence population projections through 2040

County		2010	2015	2020	2025	2030	2035	2040	Change 2010 - 2040	
									numeric	Percent
INDIANA	Clark	110,232	117,001	123,060	128,509	133,253	137,476	141,408	31,176	28.30%
	Floyd	74,578	76,267	77,763	79,005	79,851	80,261	80,367	5,789	7.80%
	Harrison	39,364	41,466	43,254	44,785	45,988	46,872	47,499	8,135	20.70%
	Scott	24,181	24,745	25,210	25,574	25,785	25,866	25,889	1,708	7.10%
	Washington	28,262	28,751	29,104	29,415	29,652	29,747	29,751	1,489	0.053
KENTUCKY	Bullitt	74,319	81,358	88,508	95,623	102,461	108,89	114,952	40,633	54.70%
	Henry	15,416	15,706	15,915	16,037	16,110	16,062	15,946	530	3.40%
	Jefferson	741,096	768,000	793,817	817,427	838,053	855,909	872,231	131,135	17.70%
	Oldham	60,316	67,412	74,990	82,306	89,639	96,668	103,223	42,907	71.10%
	Shelby	42,074	46,838	51,944	56,950	61,939	66,835	71,703	29,629	70.40%
	Spencer	17,061	20,157	23,655	27,189	30,861	34,587	38,301	21,240	124.50%
	Trimble	8,809	9,172	9,514	9,807	10,022	10,171	10,272	1,463	16.60%
Louisville MSA		1,235,708	1,296,873	1,356,734	1,412,627	1,463,614	1,509,345	1,551,542	315,834	25.60%

Source: Louisville Metro Demographic and Economic Projections 2010 - 2014, University of Louisville - Urban Studies Institute; Kentucky state Data Center (2015)

Table 9 Top employers in the Louisville/Jefferson County MSA

Company	Type	Headquarters	Employees
United Parcel Service	International air hub	Atlanta, GA	22,080
Ford Motor Co. (2 plants)	Automotive manufacturer	Dearborn, MI	12,990
Humana Inc.	Managed care, HMO, PPO, POS	Louisville, KY	12,500
Norton Healthcare	Health care provider	Louisville, KY	11,389
Amazon.com	Logistics and customer service	Seattle, WA	6,000
GE Appliances	Home appliances	Fairfield, CT	6,000
KentuckyOne Health, Inc.	Health care facilities	Louisville, KY	6,000
Baptist Healthcare Systems Inc.	Health care provider	Louisville, KY	4,995
Kroger Co.	Retail grocer	Cincinnati, OH	4,626
Manna, Inc.	Quick service & casual dining restaurants	Louisville, KY	3,120

Table 8 Employment categories

INDUSTRY	2017
Mining, Logging & Construction	30,500
Trade, Transportation & Utilities	149,500
Manufacturing	83,500
Information	9,200
Financial Activities	46,700
Professional & Business Services	90,000
Education & Health Services	90,700
Leisure & Hospitality	70,200
Other Services	25,700
Government	77,400

According to the U.S. Department of Commerce Bureau of Economic Analysis the Louisville/ Jefferson County KY-IN MSA had a personal income of \$58,427,868 in 2016. This ranked 47th in the United States. For comparison, in 2006, the personal income of the Louisville/Jefferson County, KY-IN (MSA) was \$42,395,436 and also ranked 47th in the United States (out of 382 total MSAs). Employment in the MSA is primarily accounted for by the Trade/Transportation /Utilities category, as defined by the U.S. Bureau of Labor Statistics. Professional /Business Services and Education/Health Services are the second and third highest employment categories (Table 11).

According to Business First (July 2016) and Greater Louisville Inc. United Parcel Service, Ford Motor Company and Humana Inc. represent the largest employers in the region. Table 12 presents the top ten employers, their headquarters location and current employment in 2016.

4.7 Adjacent Recreational areas to the NWCA

In addition to the recreational areas that transect the NWCA (Falls of the Ohio State Park, Clark Home Site, Ohio River Greenway and Louisville Riverwalk), there are two adjacent Louisville Metro Parks, as well as two additional parks under development. Current and planned development at each of these four facilities should be expected to increase visitation to the NWCA and is discussed in more detail in the subsequent sections.

4.7.1 Portland Wharf Park

Portland Wharf was the historic riverboat landing for the City of Portland founded in 1811. The Wharf is part of an archaeological site known as “Portland Proper” and is listed on the National Register of Historic Places (NRHP) and its limits encompass the entirety of the Portland Wharf Park. The City of Portland once thrived as an autonomous shipping port at the western end of the portage route around the Falls of the Ohio River, and later the Louisville-Portland Canal. Its hotels, taverns, warehouses, and many businesses catered to the steamboats and their passengers for many years. Evidence of this historic occupation exists throughout the Portland Wharf Park and has been the focus of many

archaeological excavations by numerous entities, including the University of Louisville and University of Kentucky. The remains of the town, including streets, sidewalks, building foundations, privies, cisterns, and thousands of artifacts dating from the early 1800s to the early 1900s are preserved in several areas even today.

Portland Proper is also contained within the 56 acre Portland Wharf Park. The Louisville Riverwalk bisects Portland Wharf Park and follows the old street grid pattern of the City of Portland. Currently, there are no other amenities located at this park.



Figure 17 Portland Wharf Park Map

In 2017 USACE, in partnership with the City of Louisville completed a bank stabilization project at Portland Wharf Park in order to protect the archeological site.



Photo 42 Riverbank stabilization at Portland Wharf Park

4.7.2 Lannan Park

This 17-acre park is owned and maintained by the City of Louisville and is situated on the Portland Canal adjacent to the entry to McAlpine Lock and Dam (Figure 19). The Louisville Riverwalk transects the northern portion of the Park and provides views into the NWCA and operations of McAlpine Lock and Dam.

Currently, Louisville Metropolitan Sewer District is completing construction of a covered basin in the western portion of the park to reduce untreated sewer discharges in the Ohio River that result when combined sewers become overloaded with rainwater and sewage. This one of several projects under construction in the City of Louisville to reduce and mitigate the effects of combined sewer overflows, and to eliminate sanitary sewer overflows and other unauthorized discharges into the Ohio River and local streams. The completed basin will be below ground providing opportunities for additional park amenities in including open space and sports fields.

Amenities at the Park include:

- Ballfield
- Basketball
- Grill
- Louisville Loop Access
- Multi-purpose Field
- Picnic Shelter
- Picnic Table
- Playground
- Restrooms
- River Frontage
- Tennis
- Volleyball
- Walking



Figure 18 Lannan Park Map



Photo 43 Construction of MSD basin



Photo 44 Picnic Shelter at Lannan Park

4.7.3 Loop Island Wetlands

Loop Island Wetlands is a 50 Acre nature park southeast of downtown New Albany. Located adjacent to the NWCA and west of Silver Creek. The area contains eight nature trails that provide excellent opportunities for birding. Signs posted along the trails acknowledge the lagoon's former industrial use. The Leather Compost Trail provides a through account of the Moser Company's history.

The abandoned railroad bridge identified in Figure 20 is being replaced by the Ohio River Greenway Commission to provide access across Silver Creek.



Figure 19 Map of Loop Islands Wetlands



Photo 45 Trailhead for Loop Island Wetlands

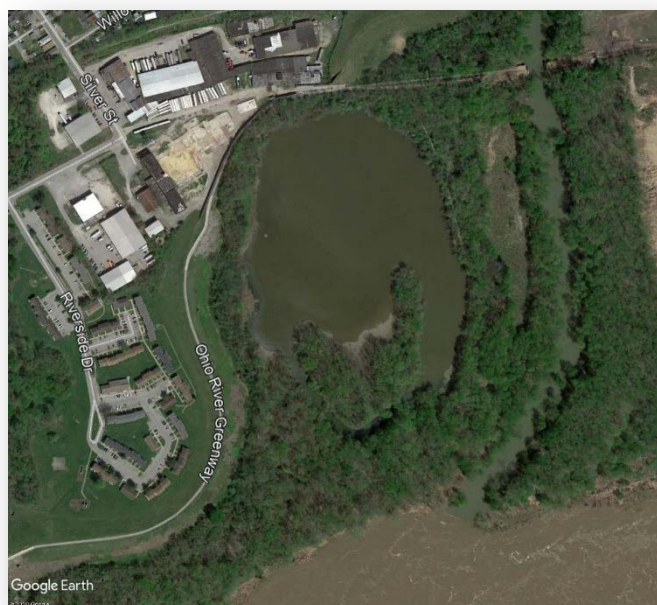


Figure 20 Aerial Image of Loop Island Wetlands

4.7.4 Clarksville – West Riverfront Park System (*under development*)

This park system, currently under development, will be located in an area bounded by Silver Creek on the west, the Ohio River on the South, Bailey Avenue on the east, and Brown Station Way on the north. In 2016, the River Heritage Conservancy, Inc. (RHC) was created to lead the development of this new system of public parks along the Ohio River adjacent to NWCA. RHC is intentionally focusing its efforts on providing world-class park, recreation, and conservation areas along the North Shore of Ohio River in Clarksville. The RHC park will conserve the resources that make this an exceptionally special place for the region through increasing the public's connection, and access to, the area through enhanced passive recreational access amenities. The figure below provides a conceptual rendering of the project footprint and several key features.



Figure 21 Conceptual rendering of Clarksville - West Riverfront Park System

4.7.5 Louisville Waterfront Park (*Phase IV*)

According to the Louisville Waterfront Development Corporation, a conceptual master plan has been created for Phase IV of Waterfront Park, which will expand Waterfront Park west of 10th Street to provide a continuation of open space along the river and the prospect for new experiences and activities along the river. The Riverwalk from the downtown wharf to



Figure 22 Conceptual rendering of Phase IV of Waterfront Park

and alongside Phase IV will be improved to provide a vital pedestrian/bicycle east-west connection and a continuum of the Waterfront Park experience. The site is 22 acres located north of the floodwall. River Road would be extended to what is now Rowan Street as part of the plan, which will include passive and active park space and improved connections to adjacent streetscapes.

4.8 Outdoor Recreation Opportunities at Comparable Facilities

Ten comparable facilities were identified in the primary area of influence that are located either on the Ohio River, a tributary or provide water-based recreational opportunities. A minimum size of 75 acres was also set as a selection criteria. Note that the unique physical and natural condition of the NWCA limits any direct comparison with other facilities in the region.

Outdoor recreational facilities were analyzed to understand the area's other options for comparable outdoor recreation. Identifying the status of comparable facilities in the primary area of influence allows for an understanding of potential effects these nearby facilities may have on NWCA visitation. Table 13 provides a list of these areas identified along with their location, their size and their managing agency.

Table 10 Comparable outdoor recreation facilities in the NWCA area of influence

Name	State	Operating Agency	Approximate Size (acres)
Charlestown State Park	IN	IDNR	5,100
Clear Creek Park	KY	Shelby County Parks	130
Deam Lake State Recreation Area	IN	IDNR	1,300
Louisville Waterfront Park	KY	Louisville Waterfront Development Corporation	85
McNeely Lake Park	KY	City of Louisville	746
O'Bannon Woods State Park	IN	IDNR	2,000
Otter Creek Outdoor Recreation Area	KY	KY DFWR	2,600
Parklands of Floyds Fork	KY	21st Century Parks	4,000
Shawnee Park	KY	City of Louisville	284
Taylorsville Lake	KY	USACE	15,143

Table 14 provides a basic overview of the recreational activities available to visitors at comparable facilities. Additional activities are available across the identified facilities (i.e. Golfing and geocaching); however, primary activities were only selected in order to highlight comparisons.

Table 11 Overview of recreation activities available at comparable facilities

Recreation Area	Fishing	Swimming	Wading	Hiking	Marina	Livery	Cabins /Lodge	Target Shooting	Hunting	Playground	Picnicking	Camping	Canoeing/Kayaking	Boating	Boat Ramp - trailer	Boat Ramp - Carrydown	Historic Site / Memorial	Wildlife Viewing	Boat Rentals (motorized)	Interpretation / Nature Center	Horseback Riding	Sports Fields	Mtn Biking	Paved Multi-Use Trails
Falls of the Ohio NWCA	X		X	X						X	X		X	X	X	X	X	X		X				X
Charlestown State Park	X			X						X	X	X	X	X	X	X	X	X		X				
Clear Creek Park	X	X		X						X	X	X	X	X	X	X		X				X		X
Deam Lake State Recreation Area	X	X	X	X			X		X	X	X	X	X	X		X	X	X		X	X		X	
Louisville Waterfront Park	X				X					X	X		X	X		X		X						X
McNeely Lake Park	X			X						X	X		X	X	X	X	X	X				X		
O'Bannon Woods State Park	X	X	X	X		X				X	X	X	X	X	X	X	X	X		X	X	X		
Otter Creek Outdoor Recreation Area	X		X	X			X	X	X	X	X	X	X		X	X	X	X		X	X		X	
Parklands of Floyds Fork	X		X	X		X				X	X		X		X		X	X		X		X	X	X
Shawnee Park	X			X						X	X							X				X		X
Taylorsville Lake	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	
Ohio River (Multiple Sites)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

The following Regional Recreation Map highlights the location of these facilities identified in Table 13, relative to the NWCA, as well as other outdoor recreational destinations within 30 and 60 miles.

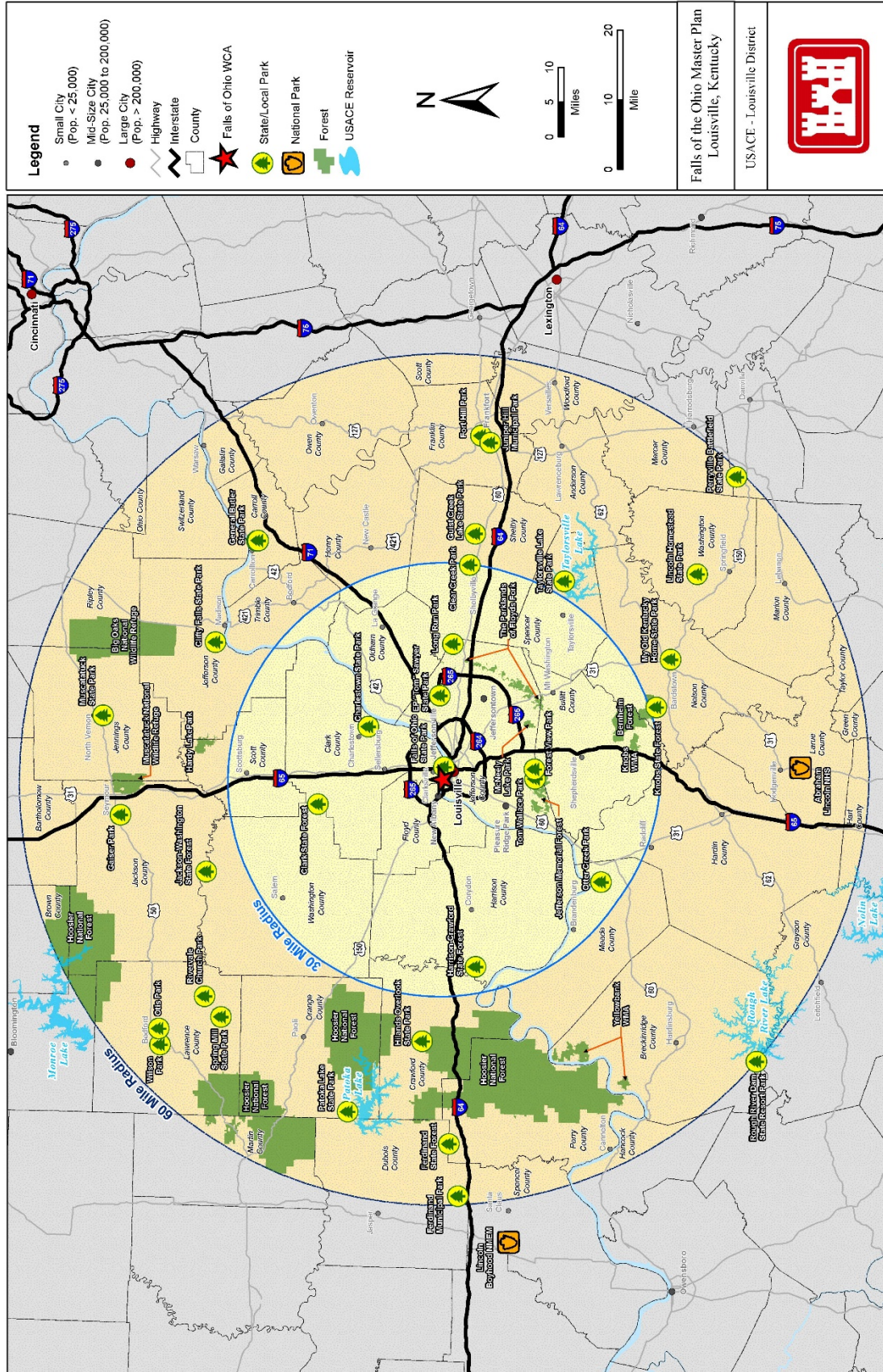


Figure 23 Regional Recreation Opportunities

4.9 Recreation Areas within Primary Area of Influence

The following section provides a summary of each of these locations identified in Table 14. No direct impact to visitation at the NWCA is expected from current or expanded recreational developments at these locations. However, future regional blueways and water-based recreational plans should consider the interaction of these recreation areas with the NWCA functioning as central activity node providing distinctive and advanced paddling opportunities. Note that there are multiple access ramps on the Ohio River

4.9.1 Charlestown State Park

Once a largely undeveloped portion of the 15,000-acre Indiana Army Ammunition plant, Charlestown State Park is located in southern Indiana. The park is located 8 miles east of I-65, on State Road 62. Charlestown State Park provides paddling access to Fourteenmile Creek and the Ohio River, along with camping, and multiple hiking trails that traverse varied topography. Charlestown State Park offers diverse bird watching opportunities with over 72 species of birds, including bluebirds, black vultures and an occasional bald eagle.

4.9.2 Clear Creek Park

Clear Creek Park is the oldest park in Shelby County, Kentucky and serves as the center of activity in the county park system. The park is 130 acres in size, named after Clear Creek which runs through parts of the park and creates Lake Shelby.

4.9.3 Deam Lake State Recreation Area

Deam Lake offers recreational activities including fishing, boating, swimming, camping, picnicking, hiking and hunting in designated areas. Deam Lake State Forest Recreation Area also has 16 camp-cabins, boat launch ramp (boat motors are limited to electric trolling motors only). The swimming beach on Deam Lake is available from Memorial Day weekend through Labor Day and offers restrooms, dressing facilities, showers and food concessions. There are several picnic areas throughout the property and includes five picnic shelter houses and two playgrounds. The Forest Education Center at Deam Lake is managed by a seasonal Naturalist and houses several displays and hands-on activities for kids and adults.

4.9.4 Louisville Waterfront Park

Louisville's Waterfront Park is situated on 85 acres adjacent to the Ohio River in downtown Louisville, Kentucky. Waterfront Park, which was constructed through a series of phases beginning in the mid-1990's, currently estimates around 2 million visitors annually. The 2017 Waterfront Park Visitor Profile study identified attending events as a main reason for visiting the park followed by spending time with family.

4.9.5 McNeely Lake Park

McNeely Lake Park, one of the largest in the Louisville Metro Parks system, features a scenic 46-acre fishing lake with an accessible pier and boat ramp which is owned by the Kentucky Department of Fish and Wildlife. A Korean War Memorial is also located in the park.

4.9.6 O'Bannon Woods State Park

O'Bannon Woods State Park (formerly Wyandotte Woods State Recreation Area) is located in south-central Indiana, bordering the Ohio River. The state park is contained within the 26,000-acre Harrison Crawford State Forest, but is managed separately, along with Wyandotte Caves State Recreation Area. The Blue River (Indiana's first designated natural and scenic river) flows through the state park and forest to its confluence with the Ohio River.

4.9.7 Otter Creek Outdoor Recreation Area

Otter Creek Outdoor Recreation Area (2,155 acres) is located in Meade County and is managed by the Kentucky Department of Fish and Wildlife. The area includes five miles of Otter Creek and frontage along the Ohio River. Boats can be launched into both the Ohio River and Otter Creek. Additional activities at Otter Creek include picnicking, hunting, fishing, horseback riding, mountain biking, shooting ranges and camping.

4.9.8 Ohio River (multiple sites)

The Ohio River provides abundant water and land based recreational opportunities throughout the area of impact. Boat launches are available in multiple locations on both the Indiana and Kentucky shores and links multiple recreation areas noted in this section.

4.9.9 Parklands of Floyds Fork

The Parklands of Floyds for is located in Eastern Jefferson County, Kentucky and follows an approximate 21 mile stretch of Floyds Fork. In total, the park system includes nearly 4,000 acres of protected lands. The Parklands consists of four flagship parks: Beckley Creek Park, Pope Lick Creek Park, Turkey Run Park and Broad Run Park and includes:

- Approximately 100 miles of hiking and biking trails
- 19 miles of signed canoe trail along Floyds Fork Creek
- Children's playgrounds, walking paths, and dog parks
- Picnics shelters and event facilities
- Accessible fishing holes, seven canoe launches and recreational fields

4.9.10 Shawnee Park

Frederick Law Olmsted designed the 180-acre Shawnee Park, on a low-lying plain of river bottomland, with natural tiers sloping down to the Ohio River. The topography inspired a curving drive, with border planting encircling an expansive 35-acre greensward, known as the Great Lawn. This broad meadow provided the ideal open site for recreation, a primary intent for the park. River scenery being the central design focus, the drive featured five points from which to view the river, with trees planted to frame these views.

4.9.11 Taylorsville Lake

Taylorsville Lake offers a wide variety of recreational opportunities. The project includes 12,093 acres of land; 3,050 acres of water; and 78 miles of shoreline. The USACE Visitor Center offers a variety of displays and presentations covering a variety of topics including wildlife, archeology and construction of the lake. The Commonwealth of Kentucky leases/licenses approximately 11,500 acres that border the lake, which includes wildlife management areas and a state park. Taylorsville Lake has a full-service marina, with 38 open slips and 144 covered slips. Lodging options include 45 RV sites with electric & water hook-ups, 10 equestrian sites with electric & water hook-ups, & 15 primitive tent sites with water available. A 24-mile trail system is open to hikers, bikers and equestrians. Edgewater Resort, located near the Settler's Trace area, has cabins available for rental.

4.10 National, Statewide and Regional Trends

The following section provides an insight to changing trends in recreational demand, both nationally and in the state of Indiana. Project decision makers can use this information to anticipate future trends, which will help provide the necessary infrastructure at the NWCA to meet demand.

4.10.1 Outdoor Recreation Participation Report

The Outdoor Foundation, a non-profit organization focused on increasing outdoor recreation participation, produces its annual Outdoor Recreation Participation Report (ORPR) in which a nationwide survey helps to further understand national recreation trends.

According the 2017 ORPR, participation by Americans in outdoor recreation activities has increased from 48.4% in 2015 to 48.8% in 2016 (addition of 2 million participants). The percentage of Americans that participate in outdoor activities has remained relatively constant since 2006 (start of survey).

Most Popular Outdoor Activities by Participation Rate (age 6+)

1. Running, Jogging and Trail Running
2. Freshwater, Saltwater and Fly Fishing
3. Road Biking, Mountain Biking and BMX
4. Hiking
5. Car, Backyard, Backpacking and RV Camping

This national demand for quality outdoor recreational experiences that align with popular activities has been demonstrated locally in the newly developed Parklands of Floyds Fork in eastern Jefferson County. In 2012, as the first segments of the Parklands was coming on board, visitation was expected to reach 350,000. In 2016, following the opening of the full system, the Parklands recorded nearly 2.6 million visits and an estimated 3.1 million visits in 2017. The Big Four Pedestrian Bridge, approximately 1.5 miles upstream from the NWCA, estimated 2.5 million visits in 2017.

Several outdoor sports, available at the NWCA, have seen dramatic increase in participation rate between 2010 and 2017. Nationally, kayak fishing has seen a 192 percent growth; standup paddle boarding - 157 percent; trail running - 130 percent and recreational kayaking - 73 percent.

4.10.2 Indiana Statewide Comprehensive Outdoor Recreation Plan

The 2016 -2020 Indiana SCORP presents a summary and analysis of the state's outdoor recreation resources with four stated goals:

- Qualify Indiana for National Park Service Land and Water Conservation Fund (LWCF) state-side grants
- Set statewide priorities for funding of grants through LWCF, the Recreational Trails Program (RTP), and any other applicable funds available at state or federal levels
- Provide a quantitative analysis of outdoor recreation supply and demand statewide
- Improve the provision of outdoor recreation to all users

Surveys are a critical piece in the development of the Indiana SCORP, which includes results from the following three surveys:

- Outdoor Recreation Participation Survey (recreation preferences);
- Local Park and Recreation Provider Study (challenges, issues and solutions faced by professional and non-profit outdoor recreation providers); and
- Trail User Survey (how the public uses Indiana trails).

The Outdoor Recreation Participation Survey identified the following outdoor recreation activities that Indiana residents currently participate in more than once a week. These are listed below in order of most popular to least popular.

1. Walking, hiking, jogging, running
2. Gardening / Landscaping
3. Relaxation / Spiritual Renewal
4. Bicycle Touring
5. Outdoor Pool Swimming or Water Sport

The Outdoor Recreation Participation Survey also captured the top five outdoor recreational activities that survey respondents would like to do in the future. Walking, Hiking, Jogging and Running remained at the top of the list and this activity has remained as top activity since the 1995.

1. Walking, hiking, jogging, running (pedestrian activities)
2. Camping
3. Fishing
4. Swimming

5. Canoeing, kayaking, tubing

The Outdoor Recreation Participation Survey reports how Indiana residents report to spend outdoor recreation. Seventy-three percent of respondents indicated that they would spend more than \$100 per year to participate in their favorite outdoor recreation activity. Overall, expenditures of less than \$100 was the most popular response at twenty-eight percent. The survey also indicates that Indiana residents currently prefer to engage in outdoor recreation activities closer to their home.

Respondents to the Local Park and Recreation Provider Survey indicated that they look beyond tax revenues for funding, staffing and program needs. Local parks and non-profit outdoor recreation providers indicated they predominately used non-tax-based funding strategies to pay for their park systems: sixty-seven percent applied for grants, eighty percent received donations, fifty-three percent pursued a community foundation, thirty-two percent levied taxes and fourteen percent said they closed facilities (an increase from five percent in the 2010 survey).

Walking was identified as an important outdoor recreational activity across all three surveys. The Trails Activity Survey reported that twenty-three of respondents walk, jog or run more than once a week. Seventy indicated that they would like to walk, jog or run at least twelve times a year.

4.10.3 Kentucky Statewide Comprehensive Outdoor Recreation Plan.

The most recent SCORP prepared by the Commonwealth of Kentucky was completed in 2008. Similar to the Indiana SCORP, the plan provides state and local agencies with information that quantifies the benefits of outdoor recreation, identifies potential users of recreational facilities, and qualifies the state for National Park Service Land and Water Conservation Fund grants.

The Kentucky SCORP centers on a statewide demand survey that was conducted in 2008 by the Eastern Kentucky University Department of Recreation and Park Administration. A supporting survey conducted by Western Kentucky University was submitted to outdoor recreation providers in the state to determine existing recreation infrastructure and areas of current and forecasted needs.

The majority of survey respondents rated outdoor recreation as desirable or essential and are spending more time involved in outdoor recreation (highest on weekends). Overall, Kentucky residents were satisfied with their outdoor recreation experiences and noted that gas prices, job and family responsibilities, and outdoor recreation sites located too far away were the main reasons for not participating in outdoor recreation opportunities. The survey also found that the importance of outdoor recreation is fairly consistent across all income and education levels, with ninety-three percent and sixty percent of respondents, respectively, indicating that outdoor recreation is desirable or essential.

The following outdoor recreational activities received the most responses by household. Note that the survey did not investigate activities that Kentucky residents would like to do in the future.

1. Driving for pleasure / scenic drive
2. Visit a historic site
3. Walking
4. Fishing from pier, shore or boat
5. Playground or open space at a local park

The SCORP builds on the survey results and identifies 10 Strategic Goals and supporting strategies. Examples of strategies relevant to the NWCA include emphasis on the importance of natural areas in the urban settings and promotion of Kentucky as a premier national outdoor adventure recreation destination. Additional strategies include the use historic sites and structures as focal points for recreation and encouraging increased use of parks, forests, and nature preserves for environmental and health education programs.

A key strategic goal in the SCORP with direct application to the NWCA is identified as Goal 7: Increase and promote coordination and definition of roles among the various federal, state, regional, local, and private agencies that are responsible for the planning, programming, and implementation of recreation facilities and opportunities. The current management in the NWCA is based on a cooperative structure between USACE, IDNR, LG&E and the City of Louisville. Further exploring the incorporation of other entities in the management of the area provides the opportunity to further protect and enhance the resource.

4.11 Potential Recreation Opportunities

Navigation and hydroelectric infrastructure in the NWCA physically limit the amount of additional recreational opportunities in the NWCA. The project authorization (Appendix D), with an emphasis on conservation of natural and historic resources, also constrains the types of activities that could be encouraged and implemented in the NWCA.

Additional development of recreational facilities or programming on Shippingport Island, Sand Island and Lewis & Clark Island should be evaluated in more detail following completion of baseline inventories of existing conditions. There are several opportunities, consistent with the project purpose, to expand low impact recreation on the Indiana and Kentucky shoreline, as well as on the open water. The following list of recreational opportunities support the current and forecasted demand for additional opportunities to walk, jog and run identified in both the Indiana and Kentucky SCORPS, as well as the national ORPR. These opportunities are also supported by feedback received from public meetings.

Upper McAlpine Tainter Gates: This location is located just outside of the upstream boundary of the NWCA, but does provide pedestrian access to the Ohio River for fishing and wildlife viewing. An informal trail leads from a small parking area off of Riverside Dr. (Ashland Park) and terminates at the fixed weir. Providing minor improvements to the trail at this location will facilitate easier and safer access to the river and upper fossil beds.

The evaluation of the operation of the Upper McAlpine Tainter Gates and related infrastructure, as it relates to water-based recreation, could identify opportunities to provide more consistent flow regimes through the NWCA that are compatible with navigation, hydroelectric generation, interpretation and conservation objectives. Flows through the NWCA are dynamic and influenced by multiple variables outside of the NWCA. Providing better communication to users on current and forecasted river conditions in the NWCA would improve safety of users as well as support more sustainable recreational programming.

Center to Clark Home Site to Silver Creek Confluence: Currently, the Ohio River Greenway is planned to continue along Emory Crossing and then turn east crossing Silver Creek about 0.35 miles north of the NWCA boundary. There is an opportunity to supplement the current Greenway alignment with additional trail development that allows the user to remain in closer proximity to the Ohio River by

traversing the northern boundary of the NWCA between the Clark Home Site and Silver Creek. This alignment also supports connections to interior trail networks that are being developed by the Town of Clarksville along this stretch of the NWCA. Erosion is occurring in this stretch of the NWCA and any stabilization efforts by USACE should consider future trail alignments, as well opportunities to enhance riparian and aquatic habitat.

Kentucky Shoreline at the Entrance to the Portland Canal: Conceptual planning is underway for Phase IV of Louisville’s Waterfront Park, which includes land in the far southeastern boundary of the NWCA (Louisville and Indiana Railroad Bridge to the terminus of 9th Street). This area of the NWCA displays remnants of former industry and consists primarily of vacant lots. This location presents multiple opportunities to improve the user’s experience on this stretch of the Louisville Riverwalk that bisects the area. Improvements also have the potential to serve as a gateway to the NWCA on the Kentucky shore, as well as reinforce linkages to downtown Louisville.

Recreational Boating (canoe / kayak / raft): Carry down access is available at the Interpretative Center and Clark Home Site in Indiana and at the Fisherman’s Trail on Shippingport Island in Kentucky. These three locations provide sufficient boating access to the NWCA and should remain open to the public.

The flow conditions in the NWCA vary greatly and are influenced by multiple variables including the Operation of the McAlpine Lock and Dam and the hydroelectric plant. The development of communication materials that explain how operational decisions and actions affect flow conditions. The Falls provide the only Class IV whitewater in the region and an improved understanding of how flow conditions affects wave features has the potential to make the NWCA a regional destination for the paddling community. Expanded information on flow conditions also allows for the novice recreational boater to understand when it is safe to paddle on the NWCA.



Photo 46 Whitewater boating in the NWCA

Improved mapping and signage in the NWCA has the potential to enhance recreational boating experiences by defining locations that are restricted, as well as offering interpretation of features in the area.

4.12 Recreational Demand Analysis

The NWCA should expect to see increased recreational demand in the near future directly resulting from park and recreation projects being completed adjacent to its boundary in both Indiana and Kentucky. It is critical for USCAE to take an active role in the early planning stages of these projects in order to support and enhance the authorized purpose of the NWCA.

Population growth in the Louisville/Jefferson County KY-IN MSA will also contribute to increased demand for recreational opportunities in the area, but the effect on visitation will be limited in comparison to implementation of surrounding recreational projects.

Growth trends in stand-up paddle boarding, kayak fishing and recreational canoe/kayaking, as identified in the ORPR, can also be expected to increase recreational demand in the NWCA. Accessibility to these water-based activities are further enhanced by strategic efforts completed over the past several years by cities such as Louisville, Nashville, Chattanooga and Greenville, South Carolina to reconnect to their riverfronts through park development.

4.12.1 Impacts of Adjacent Indiana Projects

A major obstacle in the completion of the Ohio River Greenway is installation of a bridge to cross Silver Creek (scheduled for completion in 2018). Once completed, the Greenway will allow bike and pedestrian access from New Albany to the NWCA and points east. This bridge provides direct access to the area to approximately 36,000 (2010 U.S. Census) additional users. Located approximately one mile upstream, the Big Four Pedestrian Bridge opened in 2014 directly linking southern Indiana to Louisville's Waterfront Park (in 2017 the bridge saw an estimated 2.5 million visits). While there are no official counts, reports from IDNR personnel, indicate a notable increase in bike traffic arriving to the Interpretative Center from Jefferson and Louisville. A similar surge should be expected once the bridge over Silver Creek is completed in 2018.

Another notable project under development in Indiana that will have a direct impact on the NWCA is the Clarksville – West Riverfront Park System. Building on the Ohio River Greenway, this park system is seeking to create a 500 acre park, which will border almost the entire northern shore of the NWCA. The majority of this area has suffered from heavy industrial uses and highly altered landscapes.

The creation and enhancement of wetlands, riparian and floodplain habitat communities in the new park system will have a direct impact on habitat quality in the NWCA. Restoring lost habitat connectivity between the Ohio River and floodplain is a goal for this project. Floodplain function is often restored through pulling back steep banks for a gentler slope, removing or notching levees/barriers and restoring quality native vegetation that can support a diversity of habitat structure and food resources. In addition, remnant areas of floodplain forest along large highly modified rivers are typically low quality dominated by invasive plant species. In general, removing invasive species and replacing or recruiting high quality native plant species will restore quality habitat and increase native biodiversity of the region. Implementation of these types of restoration activities coupled with trail development and programming for water-based recreation will result additional visitation to this area of the NWCA.

The long-term viability of any ecosystem restoration or recreation project on the Indiana shore of the NWCA will require action to address the on-going bank failure and erosion between Ohio River Mile 605.5 and 606.5. In 1973 USACE identified that the operation of the McAlpine Locks and Dam project had adversely affected the river bank in this area. Specifically, the operation of the dam tainter gates for this project has been previously identified as a significant contributor to erosion of the river bank in the study area. Since 1973, multiple federally funded attempts at responding to this problem have met with limited success (see Table 1). Actions included the setback relocation of Harrison Avenue (1973); placement of quarry stone along Harrison Avenue and Emery Lane (1979); and construction of a revetment project restoring/protecting the river bank adjacent to Emery Crossing Road and near the Emery Crossing Bridge over Mill Creek (2004).

In 2018 the River Engineering Branch of the U.S. Army Research and Development Center, Coastal (ERDC) and Hydraulics Laboratory, developed a model to determine the causative factors of erosion on the north shore of the NWCA and evaluate possible alternatives to eliminate or reduce the erosion. The analysis concluded that that gate operations at McAlpine Locks & Dam exacerbate river forces along the shore and that river training structures (i.e. dikes) and/or some form of bank protection would be needed to protect the bank from future erosion in that location. This analysis from ERDC will be incorporated into a USACE report that fully formulates options and makes a recommendation for a course of action once funding is available. Given the current park master planning by the River Heritage Conservancy and Town of Clarksville for West Riverfront Park System, any recommendation will need to consider how any action can support long-term plans and objectives by these two entities. Concurrently, opportunities for improved aquatic habitat, as well as water-based recreation should be evaluated as part of a comprehensive project to address erosion in this area.

4.12.2 Impacts of Adjacent Kentucky Projects

Louisville's Waterfront Park is in the early planning stages to expand the system west to the Louisville and Indiana Railroad Bridge. Conceptual renderings for Phase IV overlap the current boundary of the eastern most segment of the NWCA on the Kentucky shoreline. Timelines and fundraising is still under development, but once implemented this park will replace an underutilized wedge of land between the NWCA and downtown Louisville. This location has the potential to serve as a significant gateway to the NWCA and will be a substantial draw for walkers, bikers and runners on the Louisville Riverwalk to continue their trips east on the multi-use trail. Additional recreation trips to Shippingport Island and McAlpine Visitor Area should be expected.

A second project in Louisville that will increase recreational demand on the NWCA is completion of the Portland Wharf and Louisville Riverwalk bank stabilization. This project consists of two bank stabilization sites on the Ohio River. In 2017 USACE and the City of Louisville completed construction of the first site at Portland Wharf which serves to protect the historic Portland Wharf Landing. In 2018 the Louisville Riverwalk site, approximately 2 miles downstream of the NWCA, will be completed allowing for the City of Louisville to fully reopen this scenic segment trail. For over ten years this stretch of trail along the river has been closed with bike traffic rerouted to surface streets. Restoring connectivity along the trail will result in additional visitation by bike and foot to the NWCA.

Additional recreational demand on the NWCA can also be expected from the West Louisville Outdoor Recreation Initiative (WLORI). The goal of the WLORI is to establish infrastructure for nature-based outdoor recreation in west Louisville including a new satellite center, the Shawnee Outdoor Learning

Center, which will serve as a base for outreach programming utilizing the new recreation infrastructure created. Specific programming to be offered will mirror current programming offered by Metro Parks at the Jefferson Memorial Forest. It is expected that the open water and islands of the NWCA will be destination for the WLORI. Planning is also underway for a boat ramp at Shawnee Park which will provide the opportunity to paddle between the NWCA and Shawnee Park.

5.0 Resource Objectives

The development of resource objectives was centered directly on the project's authorized purposes outlined below:

- to protect wildlife populations and habitats in their natural diversity including, but not limited to, bald eagle, peregrine falcon, Canada geese, mallard, gadwall, blue-winged teal, black duck, American widgeon, and wood duck;
- to conserve fish populations in their natural diversity including, but not limited to, shad, shiner, crappie, largemouth bass, striped bass, and channel catfish;
- to ensure, to the maximum extent practicable and in a manner consistent with paragraphs (1) and (2) and compatible with navigation on the Ohio River and operation of the McAlpine locks and dam, the necessary water quantity within the wildlife conservation area;
- to protect the fossilized coral reef as a unique paleontological feature; and
- to provide opportunities for scientific research and interpretive and environmental uses and fish and wildlife oriented recreational uses.

The natural resources under the control of the USACE for this purpose require resource stewardship and allow for recreational use. Recreational uses reflect user demands and funding. Multiple user types have interests in project lands and recreational facilities. Such demands occasionally create conflicts, but it is the obligation of the USACE to manage these resources to benefit the overall interest of the public. USACE personnel at the NWCA have the responsibility of providing these resources in an environmentally sound manner. Impacts on the environment will be assessed during the decision-making process prior to any management plans or strategies. The four objectives presented in the following section considered the following:

- Authorized project purposes;
- Applicable federal laws and directives;
- Review and evaluation of existing forecasted conditions at the NWCA;
- USACE and agency coordination; and
- Feedback received from public meetings;

Each of the four objectives also includes multiple supporting measures that were developed to achieve the Objective. These measures are not intended to limit or constrain resource management at the NWCA, rather they should be referenced as possible actions to successfully achieve the project's authorized purpose. Additionally, these measures should be referenced and expanded during any future update to the Master Plan or Operational Management Plan.

5.1 Objective 1: Protect the fossilized coral reef as a unique paleontological feature

Throughout the entire 981-mile course of the Ohio River, there is only one place where bedrock is exposed across much of the riverbed. This exposed stretch of bedrock, known as the Falls of Ohio, is a 350-400 million-year-old fossilized coral reef. The protection of this natural asset is the primary reason for the NWCA designation by Congress.

5.1.1 Objective 1 Supporting Measures

- Monitor impacts to fossil beds from flows at McAlpine Dam and identify corrective actions to mitigate effects.
- Maintain limited access to outer fossil beds.
- Continue coordination with state and local law agencies to enforce laws pertaining to fossil collection and vandalism.

5.2 OBJECTIVE 2: Protect and enhance the ecosystem function of the NWCA

The ecological function of the shoreline and islands located in the NWCA are impaired. The Ohio's flow regimens coupled with limited resource management has resulted in the reduction of healthy riparian ecosystem functions. Current vegetation in the NWCA vegetation can be characterized as low value species, and includes significant invasive plant establishment. There are opportunities to develop a collaborative and system-wide plan to improve the habitat conditions of the NWCA shoreline and islands for the benefit of bird and wildlife species that require them for habitat.

5.2.1 Objective 2 Supporting Measures

- **Terrestrial Ecosystem Function**
 - Conduct baseline assessment of vegetative, avian and terrestrial species
 - Develop a Natural Resource Management Plan for the NWCA.
 - Remove/control invasive species and develop a monitoring/management plan.
 - Maintain and expand existing pollinator areas located on Shippingport Island and adjacent to the McAlpine Visitor Center.
 - Delineate existing wetlands on Shippingport/Sand Islands and identify opportunities for enhancement/creation of additional wetlands.
 - Reduce sedimentation / loss of riparian corridor and near-shore habitat in the vicinity of Emery Crossing and the Clark Cabin interpretive site.
 - Remove metal scrap and debris deposits on Shippingport Island located outside of operational areas.
 - Work with LG&E to actively manage vegetation for conservation under powerlines on Shippingport Island.
 - Conduct native species planting on islands (e.g. spring ephemerals).
 - Provide nesting boxes and other refuge/nesting structures on NWCA Islands.
 - Actively maintain the proper NWCA boundary line on the Indiana shore.

▪ **Aquatic Ecosystem Function**

- Review operation of upper gate to maximize water quality and quantity parameters for aquatic species.
- Maintain continued fish monitoring with ORSANCO.
- Continue to clear debris from lower castellations adjacent to the Middle Chute.
- Identify opportunities for improved floodplain connections to the Loop Island wetlands and floodplain forest.
- Identify opportunities for improved fish habitat in the NWCA at the confluence with Silver Creek to Emery Crossing (i.e. installation of shallow riffles/gravel bars/boulders/j-hooks/wing-dikes) that provides critical refuge and food resources for small fish and for juveniles of larger river species as cover from predators.
- Engage adjacent resource managers to develop and fund a comprehensive strategy to manage woody debris and trash that is deposited in the NWCA from Ohio River flows.

5.3 Objective 3: Enhance and maintain visitor experience at the NWCA

A unique attribute of the Falls of the Ohio is its service as a destination for non-motorized boating activities such as canoeing, kayaking, whitewater boating, and stand-up paddle boarding for the region. Clear separation of navigation traffic, significant public shoreline access, accessibility of natural and cultural resources, and natural features that produce relatively consistent whitewater surf waves, make the NWCA a unique recreational amenity within the Ohio River. Focused planning to safely accommodate these growing activities coupled with the development of an improved understanding and communication of flows through the NWCA provides a significant opportunity to enhance recreational experiences while expanding public awareness of the unique environs located in the NWCA.

The multi-use trails that transect the northern and southern boundaries also provide direct linkages to surrounding neighborhoods and park systems. As these trail systems expand, visitation will naturally increase. Providing clear way-finding, increased interpretation and enhanced visitor management will improve land-based recreational experiences.

5.3.1 Objective 3 Supporting Measures

▪ **(land-based measures to enhance recreational experiences)**

- Provide additional wayfinding from the Louisville Loop and Portland neighborhood to the McAlpine Visitor Area.
- Further develop a project sign plan for the NWCA.
- Improve trailhead facilities at the Fisherman's Trail parking area.
- Provide full-time staff to manage visitation to the NWCA (Resident's Office has the potential to serve as the primary Kentucky gateway / project office).
- Identify and communicate public high hazard areas (LG&E, quick sand, etc.).
- Improve safety on Shippingport Island through increased patrols by the Louisville Metro Police Department or contracted security.
- Maintain visitation hours and gate closure policies.

- Identify opportunities for creative reuse of woody debris on the Indiana shoreline.
- Formalize the access trail from the Ohio River Greenway to the castellations on the upper weir.
- Delineate fishing and no-fishing areas located in the WCA.
- Actively engage in the planning and implementation of Phase IV of Waterfront Park (Waterfront Park West) and the Clarksville West master plan.
- Continue lease with IDNR for the Falls of the Ohio State Park and Interpretative Center.
- Actively track visitation to the NWCA via vehicle, boat ramp foot and bicycle.
- **(water-based measures to enhance recreational experiences)**
 - Develop communication materials for the WCA that describe ideal/dangerous paddling conditions relative to skill level.
 - Develop interpretive materials that highlight key features (natural, historic and contemporary) of the WCA that can be explored via canoe or kayak.
 - Develop a blueways plan that describes how the WCA functions as a whitewater and flatwater destination with paddling connections to areas such as Silver Creek, New Albany, Shawnee Park (forthcoming), Greenwood, Otter Creek, West Point, and destinations in the McAlpine pool.
 - Explore opportunities with the Falls of the Ohio State Park / River Heritage Conservancy to enhance water-based recreation in the NWCA.

5.4 Objective 4: Increase opportunities for scientific research, interpretive and environmental uses

The NWCA is authorized to provide opportunities for scientific research and interpretive and environmental uses and fish and wildlife-oriented recreational uses. There are multiple opportunities to collaborate with local universities, school systems, resource agencies and non-profit entities to improve the current understanding of baseline ecological function, as well as improve conditions in the NWCA. These same collaborative efforts also provide the opportunity to promote a community-wide understanding and appreciation of the Ohio River's role in the community.

5.4.1 Objective 4 Supporting Measures

- Facilitate connections with local universities for academic research in the WCA including Indiana University, Indiana University Southeast, University of Louisville, University of Kentucky, Bellarmine University and Spalding University.
- Provide opportunities for facilitated educational tours of the WCA targeting environmental, historic and prehistoric interests. (i.e. West Louisville Outdoor Recreation Initiative – based in Shawnee Park).
- Expand interpretative materials at the McAlpine Visitor Area and other NWCA gateways to include historic, prehistoric and wildlife information.
- Engage Portland and other adjacent neighborhoods to provide opportunities for volunteer labor to assist with invasive species control and eradication.

- Identify an education/research manager who can coordinate and promote community/university/agency research, education and information.

5.5 Summary of Resource Objectives and Supporting Measures

Table 12 NWCA Resource Objectives

Falls of the Ohio National Wildlife Conservation Area: Resource Objectives	
OBJECTIVE 1: Protect fossilized coral reef as an unique paleontological feature	
	Monitor impacts to fossil beds from flows at McAlpine Dam and identify corrective actions to mitigate effects.
	Maintain limited access to outer fossil beds.
	Continue coordination with state and local law agencies to enforce laws pertaining to fossil collection and vandalism.
OBJECTIVE 2: Protect and enhance ecosystem function of the NWCA	
Terrestrial	Conduct baseline assessment of vegetative, avian and terrestrial species.
	Develop a Natural Resource Management Plan for the NWCA.
	Remove/control invasive species and develop a monitoring/management plan.
	Maintain and expand existing pollinator areas located on Shippingport Island and adjacent to the McAlpine Visitor Center.
	Delineate existing wetlands on Shippingport/Sand Islands and identify opportunities for enhancement/creation of additional wetlands.
	Reduce sedimentation / loss of riparian corridor and near-shore habitat in the vicinity of Emery Crossing and the Clark Cabin interpretive site.
	Remove metal scrap and debris deposits on Shippingport Island located outside of operational areas.
	Actively manage vegetation for conservation under powerlines on Shippingport Island.
	Conduct native species planting on islands (e.g. spring ephemerals).
	Provide nesting boxes and other refuge/nesting structures on Shippingport and Sand islands.
	Actively maintain the proper NWCA boundary line on the Indiana shore.
Aquatic	Review operation of upper gate to maximize water quality and quantity parameters for aquatic species.
	Maintain continued fish monitoring with ORSANCO.
	Continue to clear debris from lower castellations adjacent to the Middle Chute.
	Identify opportunities for improved floodplain connections to the Loop Island wetlands and floodplain forest.
	Identify opportunities for improved fish habitat in the NWCA at the confluence with Silver Creek to Emery Crossing (i.e. installation of shallow riffles/gravel bars/boulders/j-hooks/wing-dikes) that provides critical refuge and food resources for small fish and for juveniles of larger river species as cover from predators.
	Engage adjacent resource managers to develop and fund a comprehensive strategy to manage woody debris and trash that is deposited in the NWCA from Ohio River flows.

Falls of the Ohio National Wildlife Conservation Area: Resource Objectives

OBJECTICE 3: Enhance and maintain visitor experience at the NWCA

Land-based	Provide additional wayfinding from the Louisville Loop and Portland neighborhood to the McAlpine Visitor Area.
	Develop a project sign plan for the NWCA.
	Improve trailhead facilities at the Fisherman’s Trail parking area.
	Provide full-time staff to manage visitation to the NWCA (Resident’s Office has the potential to serve as the primary Kentucky gateway / project office).
	Identify and communicate public high hazard areas (LG&E, quick sand, etc.).
	Improve safety on Shippingport Island through increased patrols by the Louisville Metro Police Department or contracted security.
	Maintain visitation hours and gate closure policies.
	Identify opportunities for creative reuse of woody debris on the Indiana shoreline.
	Formalize the access trail from the Ohio River Greenway to the castellations on the upper weir.
	Delineate fishing and no-fishing areas located in the WCA.
	Actively engage in the planning and implementation of Phase IV of Waterfront Park (Waterfront Park West) and the Clarksville West master plan.
	Continue lease with IDNR for the Falls of the Ohio State Park and Interpretative Center.
	Actively track visitation to the NWCA (both shores) via vehicle, foot and bicycle.
Water-based	Develop communication materials for the WCA that describe ideal/dangerous paddling conditions relative to skill level.
	Develop interpretive materials that highlight key features (natural, historic and contemporary) of the WCA that can be explored via canoe or kayak.
	Develop a blueways plan that describes how the WCA functions as a whitewater and flatwater destination with paddling connections to Silver Creek, New Albany, Shawnee Park (forthcoming), Greenwood, West point and Otter Creek.
	Enhance relationship with the Falls of the Ohio State Park / Interpretative Center in providing safe access to fossil beds and kayak/canoe launch.

OBJECTICE 4: Increase opportunities for scientific research, interpretive and environmental uses.

Facilitate connections with local universities for academic research in the WCA including Indiana University, Indiana University Southeast, University of Louisville, University of Kentucky, Bellarmine University and Spalding University.
Provide opportunities for facilitated educational tours of the WCA targeting environmental, historic and prehistoric interests. (i.e. West Louisville Outdoor Recreation Initiative – based in Shawnee Park).
Expand interpretative materials at the McAlpine Visitor Area and other NWCA gateways to include historic, prehistoric and wildlife information.
Engage Portland and other adjacent neighborhoods to provide opportunities for volunteer labor to assist with invasive species control and eradication.
Identify an education/research manager who can coordinate and promote community/university research, education and information.

6.0 Land Allocation and Classification

The land allocation and land classification information presented in this section provides for the development, use, and management of Project lands and waters. In addition to land allocation and land classification, this chapter identifies easement lands that are located within and around project lands. Describing the allocation and classification of project lands and identifying easement lands helps project officials and decision-makers understand the current use, development and management of project lands. The land classification and allocation categories are established for all USACE projects based on Engineering Pamphlet (EP) 1130-2-550, Recreation Operations and Maintenance Policies and help guide decisions for future development.

6.1 Land Allocation

Land allocation areas at in the 1984 NWCA Master Plan divided the area into seven compartments. The individual compartment boundaries were developed with the intent of including areas in each compartment that are alike both in habitat and in geographic location for development of a plan for management of the whole NWCA. Below is a list of the original compartments:

- Outer Fossil Beds
- Sand Island
- McAlpine Locks
- Shippingport Island
- Water Area
- Indiana Shoreline
- Falls of the Ohio State Park

The allocation designations identified in the 1984 Master Plan have informed land use management at the project and were used by the planning team in the formulation of the land classification zones that are identified in the following section.

6.2 Land Classification

For USACE project master plans, land is further categorized from allocation into classifications to identify use and management of all project lands into the future. These classifications are analogous to zoning designations implemented local governments to manage land-use. Land classification at the NWCA can be seen in Figure 25. Land classification categories as defined by EP 1130-2-550 are as follows:

1. Project Operations
2. High Density Recreation
3. Mitigation
4. Environmentally Sensitive Areas
5. Multiple Resource Management
 - a. Low Density Recreation
 - b. Wildlife Management
 - c. Vegetative Management
 - d. Future High Density Recreation
 - e. Future Low Density Recreation

The land classifications defined below represent the future of land use at the NWCA. The planning team, based on coordination and outreach with project staff, stakeholders and resource agencies identified the classifications for land and water throughout the project based on demand projections, demand trends and capacity needs. Table 16 provides a breakdown of each classification identified in the NWCA by acreage.

Table 13 Land Classification Acreage

Land Classification	Total Acres
Environmentally Sensitive Area	82.6
Low Density Recreation	105.9
Open Recreation	410.7
Project Operations	189.5
Restricted	372.4
Vegetative Management	224.1

The current zoning of communities (Louisville, Clarksville and New Albany) adjacent to the NWCA is displayed in the Zoning Map (Figure 26). Of note, the NWCA is primarily bordered by a mix of land designated as residential and open space. Parcels and land tracts currently identified as industrial and commercial can be expected to undergo a zoning change as new park development occurs on the boundary of the NWCA.



Figure 24 NWCA Land Classifications

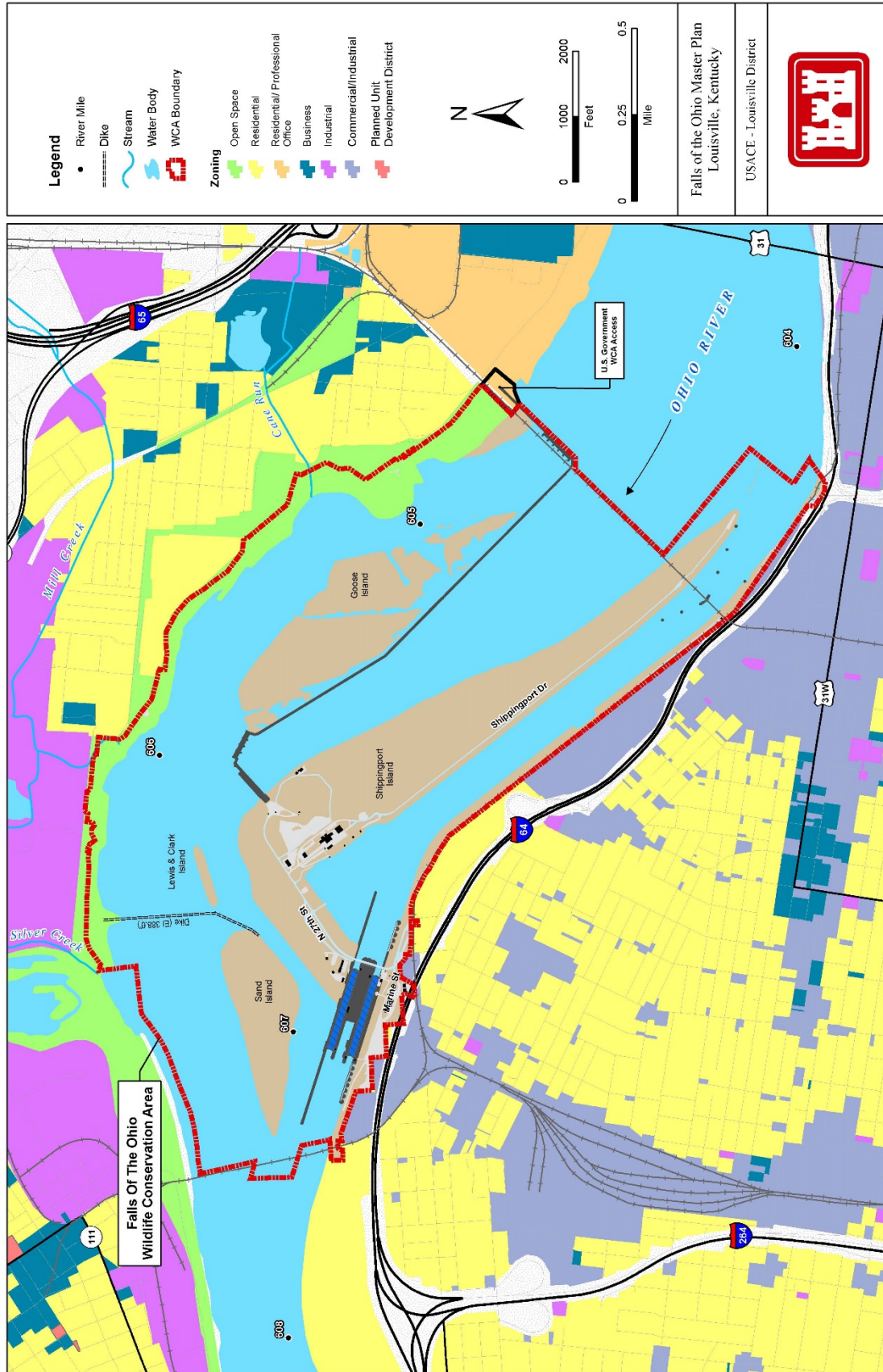


Figure 25 NWCA Adjacent Zoning

6.2.1 Project Operations

The project operations (PO) classification is used to classify lands that are related to the locks, dams, hydroelectric plant, maintenance facilities, administrative facilities and any other land associated with project maintenance and operation. Recreation is not permitted on PO lands. PO lands in the NWCA include both USACE-managed land and LG&E-managed land. PO land managed by the USACE includes the McAlpine Locks and Dams and Louisville Repair Station. PO lands managed by LG&E include the hydroelectric plant and associated office and maintenance facilities.

6.2.2 High Density Recreation

High-density recreation (HDR) classification is used to classify lands that are developed for intensive recreational use for visitors to the project. This land use classification allows the greatest amount of land disturbance of all land use categories for the project. Examples of HDR lands include day use areas, amphitheaters, campgrounds, beaches, cabins, quasi-public development, and commercial concessions such as marinas, restaurants, lodges, etc.

6.2.3 Mitigation

Mitigation lands are lands used to offset ecological losses associated with development at the project.

6.2.4 Environmentally Sensitive Areas

The Environmentally sensitive area (ESA) classification applies to lands in which aesthetic, ecological, cultural or scientific features have been identified and deemed sensitive to development and intense land use. Project management must ensure that the sensitive features in the ESAs are not adversely impacted. Prohibiting or heavily limiting development on ESAs is a standard procedure for protecting these lands. Preservation of these areas would be accomplished by strictly, or completely limiting public access and prohibiting agricultural activities. Buffering of ESAs may be necessary; the size of the buffer would depend on the ecology of the area. No licenses, leases, permits or easements for man-made intrusions in these areas would be permitted. Mountain biking trails and off-highway vehicle use is prohibited.

ESAs at the NWCA include the outer fossil beds and ten-acre Shippingport Island Rookery State Natural Area. Access should be limited to these areas and both should be protected from unnecessary development.

6.2.5 Multiple Resource Management

Multiple resource management lands allow for the designation of predominant use as described with the understanding that other compatible uses may also occur on these lands without impacting the predominant use. The compatible uses that may occur on multiple resource management lands are described below.

Low-Density Recreation (LDR). LDR are lands designated for passive public recreational use that require minimal development and infrastructure. LDR land is located at multiple locations throughout the project.

Agricultural and vegetative management activities would be permitted if they could be incorporated into interpretive programs or maintain viewsheds. Low-density recreational activities, such as low-capacity boat ramps and docks, picnicking, primitive camping, fishing, wildlife viewing and hiking, would be allowed. Mountain biking trails and off-highway vehicle use is prohibited.

LDR lands in the NWCA in Kentucky include the McAlpine Visitor's Area, Louisville Riverwalk and the Fisherman's' Trail on Shippingport Island. LDR lands on the Indiana Shoreline include the Falls of the Ohio State Park and Clark Home Site. This land classification was also extended east to the confluence with Silver Creek in anticipation of the forthcoming park development in that area.

Vegetative Management. Vegetative management lands are designated for stewardship of forest, wetland and other native vegetative cover. Vegetation management areas distributed through the majority of the NWCA. These areas are managed to promote the biodiversity of vegetative habitats and include a variety of habitat types. Active management of invasive plant species may also be conducted in these areas. These areas stabilize soils, minimizing erosion along the shoreline of the Ohio River.

Vegetative management occurs on Sand Island, Shippingport Island and Lewis Goose Island and Clark Islands. A band of vegetative management was also identified for the stretch of Indiana shoreline between the Falls of the Ohio Interpretive Center and George Rogers Clark Boat Ramp.

Wildlife Management. Wildlife management lands are designated for stewardship of fish and wildlife. These lands are characterized by valuable wildlife habitats that are managed to benefit certain game and non-game species or the natural community as a whole.

No Wildlife Management lands exist at the project.

Water Surface – Restricted. This designation includes water areas restricted for project operations, safety and security purposes. In the NWCA this includes the Portland Canal McAlpine Lock and the area between Shippingport Island and fixed weir.

Water Surface – Open Recreation. Includes those waters available for year round or seasonal water-based recreational use. Open water in the NWCA surrounds Sand Island and extends between the two railroad bridges in the Indiana shoreline.

7.0 Resource Plan

Table 14 presents the plan for resource use and development at the NWCA based on objectives identified in Section 5 and land classifications established in Section 6 of this report. Recommendations are conceptual in nature and will be translated into operational terms in the Operational Management Plans. Prior to the implementation of any development activity, additional environmental studies and economic analyses may be conducted if necessary.

Table 14 Resource Plan for the NWCA

Falls of the Ohio National Wildlife Conservation Area: Resource Plan		
NWCA (project-wide): Recommendations	Primary Land Class: Multiple	Objective
Conduct baseline assessment of vegetative, avian and terrestrial species.		2
Develop a Natural Resource Management Plan for the NWCA.		2
Remove/control invasive species and develop a monitoring/management plan.		2
Engage adjacent resource managers to develop and fund a comprehensive strategy to manage woody debris and trash that is deposited in the NWCA from Ohio River flows.		2
Maintain continued fish monitoring with ORSANCO.		2
Actively engage in the planning and implementation of Phase IV of Waterfront Park (Waterfront Park West) and the Clarksville West master plan.		3
Identify and communicate public high hazard areas (LG&E, quick sand, etc.).		3
Enhance project sign plan for the NWCA.		3
Actively track visitation to the NWCA (both shores) via vehicle, foot and bicycle.		3
Provide full-time staff to manage visitation to the NWCA (Resident's Office has the potential to serve as the primary Kentucky gateway / project office).		3
Delineate fishing and no-fishing areas located in the NWCA.		3
Provide opportunities for facilitated educational tours of the WCA targeting environmental, historic and prehistoric interests. (i.e. West Louisville Outdoor Recreation Initiative – based in Shawnee Park).		4
Engage Portland and other adjacent neighborhoods to provide opportunities for volunteer labor to assist with invasive species control and eradication.		4
Facilitate connections with local universities for academic research in the WCA including Indiana University, Indiana University Southeast, University of Louisville, University of Kentucky, Bellarmine University and Spalding University.		4
Identify an education/research manager who can coordinate and promote community/university research, education and information.		4
Indiana Shoreline (General): Recommendations	Primary Land Class: Multiple Resource Management (Low Density Recreation)	Objective
Reduce sedimentation / loss of riparian corridor and near-shore habitat in the vicinity of Emery Crossing and the Clark Cabin interpretive site.		2
Identify opportunities for improved fish habitat in the NWCA at the confluence with Silver Creek to Emery Crossing (i.e. installation of shallow riffles/gravel bars/boulders/j-hooks/wing-dikes) that provides critical refuge and food resources for small fish and for juveniles of larger river species as cover from predators.		2
Actively maintain the proper NWCA boundary line on the Indiana shore.		2
Identify opportunities for improved floodplain connections to the Loop Island wetlands and floodplain forest.		2
Continue lease with IDNR for the Falls of the Ohio State Park and Interpretative Center.		3
Identify opportunities for creative reuse of woody debris on the Indiana shoreline.		3
Formalize the access trail from the Ohio River Greenway to the castellations on the upper weir.		3

Table 14 Continued

Falls of the Ohio National Wildlife Conservation Area: Resource Plan		
Shippingport Island: Recommendations	Primary Land Class: Multiple Resource Management (Vegetative Management)	Objective
Maintain and expand existing pollinator areas located on Shippingport Island and adjacent to the McAlpine Visitor Center.		2
Delineate existing wetlands on Shippingport Island and identify opportunities for enhancement/creation of additional wetlands.		2
Remove/control invasive species and develop a monitoring/management plan.		2
Conduct native species planting on islands (e.g. spring ephemerals).		2
Provide nesting boxes and other refuge/nesting structures.		2
Actively manage vegetation for conservation under powerlines on Shippingport Island.		2
Improve safety on Shippingport Island through increased patrols by the Louisville Metro Police Department or contracted security.		3
Improve trailhead facilities at the Fisherman's Trail parking area.		3
Sand Island / Lewis & Clark Island / Goose Island: Recommendations	Primary Land Class: Multiple Resource Management (Vegetative Management)	Objective
Delineate existing wetlands on islands and identify opportunities for enhancement/creation of additional wetlands.		2
Remove/control invasive species and develop a monitoring/management plan.		2
Conduct native species planting on islands (e.g. spring ephemerals).		2
Remove metal scrap and debris deposits on Shippingport Island located outside of operational		2
Provide nesting boxes and other refuge/nesting structures.		2
Outer Fossil Beds : Recommendations	Primary Land Class: Environmentally Sensitive	Objective
Continue coordination with state and local law agencies to enforce laws pertaining to fossil collection and vandalism.		1
Maintain limited access to outer fossil beds.		1
Continue coordination with state and local law agencies to enforce laws pertaining to fossil collection and vandalism.		1
Continue to clear debris from lower castellations adjacent to the Middle Chute.		2
Enhance relationship with the Falls of the Ohio State Park / Interpretative Center in providing safe access to fossil beds and kayak/canoe launch.		3
McAlpine Visitor's Area / Louisville Riverwalk: Recommendations	Primary Land Class: Multiple Resource Management (Low Density Recreation)	Objective
Provide additional wayfinding from the Louisville Loop and Portland neighborhood to the McAlpine Visitor Area.		3
Maintain visitation hours and gate closure policies.		3
Expand interpretative materials at the McAlpine Visitor Area and other NWCA gateways to include historic, prehistoric and wildlife information.		4

Table 14 Continued

Falls of the Ohio National Wildlife Conservation Area: Resource Plan		
Ohio River (waters outside of project operations):	Primary Land Class: Open Water	Objective
Recommendations		
Review operation of upper gate to maximize water quality and quantity parameters for aquatic species		2
Continue to clear debris from lower castellations adjacent to the Middle Chute.		2
Develop a blueways plan that describes how the WCA functions as a whitewater and flatwater destination with paddling connections to Silver Creek, New Albany, Shawnee Park (forthcoming), Greenwood, West point, Otter Creek and Ohio River destinations upstream.		3
Develop interpretive materials that highlight key features (natural, historic and contemporary) of the WCA that can be explored via canoe or kayak.		3
Develop communication materials for the WCA that describe ideal/dangerous paddling conditions relative to skill level.		3

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Falls of the Ohio National Wildlife Conservation Area Master Plan Update



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Appendix A Acronyms and Abbreviations

Acronyms and Abbreviations

AB	Accommodation Business
ACS	American Community Survey
ADA	Americans with Disabilities Act
CR	Conservation Residential
DM	Design Memorandum
EA	Environmental Assessment
ECO	Environmental Constraints Overlay
EM	Engineering Manual
EO	Executive Order
EP	Engineering Pamphlet
ER	Estate Residential
ERDC	River Engineering Branch of the U.S. Army Research and Development Center
ESA	Endangered Species Act
ESA	Environmentally Sensitive Area
FF	Flood Fringe
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
FP	Floodplain
FR	Forest Recreation
FR	Forest Reserve
FW	Floodway
FY	Fiscal Year
GHG	Greenhouse Gas
HAB	Harmful Algal Blooms
HDR	High Density Recreation
IAC	Indiana Administrative Code
IC	Indiana Code
IDEM	Indiana Department of Environmental Management
IDHS	Indiana Department of Homeland Security
IDNR	Indiana Department of Natural Resources
IGS	Indiana Geological Survey
IP	Institutional/Public

LDR	Low Density Recreation
LR	Lake Residence
LRL	U.S. Army Corps of Engineers, Great Lakes and Ohio River Division, Louisville District
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NOA	Notice of Availability
NRCS	Natural Resources Conservation Service
NRMS	Natural Resource Management System
NWCA	Falls of the Ohio National Wildlife Conservation Area
NWI	National Wetlands Inventory
OMP	Operational Management Plan
ORP	Outdoor Recreation Plan
ORPR	Outdoor Recreation Participation Report
ORSANCO	Ohio River Valley Water Sanitation Commission
PB	Pre-existing Business
PL	Public Law
PO	Project Operations
PUD	Planned Unit Development
RV	Recreational VehicleSCORP State Comprehensive Outdoor Recreation Plan
SFHA	Special Flood Hazard Overlay
SHAARD	State Historic Architectural and Archaeological Database
SMCRA	Surface Mining Control and Reclamation Act
SR	Suburban Residential
SRA	State Recreation Area
SWAP	State Wildlife Action Plan
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture

USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
VERS	Visitation Estimation and Reporting System
WM	Wildlife Management

Falls of the Ohio National Wildlife Conservation Area Master Plan Update



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Louisville District

Appendix B FONSI Environmental Assessment



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FINDING OF NO SIGNIFICANT IMPACT

Master Plan Update Falls of the Ohio National Wildlife Conservation Area

1. The original Falls of the Ohio National Wildlife Conservation Area (NWCA) Master Plan was approved in 1984 and has not been updated since that time. The Master Plan serves as a guide for coordination of Project development and management of all land and water resources. Therefore, an updated Master Plan is needed to address changes and outline measures to best provide facilities and services while ensuring conservation and protection of the Project and environmental resources. The intent of an updated Master Plan is to present a current inventory and assessment of resources, provide an analysis of resource use, and evaluate existing and future needs required to protect and improve the value of resources at the NWCA.
2. An Environmental Assessment (EA) has been prepared following the National Environmental Policy Act (NEPA), Council for Environmental Quality (CEQ) Regulations implementing NEPA (40 CFR, 1500-1508), and Corps of Engineers Regulations ER 200-2-2 *Policy and Procedures for Implementing NEPA* (33 CFR, 230). The EA was prepared to describe existing conditions and evaluate potential impacts associated with the proposed action and alternatives. Alternatives evaluated include the following:

Alternative 1 - No action, which means there would be no update to the existing Master Plan and no change from current management direction or level of management intensity; and

Alternative 2 - Approval and Use of a Balanced Updated Master Plan, which would address important updates due to the considerable changes in the demographics, recreation demand, amenities within the project, amenities on adjacent properties, current environmental conditions, and pertinent laws and policies, and would seek to balance preservation of natural resources and visitor access and recreation opportunities.

Alternative 3 - Approval and Use of an Updated Master Plan Maximizing Natural Resource Preservation, which would involve a Master Plan that would include the updates included in Alternative 2, but would prioritize maintenance, operations and development for natural resource protection, and preservation for the life of the Project.

Alternative 4 - Approval and Use of an Updated Master Plan Maximizing Recreation, which would involve a Master Plan that includes the updates included in Alternative 2, but represents a comprehensive long-term strategy to manage and utilize the NWCA lands and waters for maximum recreation facilities development and visitor use on all lands for the life of the NWCA.

In the initial screening process, Alternatives 3 and 4 were eliminated from further consideration because they failed to satisfy the screening criteria for meeting the Purpose and Need. Alternative 2 and the “no action” alternative were carried forward for analysis of environmental consequences. Alternative 2, full implementation of the Balanced Updated Master Plan, is the preferred alternative. This would allow the most comprehensive update that best reflects environmental stewardship and conservation of the NWCA project lands and waters while meeting public, social, and economic demands.

3. The EA does not reveal significant impacts resulting from the proposed action. No negative impacts are anticipated to water quality, aquatic or terrestrial resources, cultural resources, socioeconomics, or recreation by the proposed activity. These resources would benefit from updated inventories and environmental conditions, and increased consistency and compatibility with national objectives and state and regional goals and programs.

Impacts of the “no action” alternative would result in no new resource analysis nor change in management direction or level of management intensity. This action would not reflect applications of policy and guidance implemented since 1984. Operation and management would continue as outlined in the 1984 Master Plan Update.

4. On September 12th, 2018, the EA began circulating to local, state, and Federal governmental agencies with jurisdiction by law or special expertise and the public for a 30-day review/comment period. Comments received are included in the EA Appendix.
5. Pursuant to the Fish and Wildlife Coordination Act of 1958 and the Endangered Species Act of 1973, as amended, coordination with the USFWS, the Indiana Department of Natural Resources, and the Kentucky Department of Fish and Wildlife Resources is conducted through scoping and EA review. The U.S. Army Corps of Engineers determined that the proposed action will have no effect on federally listed species or their designated critical habitat. The United States Fish and Wildlife Service concurred with the Corps’ determination of no effect.
6. Section 106 of the National Historic Preservation Act of 1966 requires each Federal agency take into account the effects of its undertakings on historic properties included in or eligible for listing in the National Register of Historic Places. The U.S. Army Corps of Engineers determined that no historic properties would be adversely affected by the proposed action. Proposals for specific actions would still be reviewed on an individual basis and coordinated with the appropriate State Historic Preservation Officer.
7. The preferred alternative has no potential implications under Executive Order (EO) 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), EO 12898 (Environmental Justice), and the Clean

Air Act Conformity Rule. Potential impacts would be evaluated on a case by case basis regarding proposed action activities in accordance with the Master Plan. Impacts would be avoided or minimized and mitigated where necessary. There are no outstanding issues concerning the proposed Master Plan Update for the NWCA.

8. I have reviewed the comments and EA in light of the general public interest, and have determined that the work would not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA as amended. Accordingly, I have concluded that an Environmental Impact Statement concerning the proposed Master Plan Update for NWCA is not required.

Date

Antoinette R. Gant
Colonel, U.S. Army
District Commander



**US Army Corps
of Engineers**
Louisville District

Environmental Assessment

Falls of Ohio National Wildlife Conservation Area Master Plan Clarksville, Indiana



November 2018

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Executive Summary

The U.S. Army Corps of Engineers, Louisville District (Corps of Engineers) partners with the Indiana Department of Natural Resources (IDNR) in the management of the Falls of the Ohio National Wildlife Conservation Area (NWCA or Project). The NWCA covers approximately 1,400 acres of land and water, and is located in the Ohio River immediately downstream of the Pennsylvania Central Railroad Bridge and the upper tainter gates and dam of McAlpine Locks and Dam. The metropolitan areas of Louisville, KY; Jeffersonville, Clarksville, and New Albany, IN surround the area.

Master plans are required for civil works projects (such as the NWCA) for which the Corps of Engineers has administrative responsibility for management of natural and manmade resources. Master Plans provide guidelines and direction for future project development and provide a District-level policy consistent with national objectives and other state and regional goals and programs. The existing Falls of the Ohio NWCA Master Plan was completed in 1984, and there has been no comprehensive revision to the Master Plan in more than 30 years. As such, the current Master Plan provides an inadequate basis on which to evaluate contemporary proposals.

Neither the Corps of Engineers nor the IDNR currently have plans for development of new major recreational amenities. However, maintaining existing facilities, improving some existing facilities, and protecting the project's natural areas and natural resources may entail specific small-scale actions that would be carried out in accordance with the objectives and framework of the proposed updated Master Plan. Any subsequent projects or proposals will be evaluated in separate environmental reviews, if required under NEPA and the implementing regulations. This Environmental Assessment considers and describes the existing environmental conditions at the Project (affected environment), providing a baseline for measuring expected changes that could result from small-scale actions implemented under the proposed updated Master Plan.

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1 INTRODUCTION

Master plans are the basic document guiding the fulfillment of U.S. Army Corps of Engineers' (Corps of Engineers) responsibilities pursuant to federal laws at Corps of Engineers' projects; these responsibilities include preserving, conserving, restoring, maintaining, managing, and developing the lands, waters, and associated resources for the citizens of the United States. The existing Falls of the Ohio National Wildlife Conservation Area (NWCA or Project) Master Plan was completed in 1984, but has not been comprehensively revised since then.

The proposed action by the Corps of Engineers that is the subject of this Environmental Assessment (EA) is the adoption of the proposed updated Master Plan for the NWCA. The EA considers and describes the potential environmental effects associated with this action. Future site-specific development or other proposals under the updated Master Plan will undergo separate (tiered) analysis when required by NEPA.

The EA also provides an enhanced opportunity for public involvement in the decision-making process. It also has allowed the Corps of Engineers to address compliance with other environmental laws as part of a single review process rather than through separate reviews, thereby reducing paperwork and ensuring comprehensive compliance.

1.1 Project Location

The NWCA covers approximately 1,400 acres of land and water, and is located in the Ohio River immediately downstream of the Kentucky and Indiana Railroad Bridge and the upper tainter gates and dam of McAlpine Locks and Dam. The Downstream boundary is the Kentucky and Indiana Railroad Bridge. The metropolitan areas of Louisville, Kentucky; and Jeffersonville, Clarksville, and New Albany, Indiana surround the area. The fossil beds cover approximately 220 acres when the river is at normal pool elevation. The Indiana boundary of the project was set at 5 feet above the Ordinary High Water mark (elevation 413 feet). The boundary on the Kentucky side follows the existing Government boundary for the McAlpine Locks and Dam project. The normal pool elevation of Cannelton dam is 383 feet above mean sea level (msl) or 30 feet below the ordinary high water elevation. Figure 1 displays the location of the NWCA.

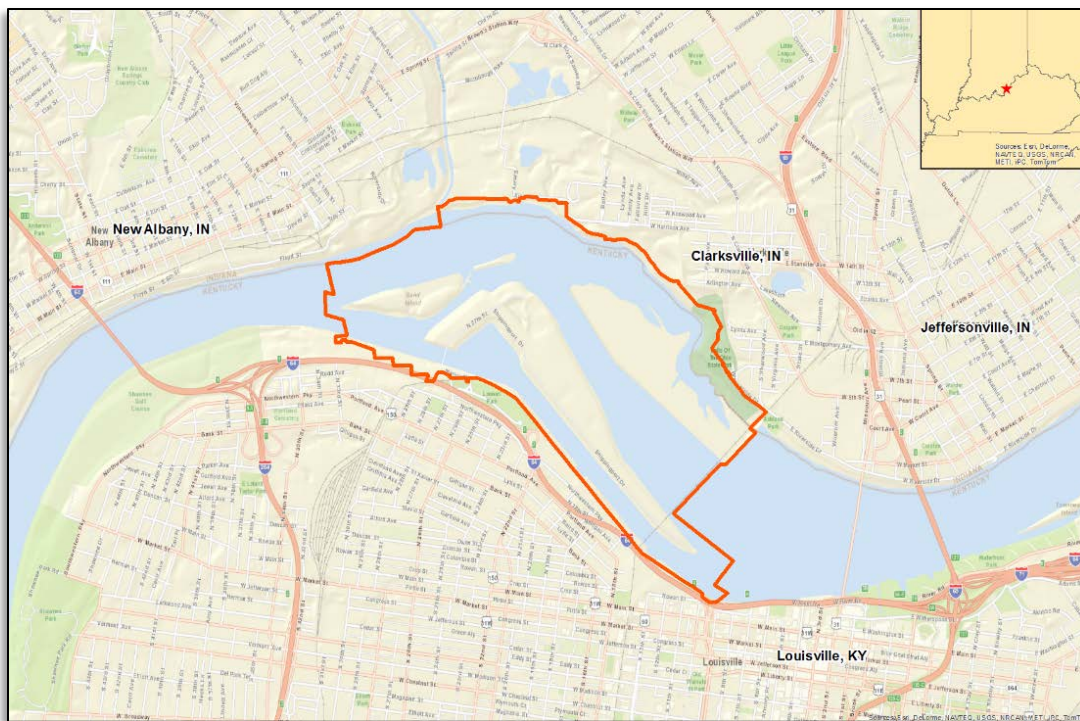


Figure 1 Vicinity map of the Falls of the Ohio NWCA.

1.2 Project Overview

The NWCA includes McAlpine Locks and Dam, located on the Ohio River, 604.5 miles below Pittsburgh, Pennsylvania, at the northwestern end of Louisville, Kentucky, in the Portland neighborhood. The navigation locks are located on the Kentucky side of the river at mile 606.8. The upper pool extends approximately 75 miles to the Markland Locks and Dam. The project has twin 1,200-foot x 110-foot locks and a two-lane, high fixed span concrete bridge to provide access to Shippingport Island and the Louisville Gas and Electric hydroelectric generating station. The upper dam includes five tainter gates at 100 feet long, and the lower dam includes four tainter gates at 100 feet long. The crest elevations of the fixed weir range from 422.67 – 425 feet above msl.

1.3 Authorization and Project Description

The NWCA was authorized by Title II of Public Law 97-137 which was signed into law on December 29, 1981. The boundary of the NWCA was designated by the Secretary of the Interior through publication of a notice in the Federal Register on August 12, 1983. Regulations for the protection, use and management of the NWCA were published in the Federal Register, September 9, 1983, 36 CFR Part 331.

Section 203 of Public Law 97-137 established five purposes for the NWCA:

1. to protect wildlife populations and habitats in their natural diversity including, but not limited to, bald eagle, peregrine falcon, Canada geese,

mallard, gadwall, blue-winged teal, black duck, American widgeon, and wood duck;

2. to conserve fish populations in their natural diversity including, but not limited to, shad, shiner, crappie, largemouth bass, striped bass and channel catfish;
3. to ensure, to the maximum extent practicable and in a manner consistent with paragraphs 1 and 2 and compatible with navigation on the Ohio River and operation of the McAlpine locks and dam, the necessary water quantity with in the wildlife conservation area;
4. to protect the fossilized coral reef as a unique paleontological feature; and
5. to provide opportunities for scientific research and interpretive and environmental uses and fish and wildlife oriented recreational uses.

1.4 National Environmental Policy Act Overview

This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's (CEQ) Regulations (40 CFR §1500-1508), as reflected in the Corps of Engineers' Engineering Regulation (ER) 200-2-2 (33 CFR Part 230). The Corps of Engineers' ER 200-2-2 supplements, and is used in conjunction with, the CEQ regulations.

Within the regulations, a process is set forth where the Corps of Engineers must assess the environmental effects of proposed federal actions and consider reasonable alternatives to their proposed actions. In general, NEPA requires federal agencies to make a series of evaluations and decisions that anticipate adverse effects on environmental resources. Unless the action qualifies under a Categorical Exclusion (CE), the first step in this process is typically the preparation of an Environmental Assessment (EA) to determine whether the proposed action constitutes a "major Federal action significantly affecting the quality of the human environment." There are two potential outcomes of the EA process: (1) if the EA concludes that the proposed major Federal action will significantly affect the quality of the human environment, a more detailed Environmental Impact Statement (EIS) must be prepared; or (2) if the EA concludes that the proposed action will *not* significantly affect the quality of the human environment, the agency prepares a Finding of No Significant Impact (FONSI), and an EIS is not required. Alternatively, an agency can decide to proceed directly to preparation of an EIS, in which case an EA is not necessary.

The CEQ's NEPA Regulations do not contain a detailed discussion regarding the format and content of an EA, but an EA must briefly discuss the:

- Need for the proposed action;
- Proposed action and alternatives;

- Probable environmental effects of the proposed action and alternatives; and
- Agencies and persons consulted in the preparation of the EA.

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2 PURPOSE AND NEED FOR CORPS OF ENGINEERS ACTION

2.1 Master Plan Overview

A master plan was developed and approved for the NWCA in 1984. It is Corps of Engineers policy that each master plan shall be reviewed on a periodic basis and be revised as required. Engineer Regulation (ER) 1130-2-550 establishes the policy for the management of recreation programs and activities, and for the operation and maintenance of Corps of Engineers recreation facilities and related structures, at civil works water resource projects.

The master plan is the basic document guiding Corps of Engineers' responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands, waters, and associated resources. The master plan is a dynamic planning document that deals in concepts, not in details of design or administration. Detailed management and administration functions are addressed in the Operational Management Plan (OMP), which implements the concepts of the Master Plan into operational actions.

Master plans are required for civil works projects and other fee-owned lands for which the Corps of Engineers has administrative responsibility for management of natural and manmade resources. Engineer Pamphlet (EP) 1130-2-550 establishes guidance for the preparation of master plans. As stated therein, the primary goals of master plans are to prescribe an overall land and water management plan, resource objectives, and associated design and management concepts, which:

- 1) Provide the best possible combination of responses to regional needs, resource capabilities and suitabilities, and expressed public interests and desires consistent with authorized project purposes;*
- 2) Contribute towards providing a high degree of recreation diversity within the region;*
- 3) Emphasize the particular qualities, characteristics, and potentials of the project; and*
- 4) Exhibit consistency and compatibility with national objectives and other state and regional goals and programs.*

2.2 Purpose and Need for the Updated Master Plan

It is Corps of Engineers policy that each master plan shall be reviewed on a periodic basis and be revised as required (ER 1130-2-550). The existing NWCA Master Plan was first approved in 1984, and there has been no revision to the Master Plan since that time. As such, the current Master Plan provides an inadequate basis with which to evaluate contemporary proposals. There have been changes in demand for recreation, adjacent population growth, and the construction of adjacent recreational amenities not on Corps of Engineers property, which dictate the need to update the Master Plan for the NWCA Project.

The Master Plan update would provide a comprehensive description of the project, a discussion of factors influencing resource management and development, an identification and discussion of special problems, a synopsis of public involvement and input to the planning process, and descriptions of past, present, and proposed development. This update is necessary in order for

the Master Plan to fulfill its purpose of guiding the comprehensive management and development of all Project resources in accordance with authorized Project purposes and applicable law.

3 ALTERNATIVES

3.1 Identification of Alternatives

When preparing an EA, agencies must develop a range of alternatives that could reasonably achieve the need that the proposed action is intended to address. This section describes the range of alternatives the Corps of Engineers initially considered to respond to the need for an updated master plan for the NWCA. As discussed in Section 2.1 above, master plans are required under Corps of Engineers regulations and policy documents, which provide goals and guidelines for the initial development and periodic revision of master plans. In this EA, alternatives are screened out and eliminated from further consideration if they do not conform to regulations and policy, and if they do not meet the stated Purpose and Need.

The alternatives initially considered in this EA are: (1) a no action alternative of continuing to operate the Project under the 1984 Master Plan; (2) the proposed action of adopting an updated master plan that seeks to balance recreational use and access with protection of natural resources; (3) adopting an updated master plan that would maximize natural resource preservation and deemphasize recreational use opportunities; and (4) adopting an updated master plan that would focus on recreational use and access and deemphasize protection of natural resources. Analysis of these alternatives is described in the subsections that follow.

3.1.1 No Action

The no action alternative being evaluated should be viewed as "no change" from current management direction or level of management intensity. Therefore, the "no action" alternative may be thought of in terms of continuing with the present course of action (under the existing Master Plan) until that action is changed (under a revised Master Plan). Because master plans provide the basis for evaluating contemporary proposals, the 1984 document does not account for the many substantial changes that have occurred since then. The existing Master Plan is capable of providing only minimal support to development and management of the Project. Future development decisions would therefore be assessed on an *ad hoc* basis without the benefit of a comprehensive assessment of recreation and natural resource conditions and opportunities at the Project.

3.1.2 Proposed Action – Approval and Use of a Balanced Updated Master Plan

Under this alternative, an updated master plan would be approved for the Project to provide management guidance, which would replace the 1984 document. The proposed updated Master Plan reflects changes in recreational use and demand, property and amenities included within the Project, current environmental conditions, changes in regional demographics and land use of surrounding property, and pertinent laws and policies. It provides guidelines and direction for future project development and use and is based on authorized Project purposes, Corps of Engineers policies and regulations on the operation of Corps of Engineers' projects (USACE, 1996; USACE, 1996a; USACE, 1999), responses to regional and local needs, resource capabilities and suitable uses, and expressed public interests consistent with authorized Project purposes and pertinent legislation. Finally, it provides a District-level policy consistent with national objectives and other state and regional goals and programs.

3.1.2.1 Land Allocation, Land Classifications, and Resource Objectives

Land allocations at all Corps of Engineers Civil Works water resource projects are based on the Congressionally-authorized purpose for which the project lands were acquired. Land classification categories as defined by EP 1130-2-550 are as follows:

1. Project Operations
2. High Density Recreation
3. Mitigation
4. Environmentally Sensitive Areas
5. Multiple Resource Management
 - a. Low Density Recreation
 - b. Wildlife Management
 - c. Vegetative Management
 - d. Future High Density Recreation
 - e. Future Low Density Recreation

Because the 1984 Master Plan predated the Corps of Engineers policy outlining land allocations and land classifications, the existing plan does not classify Project land into the categories listed above. See Section 6 of the proposed updated Master Plan for proposed land classifications at the NWCA.

Resource objectives were developed to ensure proper resource stewardship and allow for recreational use within the NWCA. The development of resource objectives was centered directly on the project's authorized purposes, which are listed in Section 1.3. Each of the four objectives listed below includes multiple supporting measures that were developed to achieve the Objective. These measures are not intended to limit or constrain resource management at the NWCA, rather they should be referenced as possible actions to successfully achieve the project's authorized purpose. Additionally, these measures should be referenced and expanded during any future update to the Master Plan or Operational Management Plan.

1. Protect the fossilized coral reef as a unique paleontological feature
2. Protect and enhance the ecosystem function of the NWCA
3. Enhance and maintain visitor experience at the NWCA
4. Increase opportunities for scientific research, interpretive and environmental uses

3.1.2.2 Other Proposed Changes and Additions to 1984 Master Plan

The updated Master Plan addresses effects on the NWCA from changes in demand for recreation, adjacent population growth, and the construction of adjacent recreational amenities. The Falls of the Ohio State Park, which opened in 1994 has been a significant factor in the change of public usage rates of the NWCA since the current Master Plan was implemented. Other developments within and adjacent to the NWCA, which have impacted usage and visitation, include the Louisville Fire & Rescue boat ramp, the Louisville Riverwalk, the Ohio River Greenway, and the McAlpine Lock extension and construction of associated structures.

The current boundary of the NWCA also differs slightly from what was originally designated by the Secretary of the Interior in 1982, and included in the 1984 Master Plan. This was due to the exclusion of two tracts located downstream of Silver Creek, on the Indiana shoreline of the Ohio River, which were not acquired due to the potential for hazardous and toxic wastes.

3.1.3 Approval and Use of a Master Plan Maximizing Natural Resource Preservation

This alternative would require development and implementation of a Master Plan that would prioritize maintenance, operations and development for natural resource protection, and preservation for the life of the Project. Recreation development and use, multiple maintenance efforts for facilities, roads, trails and vegetation, and common access to some lands and waters would be restricted to protect plant, wildlife, and fish species over other Project uses. Project resource objectives and land classifications would be developed to emphasize protection of specific habitats, animals, and plants. Land classifications would restrict access in some areas for the purpose of environmental resource protection. This plan would restrict public access on or around the shoreline and the fossil beds for the protection of cultural and natural resources.

3.1.4 Approval and Use of a Master Plan Maximizing Recreation

This alternative would involve developing and putting into practice a Master Plan that represents a comprehensive long-term strategy to manage and utilize the NWCA lands and waters for maximum recreation facilities development and visitor use on all lands for the life of the Project. Many land classifications currently allow some recreational use. Under this alternative, resource objectives and land classifications would be developed to provide enhanced opportunity for Corps of Engineers', and possibly commercial, recreational development on all lands. The land classifications currently used for low density recreation and resource protection would be considered for change to alternate high density recreation and commercial development and use.

3.2 Screening of Alternatives

A set of screening criteria was used to evaluate whether and to what extent each alternative under consideration meets the stated Purpose and Need. These criteria were developed based on the purposes for the NWCA laid out in the authorizing legislation and the goals for master plans outlined in EP 1130-2-550. The screening criteria are as follows:

A Provide the best management practices to respond to regional needs, resource capabilities, suitabilities, changing use, and expressed public interests consistent with Project purposes;

B Protect and manage project natural and cultural resources through a sustainable environmental stewardship program, including protection of fish and wildlife populations and habitats, and preservation of the fossilized coral reef as a unique paleontological feature;

C Provide public outdoor recreation opportunities, and opportunities for scientific research and interpretive and environmental uses, while sustaining Project natural resources;

D Provide consistency and compatibility with national objectives and other state and regional goals and programs; and

E Comply with specific requirements of Corps policy and regulations for management of civil works projects and master plan approval.

Table 1 illustrates screening of the four alternatives for each of the criteria identified above. Alternatives are marked “Y” if they meet the definition of a criterion and “N” if they do not. Only the proposed balanced updated Master Plan meets all five criteria and fully satisfies the Purpose and Need.

Table 1. Alternatives Matrix

Initial Alternative	Criteria				
	A	B	C	D	E
1 – No Action / Current Master Plan	N	Y	Y	N	N
2 – Proposed Balanced Master Plan	Y	Y	Y	Y	Y
3 – Maximize Preservation Master Plan	N	Y	N	N	N
4 – Maximize Recreation Master Plan	N	N	Y	N	N

3.3 Alternatives Removed from Further Consideration

In accordance with CEQ regulations, alternatives that an agency determines do not satisfy the stated Purpose and Need may be eliminated from more detailed study. As described below, the alternatives proposing updated master plans that would emphasize either natural resource protection or recreation do not meet the Purpose and Need, and in particular, they do not comply with Corps policy governing development and updating of master plans. As a result, these two alternatives have been removed from further consideration in this EA.

3.3.1 Master Plan Maximizing Natural Resource Protection

This alternative does not fully incorporate each of the authorized purposes of the NWCA. Of critical importance is the need to emphasize that an approved Corps’ Master Plan would be stewardship driven and must seek to balance recreation, development, and navigation operations with protection and conservation of natural and cultural resources. This alternative does not consider Project-wide resource capability and suitability, and is not consistent with multiple use Project purposes. This alternative, therefore, has been eliminated from further consideration.

3.3.2 Master Plan Maximizing Recreation

This alternative would include development and implementation of a Master Plan to prioritize enhancement and expansion of recreation use, programs and facilities. To aid in responsible stewardship of Project resources and remain consistent with congressionally authorized purposes, an updated Master Plan for the NWCA should act to protect and conserve its natural, cultural, and paleontological resources in a manner consistent with navigation operations. While

recreational use is an important consideration in the development of a Master Plan, it is only one of several congressionally authorized purposes of the NWCA, and solely emphasizing recreational uses at the expense of other Project purposes is not consistent with Corps policy or the legislative mandate. For these reasons, this alternative has been eliminated from further consideration.

3.4 Alternatives Carried Forward for Detailed Analysis

3.4.1 No Action Alternative

Under the no action alternative, development and management of the Project area would likely take the same general direction outlined in the proposed updated Master Plan and therefore, would generally share the same environmental consequences. However, future developments or resource management policies would require approval on a case-by-case basis without the benefit of evaluation in the context of a revised overall plan. Continued operation under the 1984 Master Plan would not meet current Corps of Engineers policy goals of regular update and approval of master planning document, nor would it meet the Purpose and Need of the project. However, CEQ regulations require analysis of a “no action” alternative as a baseline with which to compare other alternatives, so the environmental consequences of the no action alternative will be addressed in Section 4 of this EA.

3.4.2 Balanced Master Plan

The balanced approach to master planning embodied in the proposed updated Master Plan would fulfill the five criteria set forth above, which reflect the purposes originally set forth for the NWCA in Section 203 of Public Law 97-137, as well as applicable Corps regulations and policy for master planning. Because the proposed balanced updated Master Plan satisfies applicable regulations and policy documents and meets the Purpose and Need of the project, this alternative was carried through for analysis of its environmental consequences, and was ultimately selected as the agency’s preferred alternative. The scope of the proposed updated Master Plan and this EA are limited to actions on Corps of Engineers’ property, with the exception of consideration of potential cumulative effects associated with offsite actions within the Project area.

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4 AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

The National Environmental Policy Act and the Council on Environmental Quality's NEPA Implementing Regulations require that an Environmental Assessment identify the likely environmental effects of a proposed project and that the agency determine whether those impacts are expected to be significant. The determination of whether an impact significantly affects the quality of the human environment must consider the context of an action and the intensity of the impacts (40 CFR 1508.27).

The term context refers to the affected environment in which the proposed action would take place and is based on the specific location of the proposed action, taking into account the entire affected region, the affected interests, and the locality. The term intensity refers to the magnitude of change that would result if the proposed action was implemented.

Determining whether an effect significantly affects the quality of the human environment also requires an examination of the relationship between context and intensity. In general, the more sensitive the context (i.e., the specific resource in the proposed action's affected area), the less intense an impact needs to be in order for the action to be considered significant. Conversely, the less intense an impact is, the less scrutiny even sensitive resources need because of the overt inability of an action to effect change to the physical environment. The consideration of context and intensity also must account for the indirect and cumulative effects from a proposed action. This section describes the existing environmental conditions in the project area (affected environment), providing a baseline for measuring expected changes that would result from implementation of either the proposed updated Master Plan or of the Master Plan currently in effect (the no action alternative). Next, this section presents the adverse and beneficial environmental effects (direct and indirect) of the proposed action and the no action alternative. Under the no action alternative, an updated master plan would not be approved for the NWCA Project in the foreseeable future and there would be no comprehensive planning for the Project. However, future development may still occur, but without the benefit of an up-to-date comprehensive planning document. No specific development actions are currently proposed under the existing Master Plan.

The proposed updated Master Plan represents a high-level planning framework, and does not contain individual proposals for specific development or management changes for the NWCA. It is not feasible at this stage to define the exact nature of impacts from potential future projects that have not yet been proposed. Thus, in accordance with CEQ guidance, this EA addresses the broad environmental consequences relevant at the comprehensive planning level. Specific implementation actions that may be proposed under the updated Master Plan would undergo individual review under NEPA, if applicable.

This section is organized by resource topic, with the effects of alternatives discussed under each resource topic. Impacts are quantified whenever possible. Qualitative descriptions of impacts are explained by accompanying text where used.

Qualitative definitions/descriptions of impacts as used in this section of the EA include:

Intensity:

- Minor – noticeable impacts to the resource in the project area, but the resource is still mostly functional;
- Moderate – the resource is impaired, so that it cannot function normally; and
- Major – the resource is severely impaired so that it is no longer functional in the project area.

Duration:

- Short term – temporary effects caused by the construction and/or implementation of a selected alternative; and
- Long term – caused by an alternative after the action has been completed and/or in full and complete operation.

The scope of the alternatives under consideration and the environmental consequences described in this EA are limited to actions on the Corps of Engineers' property. The only exception is the consideration of potential cumulative effects associated with actions off of Corps of Engineers' property.

4.1 McAlpine Locks and Dam Operation

4.1.1 Existing Condition

The primary purposes of the NWCA project are detailed in Section 1.3 of this EA. In general, the purposes are to protect and conserve fish and wildlife of the area, as well as the fossil beds exposed by the McAlpine Dam, and to provide research and recreational opportunities for users. However, these purposes must be consistent and compatible with navigation on the Ohio River and operation of the McAlpine Locks and Dam. This project is crucial to commercial navigation on the Ohio River, as over 50 million tons of cargo move through McAlpine Locks each year.

The dams on the Ohio River do not provide a flood control measure. As flood stage approaches, the gates in the dams are opened for the water to flow downstream. The upper fixed weir overtops at an elevation of 425.0 feet msl. The locks and dam are operated 24 hours a day, 365 days a year, by personnel of the Louisville District of the Corps. The foremost priority of the project is to maintain a navigable channel in the McAlpine pool of the Ohio River.

4.2.2 Environmental Consequences

4.1.2.1 No Action

Operations at the McAlpine Locks and Dam are controlled by the project's Operational Management Plan. The existing NWCA Master Plan does not change or suggest changes to operations of the locks and dam, thus the no action alternative is not anticipated to have any discernable effect on the McAlpine Locks and Dam operation.

4.1.2.2 Proposed Action

As with the current Master Plan, the proposed updated Master Plan does not change or suggest changes to locks and dam operations, so no impacts are anticipated.

4.2 Climate

4.2.1 Existing Condition

The climate in the region around the NWCA exhibits strongly marked seasons. Winters are often cold, and summers are often hot. The transition from cold to hot weather can produce an active spring with thunderstorms and tornadoes. Oppressive humidity and high temperatures arrive in summer. Autumn is generally marked by lower humidity and mostly sunny skies. The annual mean temperature is 57°F (14°C) in southern Indiana. Although Indiana sometimes has temperatures below 0°F (–18°C) during the winter, the average temperatures in January range between 17°F (–8°C) and 35°F (2°C). Average temperatures during July vary from 63°F (17°C) to 88°F (31°C).

The growing season averages 185 days in southern Indiana. Rainfall is distributed fairly evenly throughout the year, although drought sometimes occurs in the southern region of the state. The average annual precipitation is 45 inches (114 cm) along the Ohio River.

4.2.2 Environmental Consequences

4.2.2.1 No Action

Operations currently contemplated under the existing Master Plan are not anticipated to impact the climate in the project vicinity.

4.2.2.2 Proposed Action

As with the no action alternative, implementation of the proposed updated Master Plan is not expected to result in impacts to the climate in the project vicinity.

4.3 Air Quality

4.3.1 Existing Condition

The U.S. Environmental Protection Agency (USEPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called “criteria” pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of 10 microns or less in size (PM-10 and PM-2.5), and sulfur dioxide. Ozone is the only parameter not directly emitted into the air but forms in the atmosphere when three atoms of oxygen (O₃) are combined by a chemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOC, also known as ozone precursors. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air.

Jefferson County, Kentucky is currently in nonattainment status for the sulfur dioxide standard and the 8-hour ozone standard. Clark County, Indiana is in nonattainment status for the 8-hour ozone standard (U.S. Environmental Protection Agency, 2016).

4.3.2 Environmental Consequences

4.3.2.1 No Action

Site operations under the existing Master Plan are not expected to have any measurable impacts on air quality in the vicinity. Although there are currently no specific proposals, future development projects could have localized and temporary emissions associated with them, which are not expected to be significant. An increase in vehicular exhaust emissions could occur due to localized development outside the NCWA, but these impacts would not be attributable to the NCWA Master Plan.

4.3.2.2 Proposed Action

Similar to the no action alternative, air quality would not be predicted to change from existing conditions as the effects of implementing the updated Master Plan and expected future development actions on air quality would be minimal. There would be some localized and temporary emissions associated with construction of new or improved amenities (e.g., utility trenching, road paving, supplying asphalt/concrete, excavation), although no such specific proposals are contained in the updated Master Plan. Emissions from construction actions would typically include byproducts of diesel and gasoline combustion, fugitive dust, and vapors from asphalt paving. The emissions associated with equipment operation and construction would be localized, of relatively short duration, and would occur when constructing any new or improved future development features.

4.4 Topography, Geology, and Soils

4.4.1 Existing Condition

According to Homoya, et al. (1985), the NWCA lies within the Big Rivers Natural Region. This region consists of rivers where average flow is 7,000 cubic feet per second or greater, and includes all of the Ohio River bordering Indiana and lower sections of the White and Wabash rivers. According to the IDNR (2016), the Falls of the Ohio State Park is also included in the Scottsburg Lowland physiographic region of Indiana. This region is generally defined by underlain Devonian/Mississippian-age shale that provides little resistance to erosion; however, it should be noted that most of the bedrock underlying the Falls of the Ohio is limestone, which provides more resistance to erosion than does shale. Perhaps for this reason, some people have subdivided the Scottsburg Lowland into two regions, the northern part being the Scottsburg Lowland and the southern part being the Charlestown Hills region. According to this division, the Falls of the Ohio State Park would be located in the Charlestown Hills physiographic region of Indiana (Gray, 2000).

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, several soil series/types are found within the NWCA. The Urban land-Udorthents complex is the predominate soils, occurring on approximately 248 acres within the NWCA, including the entirety of Shippingport Island. Goose Island is comprised totally of Chagrin-Nelse-Wheeling complex, while Sand Island consists of the Chagrin-Nelse-Wheeling complex and Combs fine sandy loam. The majority of the Indiana shoreline within the NWCA consist of the Udifluvents, cut and filled - Urban land complex. The NRCS soil map is located in EA Appendix.

4.4.2 Environmental Consequences

4.4.2.1 No Action

Erosion along the Indiana bank of the Ohio River within the NWCA has been an issue for several decades. Specifically, the operation of the McAlpine tainter gates has been previously identified as a significant contributor to erosion of the river bank in the study area. Multiple federally funded attempts at addressing this problem have been met with limited success. Analysis of the issue by the River Engineering Branch of the U.S. Army Research and Development Center, Coastal (ERDC) and Hydraulics Laboratory has been completed and will be incorporated into a USACE report that fully formulates options and makes a recommendation for a course of action once funding is available. There is also continued erosion of the riverbank adjacent to the Clark Cabin interpretative site. Consequently, IDNR plans to move the cabin away from riverbank. These potential actions would not be expected to change in the future under the existing Master Plan. One of the congressionally authorized purposes of the NWCA is to protect the fossilized coral reef as a unique paleontological feature. Current measures taken for the protection of this feature, such as restriction of fossil collection, would not be expected to change in the future under the existing Master Plan. The existing Master Plan does not specifically address implementation of best management practices (BMPs) to reduce erosion, stormwater runoff, and soil loss associated with new construction projects within the NWCA; however, as with all construction projects on USACE property, all applicable BMPs are currently utilized to minimize construction related impacts to natural resources. This would not change in the future under the existing Plan.

4.4.2.2 Proposed Action

Impacts to topography, geology, and soils are not expected to differ from the existing Master Plan. Any planned actions to address current or future erosion issues would not be changed from implementation of the updated Master Plan. Measures currently in place under the existing Master Plan to protect the fossil resources of the NWCA will remain in the proposed updated Master Plan. The implementation of BMPs to minimize erosion and soil loss for any proposed new features or improvements to existing features would not be changed under the updated Master Plan. As a result of the reasonable use of BMPs, minimal effects would be predicted to topography, geology, and soils from implementing the new Master Plan or future actions proposed under the new Master Plan.

4.5 Surface Water Hydrology and Groundwater

4.5.1 Existing Condition

The Ohio River is one of the nation's great natural resources. The Ohio not only provides drinking water for over five million people, but serves as a warm water habitat for aquatic life, provides numerous recreational opportunities, is used as a major transportation route, and is a source of water for the manufacturing and power industries. The headwaters of the Ohio River begin in Pittsburgh, Pennsylvania at the confluence of the Allegheny and Monongahela Rivers and flows southwesterly for 981 miles, joining the Mississippi River near Cairo, Illinois. Nineteen high-lift locks and dams installed by the Corps of Engineers for navigation purposes maintain a nine-foot minimum river depth and regulate flow, facilitating the transport of more than 230 million tons

of cargo on the river every year. The river has an average depth of 24 feet with an average width of 0.5 miles. Long-term monthly average flows in the Ohio River, depending on location and time of year, range from 14,000 to 497,000 cubic feet per second (cfs). The McAlpine pool is 72.9 miles long and is bounded Markland Locks and Dam on the upstream end. Downstream of McAlpine Locks and Dam, the Cannelton pool is 113.9 miles long.

Tributaries

The NWCA encompasses approximately three miles of the Ohio River, between the upstream bounds near the L&I Railroad Bridge and the downstream bounds near the K&I Railroad Bridge. Two tributaries, Silver Creek and Mill Creek, flow into the Ohio River within the boundary of the NWCA on the Indiana side. Silver Creek has a drainage area of 152 square miles and Mill Creek drains approximately 3-4 square miles. A few other smaller, intermittent and ephemeral streams can be found around the border of the NWCA.

Groundwater

Both bedrock and unconsolidated aquifers are present in and around the NWCA. According to Maier (2006), the NWCA contains several types of unconsolidated aquifer systems, including the Unglaciaded Southern Hills and Lowlands and the Dissected Till and Residuum Aquifer System; the Alluvial, Lacustrine, and Backwater Deposits Aquifer System; and the Ohio River Outwash Aquifer System. See Section 3.1.4 of the updated Master Plan for a detailed description of groundwater aquifers in the project area.

4.5.2 Environmental Consequences

4.5.2.1 No Action

Continued operation under the existing Master Plan is not anticipated to have any discernable effect on surface water hydrology or groundwater in the Project area.

4.5.2.2 Proposed Action

No environmental consequences to the surface water hydrology or groundwater in the Project vicinity are anticipated from implementing the new Master Plan or future actions proposed under the new Master Plan.

4.6 Water Quality

4.6.1 Existing Condition

The Ohio River Valley Water Sanitation Commission (ORSANCO) is a quasi-regulatory agency created to control pollution of the Ohio River. The agency is responsible for setting baseline water quality standards for the Ohio River. Ohio River states (Ohio, Kentucky, Illinois, Indiana, West Virginia, and Pennsylvania) may then elect to adopt those standards or stricter ones. All such standards must comply with Clean Water Act regulations and are subject to United States Environmental Protection Agency (USEPA) approval.

According to ORSANCO (2016), an assessment of water quality and biota data collected from 2010 – 2014 at RM 603.3 – 608.1, indicated impairments for contact recreation caused by E.

coli, and impairments for fish consumption caused by polychlorinated biphenyls (PCBs) and dioxins. The data indicated standards were met for aquatic life use and public water supply for the same stretch of river. Important trends detected in data included increasing phosphorus concentrations at most Ohio River monitoring stations and increases in chloride concentrations at nearly all stations, including tributaries.

Combined sewer overflows (CSOs) and other non-point sources have been identified as significant causes of bacteria problems in the Ohio River, particularly during heavy rain events. The Louisville Metropolitan Sewer District (MSD) has approximately 84 CSOs upstream of the NWCA (MSD 2017), and Jeffersonville, Indiana has six active CSOs upstream of the NWCA (IDEM 2017).

The main stem of Silver Creek, from its confluence with the Ohio River to the mouth of the Sinking Fork, was included on Indiana's 2014 Clean Water Act section 303(d) List of Impaired Waters due to high levels of PCBs and/or E. coli. The 2007 Silver Creek Watershed Management Plan cites increased run-off caused by rapid population growth and increased impervious area in Clark and Floyd counties as one of the main factors affecting the condition of Silver Creek.

4.6.2 Environmental Consequences

4.6.2.1 *No Action*

Under the no action alternative, continued operation under the existing Master Plan is not anticipated to have any discernable effect on the water quality of the Ohio River or its tributaries within the NWCA. Current water quality impacts due to CSOs and other regional sources of pollution would be expected to continue irrespective of operations at the Project. Although construction activities associated with potential future projects would result in ground-surface disturbances that could increase runoff and diminish water quality, best management practices during construction would be utilized to minimize the potential for deleterious effects. After construction is completed, re-seeding and re-vegetation would be performed to minimize erosion losses and protect surface soils.

4.6.2.2 *Proposed Action*

Under the proposed action, operation under the proposed updated Master Plan and future actions proposed under the updated Master Plan would occur without discernible effects to the water quality of the Ohio River or its tributaries within the NWCA. The practice of implementing best management practices to reduce stormwater runoff associated with construction activities would not be changed under the updated Master Plan. The existing water quality in the NWCA is a result of factors substantially unrelated to the management actions on Project lands and results from land use and discharges to the watershed upstream from the Project. These factors and the associated impairments to designated uses are expected to continue regardless of whether the updated Master Plan is adopted.

4.7 Biological Environment

4.7.1 Existing Condition

Vegetation

According to the IDNR (2016), a flora survey of the Falls of the Ohio State Park and NWCA was completed in 1994 and again in 2002 to include the then newly acquired Buttonbush Woods area of the park. These surveys, along with more recent records, documented 328 plant species, eight of which are rare or threatened in Indiana. A complete list compiled by the IDNR in December of 2015 is located in the EA Appendix. The 1994 survey may be more representative of the flora found in the NWCA currently, as the Buttonbush Woods Area is not included in the NWCA. The 1994 survey recorded 204 species in 65 families. Of those species, 156 were herbaceous and 48 were woody species. One hundred forty-one of the 204 species were native, while 63 species were introduced (IDNR, 2016).

Plant communities of note within the NNWCA include nearly 19 acres of dense sandbar willow (*Salix interior*) along the Indiana shore near the upper gates, and the 43-acre cottonwood stand on Goose Island. Shippingport and Sand islands have healthy stands of deciduous bottomland tree species accustomed to growing on the banks of rivers and streams including, but not limited to, sycamore (*Platanus occidentalis*), cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), and green ash (*Fraxinus pennsylvanica*). Invasive Japanese honey suckle (*Lonicera* sp.) is pervasive among the understory of Shippingport Island. The IDNR (2016) listed four invasive species of concern at the State Park: garlic mustard (*Alliaria officinalis*), purple loosestrife (*Lythrum salicaria*), Japanese honeysuckle (*Lonicera japonica*), and Japanese Chaff Flower (*Achyranthes japonica*). Japanese honeysuckle is also pervasive in the understory of Shippingport Island. *Wetlands* Approximately 92.5 acres of freshwater forested/shrub wetland, as classified by the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI), exist within the NWCA. The largest and most developed wetland is on Goose Island, located below the upper and lower tainter gates of the dam. Sand Island, located north of the McAlpine lock, is mostly comprised forested wetland, as is the northwestern edge of Shippingport Island. Several small depressions on Shippingport Island have developed into wetlands, including one freshwater emergent wetland with an area of approximately 0.19 acres. Smaller marsh areas are found near seeps and springs in the sandbar below the K&I Railroad Bridge and along the river at the Clark Home site. According to the Falls of the Ohio State Park Natural Resource Management Plan (2016), plants that are characteristic of this environment include: water willow (*Justicia americana*), common arrowhead (*Sagittaria latifolia*), Virginia bugleweed (*Lycopus virginicus*), primrose willow (*Ludwigia peploides*), nodding smartweed (*Polygonum lapathifolium*), nodding-bur marigold (*Bidens cernua*), and small bulrush (*Scirpus atrovirens*). Scattered areas of non-native purple loosestrife (*Lythrum salicaria*) and garden loosestrife (*Lysimachia vulgaris*) add color to the landscape along with large pink blossoms of the swamp rose mallow (*Hibiscus moscheutos*). Commonly entangling itself over large patches of vegetation, dodder (*Cuscuta gronovii*) is also found in this habitat. Wetland areas in the NWCA

are important habitat for migrating waterfowl. Birds commonly found in this area are the same birds found in the river community listed above. A colony of beavers (*Castor canadensis*) is established on the Goose Island marsh along with muskrats (*Ondatra zibethicus*) and reptiles like the midland water snake (*Nerodia sipedon pleuralis*). Amphibians include the common southern leopard frog (*Rana sphenoccephala utricularia*) and the minute cricket frog (*Acris species*). *Terrestrial Wildlife* Terrestrial wildlife is defined as animals that are found on land and in the air and includes amphibians, birds, mammals, and reptiles. The Project area supports a diverse array of bird, mammal, amphibian, and reptile species. Table 1 lists some of the common species of mammals, reptiles and amphibians that can be found within the NWCA. This is not a complete list, as it is based on observations and not formal surveys. Brainerd Palmer-Ball created a comprehensive checklist of birds of the Falls of the Ohio for the IDNR (2016). The checklist includes 273 species and is included in the EA Appendix.

Table 2. Species commonly occurring within the NWCA.

Taxonomy	Common Name	Scientific Name
Mammals	raccoon	<i>Procyon lotor</i>
	opossum	<i>Didelphis marsupialis</i>
	beaver	<i>Castor Canadensis</i>
	muskrat	<i>Ondatra zibethicus</i>
	groundhog	<i>Marmota monax</i>
	eastern chipmunk	<i>Tamias striatus</i>
	eastern woodrat	<i>Neotoma floridana</i>
	red fox	<i>Vulpes vulpes</i>
	white-tailed deer	<i>Odocoileus virginianus</i>
	fox squirrel	<i>Sciurus niger</i>
	gray squirrel	<i>Sciurus carolinensis</i>
	eastern cottontail rabbit	<i>Sylvilagus floridanus</i>
	deer mouse	<i>Peromyscus maniculatus</i>
	coyote	<i>Canis latrans</i>
Reptiles	midland watersnake	<i>Nerodia sipedon pleuralis</i>
	spiny soft-shelled turtles	<i>Trionyx spinifer spinifer</i>
	eastern box turtle	<i>Terrapene carolina</i>
	common snapping turtle	<i>Chelydra serpentina</i>
	red ear slider	<i>Trachemys scripta elegans</i>
	five-lined skink	<i>Eumeces fasciatus</i>
	northern fence lizard	<i>Sceloporus undulatus hyacinthinus</i>
	eastern garter snake	<i>Thamnophis sirtalis sirtalis</i>
	black rat snake	<i>Elaphe obsoleta obsoleta</i>
	black racer	<i>luber constrictor constrictor</i>

	rough green snake	<i>Opheodrys aestivus</i>
Amphibians	southern leopard frog	<i>Rana sphenoccephala utricularia</i>
	cricket frog	<i>Acris</i> sp
	bullfrog	<i>Rana catesbeiana</i>
	spring peeper	<i>Pseudacris crucifer</i>
	wood frog	<i>Rana sylvatica</i>
	mudpuppy	<i>Necturus maculosus</i>
	Fowler's toad	<i>Bufo woodhousei fowleri</i>

Aquatic Resources

Aquatic resources refer to animal life in surface waters including streams, wetlands, and rivers. The IDNR Falls Master Plan (2016) cites a publication by Pearson and Pearson (1989) that listed 131 species of fish occurred in the middle Ohio River (RM 328-654) between 1800 and 1970. The list included 10 introduced species, including the silver carp (*Hypophthalmichthys molitrix*), which has since proliferated throughout the several large river systems in the U.S., including the Ohio River. A closely related species, bighead carp (*Hypophthalmichthys nobilis*), have also since invaded the Ohio River. These species, known collectively as Asian carp, have been verified as far upstream as Huntington, West Virginia (Nico et al., 2017) and pose a significant threat to the health of the Ohio River ecosystem through overconsumption of plankton. According to the KDFWR, McAlpine Dam acts as a partial barrier to upstream movement of the carp until the dam is overtopped in high flow events, and the Critical Species Investigations Group of KDFWR routinely remove Asian carp from the Ohio River at the Falls. (J. Crosby, personal communication, August 31, 2017).

Despite issues with invasive species and variable water quality, the Falls of the Ohio offer excellent and unique habitat to fish of the Ohio River. The area is a popular fishing location for anglers targeting sauger (Sander Canadensis), white bass (*Morone chrysops*), and catfish. According to KDFWR, the Falls also supports a healthy population of blue sucker (*Cycleptus elongates*), freshwater drum (*Aplodinotus grunniens*), shiners (Notropis sp.), and many other nongame fish species. The list of fish species accumulated by Pearson and Pearson (1989) is located in the EA Appendix.

Manipulation of the river channel for navigation, along with the expansive solid limestone substrate has resulted in less than desirable habitat for mussels at the Falls of the Ohio. Because of this poor habitat, no formal mussel surveys have been completed at the NWCA. According to IDNR (2016), only Asian clams (*Corbicula fluminea*) and zebra mussels (*Dreissena polymorpha*) - both non-native, invasive species - can be found commonly within the NWCA. These mussels compete for many of the same resources as the native mussels and invertebrates, which in turn, can reduce native species population, including fish. Additionally zebra mussels can pose economic threats by clogging intake valves and pipes.

4.7.2 Environmental Consequences

4.7.2.1 No Action

Continued operation under the existing Master Plan is not anticipated to have any discernable adverse effect on the biological environment in the Project area. Current habitat impacts due to river manipulation for navigation, presence of invasive species, and other factors would be expected to continue irrespective of operations at the Project.

4.7.2.2 Proposed Action

Proposed development actions on the Project are required to comply with NEPA and many other laws pertaining to the conservation of natural and cultural resources. As with the no action alternative, prior to implementation of any development activity that could adversely impact terrestrial or aquatic habitats, field surveys and all appropriate coordination with state and/or federal agencies will be conducted by the Corps of Engineers. As such, any future development would be expected to occur with minimal effects to the biological environment of the NWCA. Beneficial impacts to the biological environment of the NWCA would be expected under the updated Master Plan. Updating inventories and information for the plant and animal communities would better inform future decisions regarding the stewardship of natural resources within the NWCA.

4.8 Listed Species

Lists of threatened, endangered and species of special concern are maintained by the USFWS and the State of Indiana. Under the Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531-1544), endangered species are defined as any species in danger of extinction throughout all or portions of its range. A threatened species is any species likely to become endangered in the foreseeable future. The ESA defines critical habitat of the above species as a geographic area that contains the physical or biological features that are essential to the conservation of a particular species and that may need special management or protection. This section also covers birds listed under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C §§ 703-712) as birds of conservation concern.

4.8.1 Existing Condition

The USFWS maintains lists of rare plants and wildlife that occur in each county of the US. The State of Indiana maintains a separate inventory of state-ranked endangered and threatened species and species of special concern. This list can be obtained through the Indiana Natural Heritage Data Center by county or by vicinity to the project.

Official lists of federally protected species were generated using the USFWS automated IPaC (Information for Planning and Consultation) website. Lists from both the Indiana and the Kentucky Ecological Field Offices were generated and are included in the EA Appendix. The lists included 15 species that could potentially be affected by activities within the NWCA (Table 2). The presence of a species on the list does not indicate presence within the NWCA. According to the IDNR (2016), the least tern (*Sterna antillarum*) has been recorded on an occasional basis at the Falls in the spring, summer, and fall. Due to the conditions mentioned in the previous

section, there is no evidence to suggest that any of the listed mussel species presently occur within the bounds of the NWCA. It is likely the area contains some suitable habitat for the Indiana bat and gray bat, as these species are known to roost in the cavities or exfoliating bark both living and dead trees during the summer months. No designated critical habitat for bats is located within the NWCA. Although not included in the list below, the federally endangered Short's goldenrod (*Solidago shortii*) is a species of interest for the IDNR. The rare plant was discovered at the Falls in 1840 and may have been present until the early 1900's when the locks and dam were constructed (IDNR, 2016). There was an unsuccessful attempt to reintroduce the species at the Falls in 1995.

Table 3. Federally listed species that could potentially be affected by activities within the NWCA

Taxonomy	Common Name	Scientific Name	Status
Mammals	gray bat	<i>Myotis grisescens</i>	Endangered
	Indiana bat	<i>Myotis sodalis</i>	Endangered
	northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Birds	least tern	<i>Sterna antillarum</i>	Endangered
Mussels	clubshell	<i>Pleurobema clava</i>	Endangered
	fanshell	<i>Cyprogenia stegaria</i>	Endangered
	northern riffleshell	<i>Epiblasma torulosa rangiana</i>	Endangered
	orangefoot pimpleback	<i>Plethobasus cooperianus</i>	Endangered
	purple cat's paw	<i>Epioblasma obliquata obliquata</i>	Endangered
	rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	Threatened
	ring pink	<i>Obovaria retusa</i>	Endangered
	rough pigtoe	<i>Pleurobema plenum</i>	Endangered
	sheepnose mussel	<i>Plethobasus cyphus</i>	Endangered
	spectaclecase	<i>Cumberlandia monodonta</i>	Endangered
Plants	running buffalo clover	<i>Trifolium stoloniferum</i>	Endangered

4.8.2 Environmental Consequences

4.8.2.1 No Action

No changes to the listed species resources of the Project would be predicted as a result of implementing the no action alternative. Currently, the NWCA acts to protect and conserve the terrestrial habitats within its bounds by restricting development and providing refuge in an urban environment. This level of protection would not be expected to change under the existing Master Plan

4.8.2.2 Proposed Action

Listed Species Effects Determination

There are no specific future development actions proposed within the updated Master Plan. As such, there would be no adverse effects to any of the listed species in Table 2. Under the updated

Master Plan, detailed classification of lands in the NWCA would act to further protect the potential habitats of listed species. Approximately 82 acres of the NWCA would be classified as “environmentally sensitive”, which would facilitate increased preservation by strictly, or completely, limiting public access.

As with the no action alternative, any future development actions proposed under the updated Master Plan will be subject to the required seasonal restrictions on timber clearing to protect roosting bats. Tree harvests over three inches in diameter at breast height are restricted within five miles of known Indiana bat locations from April 1 through September 30. Around known hibernacula, restrictions may be more extensive. Future developmental actions on the NWCA will be also be assessed to determine potential impacts to all listed species, in compliance with the ESA.

4.9 Demographics and Environmental Justice

4.9.1 Existing Condition

The proposed updated Master Plan identified the area of influence of the NWCA as the Louisville/ Jefferson County KY-IN Metropolitan Statistical Area (MSA). The simple definition of the area of influence is the area in which the majority of project visitors live.

In 2015 the Louisville/ Jefferson County MSA had an estimated population of nearly 1.3 million people and is projected to reach 1.5 million by 2040 (Kentucky State Data Center, 2015). This represents an approximately 15% population increase across the MSA with growth in Kentucky suburban counties (Spencer, Oldham and Shelby). Jefferson County shows the largest increase in population with an additional 131,000 residents by 2040. For comparison, Kentucky’s population is forecasted to increase by 10% by 2040 (Kentucky State Data Center, 2016) and Indiana expects to see an increase of 15% (STATS Indiana) during the same time period.

The USEPA online EJScreen environmental justice mapping tool was used to assess the environmental and demographic indicators within the area of influence of the NWCA. Section 4.6.2 of the updated Master Plan contains more information on the demographics of the area of influence.

4.9.2 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations (Executive Order, 1994), directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority population and low-income populations. When conducting NEPA evaluations, the Corps of Engineers incorporates Environmental Justice (EJ) considerations into both the technical analyses and the public involvement in accordance with the USEPA and the Council on Environmental Quality guidance (CEQ, 1997).

The CEQ guidance defines “minority” as individual(s) who are members of the following population groups: American Indian or Alaskan native, Asian or Pacific Islander, Black, not of

Hispanic origin, and Hispanic. The Council defines these groups as minority populations when either the minority population of the affected area exceeds 50 percent of the total population, or the percentage of minority population in the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.

Figure 2 shows the area of influence of the NWCA compared to state, regional and national block groups for each EJ index. For example, if a given location is at the 95th percentile nationwide for an index, this means that only five percent of the US population has a higher block group value than the average person in the location being analyzed. The full EJScreen Report is included in the EA Appendix.

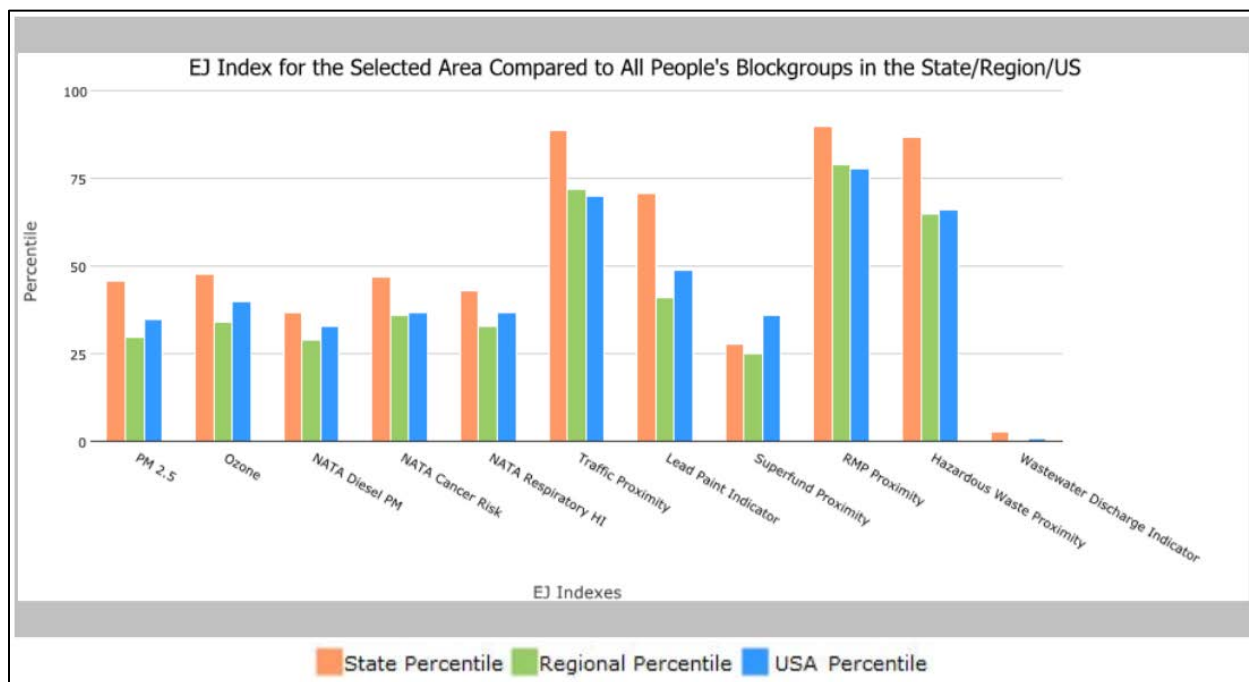


Figure 2. Environmental Justice Index for the area of influence of the NWCA.

Table 3 compares demographic indicator values of the NWCA area of influence with state, regional, and national values. The complete ACS report generated by EJScreen can be found in the EA Appendix.

Table 4. Demographic indicators within the area of influence for the NWCA.

Variable	NWCA AOI Value	State Average	Percentile in State	EPA Region Average	Percentile in EPA Region 4	USA Average	Percentile in USA
Demographic Index	31%	27%	67	38%	44	36%	50
Minority Population	27%	14%	84	37%	46	38%	48
Low Income Population	34%	39%	41	39%	42	34%	53
Linguistically Isolated Population	2%	1%	81	3%	62	5%	54
Population with Less Than High School Education	11%	16%	39	14%	46	13%	54
Population under Age 5	6%	6%	57	6%	58	6%	56
Population over Age 64	14%	14%	52	15%	54	14%	57

Low-income populations are identified using statistical poverty thresholds from the Bureau of the Census Current Population Reports. In identifying low-income populations, a community may be considered either as a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. The threshold for the 2010 census was an income of \$10,956 for an individual and \$21,954 for a family of four (USCB, 2010). This threshold is a weighted average based on family size and ages of the family members.

4.9.2.1 No Action

Under the no action alternative, the trends of growth of population observed in the recent years surrounding the NWCA would be expected to continue. There would be no disproportionate adverse effects to minority or low-income communities as a result of implementing the no action alternative.

4.9.2.2 Proposed Action

The changes in population and associated stresses on the municipal resources and services over the past 34 years have occurred while the Corps of Engineers have managed the NWCA. Implementing the updated Master Plan would be expected to have no effect on the demographic trends of the surrounding communities, and there would be no disproportionate adverse effects to minority or low-income communities as a result of implementing the proposed updated Master Plan.

4.10 Recreation and Visitation

4.10.1 Existing Condition

The NWCA and its area of influence afford visitors and residents many choices for outdoor recreation. The NWCA offers excellent recreational paddling opportunities within sight on

downtown Louisville. Hiking, fishing, bird and wildlife watching, and exploring the fossil beds are other popular activities at the NWCA. Table 4 lists activities available to area visitors. See Section 4.0 of the updated Master Plan for a comprehensive analysis of outdoor recreation in the area of influence.

Table 5. Available recreational activities within the NWCA area of influence.

Recreation Area																		
	Fishing	Swimming	Wading	Hiking	Marina	Livery	Cabins /Lodge	Target Shooting	Hunting	Playground	Picnicking	Camping	Canoeing/Kayaking	Boating	Boat Ramp - trailer	Boat Ramp - Carrydown	Historic Site / Memorial	Wildlife Viewing
Falls of the Ohio NWCA	X		x	x						x	x		X	x	x	x	x	x
Charlestown State Park	x			x						x	x	x	x	x	x	x	x	
Clear Creek Park	x	x		x						x	x	x	x	x	x	x		x
Deam Lake State Recreation Area	x	x	x	x			x		x	x	x	x	x	x		x	x	x
Louisville Waterfront Park	x				x					x	x		x	x		x		
McNeely Lake Park	x			x						x	x		x	x	x	x	x	x
O'Bannon Woods State Park	x	x	x	x		x				x	x	x	x	x	x	x	x	x
Otter Creek Outdoor Recreation Area	x		x	x			x	x	x	x	x	x	x		x	x	x	x
Parklands of Floyds Fork	x		x	x		x				x	x		x		x		x	x
Shawnee Park	x			x						x	x						x	x
Taylorsville Lake	x	x	x	x	x		x	x	x		x	x	x	x	x	x	x	x

The NWCA should expect to see increased recreational demand in the near future, directly resulting from park and recreation projects being completed adjacent to its boundary in both Indiana and Kentucky. It is critical for the Corps of Engineers to take an active role in the early planning stages of these projects in order to support and enhance the authorized purpose of the NWCA.

Population growth in the Louisville/Jefferson County KY-IN MSA will also contribute to increased demand for recreational opportunities in the area, but the effect on visitation will be limited in comparison to implementation of surrounding recreational projects.

Growth trends in stand-up paddle boarding, kayak fishing and recreational canoe/kayaking, as identified in the Outdoor Foundation's annual Outdoor Recreation Participation Report, can also be expected to increase recreational demand in the NWCA. Accessibility to these water-based activities are further enhanced by strategic efforts completed over the past several years by cities such as Louisville, Nashville, Chattanooga and Greenville, South Carolina to reconnect to their riverfronts through park development.

4.10.2.1 No Action

The existing Master Plan that would continue in effect under the no action alternative does not take into account population growth and trends in recreation demand that have occurred over the past three decades, and are projected to continue. As such, it is unlikely that the full potential of recreation within the NWCA would be realized without implementing the guidance of the updated Master Plan.

4.10.2.2 Proposed Action

Recreational use of the NWCA is expected to increase in the future as indicated by predictions of increased outdoor recreation. The updated Master Plan would serve as a guide in accommodating increases in demand and planning future recreational amenities within the NWCA while ensuring those amenities complement surrounding outdoor attractions.

There are no major new recreational amenities currently planned in the future, and most of the development at the NWCA would involve minor improvements, replacements-in-kind, and facility improvements. However, several potential recreational activities and opportunities have been identified in the updated Master Plan for the NWCA, and may be considered for implementation in the future. There would be some localized and temporary annoyance to recreational users (e.g., noise, fugitive dust, trails closed) during construction of new or improved amenities, but these would be short-term.

4.11 Cultural Resources

4.11.1 Existing Condition

The Falls of the Ohio area has a rich cultural and natural history. The area was used as a crossing point for animals, and as a hunting area for Native Americans. In the river's natural state, boats could traverse the falls during periods of high water only, so the area became a stopping point while goods were unloaded and portaged, thus creating the towns of Louisville, Clarksville and Jeffersonville. When there was enough water, boats could attempt to run one of three chutes, or passages through the Falls, but this required expertise and boats often wrecked during the attempt. In 1830, the 1.9-mile privately owned and operated Portland Canal, with a three-flight lock at the lower end, was finished. By 1930, a new concrete and steel dam was built in conjunction with a hydroelectric plant project of the Louisville Gas and Electric (LG&E) Company. The dam was constructed in an "L" shape, extending from the Indiana shore and gave the Falls area its present look. In 1961, construction was finished on McAlpine's first 1,200-foot long lock. In 1996, construction began on a multi-phase project to improve the McAlpine facility, including a new operations building, a second 1,200-foot long lock, a new bridge over the locks, and a heavy-lift crane. All project features, including the visitor center and overlook were completed in 2009. These improvements were designed to serve the navigation needs at the Falls of the Ohio for the next 50 years.

4.11.2 Environmental Consequences

4.11.2.1 No Action

Continued operation under the existing Master Plan is not anticipated to have any discernable adverse effect on the cultural resources of the NWCA. The Master Plan was designed to preserve the unique paleontological features within the NWCA, which is one of the core purposes of the area's designation. However, due to the outdated nature of several aspects of the existing Master Plan, the no action alternative may not serve this purpose as well as adopting the updated Master Plan.

4.11.2.2 Proposed Action

Implementing the updated Master Plan would be expected to have no adverse effect on the cultural resources of the NWCA, as all proposed development actions would still be required to comply with the NHPA, as they are currently. Prior to implementation of any ground disturbing activity, field surveys and Section 106 NHPA coordination with the Kentucky or Indiana State Historic Preservation Office (SHPO) will be conducted by the Corps of Engineers. Federal and state laws require federal agencies to minimize or mitigate adverse impacts to historic properties (36 CFR Part 800.13). Should unanticipated historic or prehistoric resources be discovered during ground disturbing activities, work must cease immediately and the Corps of Engineers will contact the Indiana SHPO. Use restrictions and other provisions of the updated Master Plan would be expected to have beneficial effects on cultural, archaeological, and paleontological resources of the NWCA, as reflected in the area's original designation.

4.12 Hazardous, Toxic, and Radioactive Waste (HTRW) Materials

4.12.1 Existing Condition

There are no permitted hazardous waste disposal facilities in proximity to the NWCA and there are no known sites of hazardous, toxic, or radioactive waste materials on Project lands.

4.12.2 Environmental Consequences

4.12.2.1 No Action

No environmental consequences related to HTRW materials are anticipated under the no action alternative, because these substances are not found on or near Project lands.

4.12.2.2 Proposed Action

Implementing the updated Master Plan would be expected to have no effect on HTRW materials as there are no known pre-existing sources at the NWCA. While the potential to create HTRW materials as a result of equipment malfunction or failure during potential future construction projects (e.g., fluid leaks from heavy equipment) exists under either the no action or the proposed action alternatives, best management practices and regular equipment maintenance reduce these risks for any future development that may occur. Storage, fueling, and lubrication of equipment and motor vehicles associated with the construction process (e.g., pavers, trenchers, cement trucks) would be conducted in a manner that affords the maximum protection against accidents and spills.

4.13 Aesthetics/Visual Qualities

4.13.1 Existing Condition

The Falls of the Ohio State Park offers excellent views of the NWCA from the observation deck of the park's Interpretative Center and from the shore near the George Rogers Clark Home Site. High water events on the Ohio River make for riveting views of the waves and rapids formed from water flowing over the fossil beds. During normal and low-flow conditions, the river at the fossil beds more resembles a meandering stream and wildlife watching opportunities can be excellent during this time, especially for the numerous bird species attracted to the area. The vegetation of the NWCA offers changes in color, texture, and size that vary by topography, vegetation type, and season. Fall foliage forms a colored collage on the islands and along the shores that create a colorful viewshed. The Corps of Engineers' observation deck provides an elevated view and great perspective of McAlpine Locks and Dam on the Kentucky side of the NWCA.

4.13.2 Environmental Consequences

4.13.2.1 No Action

No impacts to aesthetics or visual qualities of the Project area are anticipated under the no action alternative.

4.13.2.2 Proposed Action

Implementing the updated Master Plan would be expected to have no long-term effect on the aesthetic character of the NWCA. Comprehensive planning under the new Master Plan could potentially facilitate improved construction planning, minimizing the temporary aesthetic effects during construction. Physical or use changes on adjacent property could impact aesthetic quality but this would occur under either alternative, and is not attributable to the NWCA Master Plan.

4.14 Noise

4.14.1 Existing Condition

Changes in noise are typically measured and reported in units of dBA, a weighted measure of sound level. The primary sources of noise within the Project area include everyday vehicular traffic along the adjacent highways (typically between 50 and 60 dBA at 100 feet) and human-generated recreational activities at the Project. Noise ranging from about 10 dBA for the rustling of leaves to as much as 115 dBA (the upper limit for unprotected hearing exposure established by the Occupational Safety and Health Administration) is common in areas where there are sources of recreational activities, construction activities, and vehicular traffic.

4.14.2 Environmental Consequences

4.14.2.1 No Action

Construction-related noise would occur if any future developments are proposed under the no action alternative, but these impacts would be temporary and short-term.

4.14.2.2 Proposed Action

Implementing the updated Master Plan would be expected to have no long-term effect on the level of background or ambient noise character of the NWCA. As with the no action alternative,

temporary increases in noise would be expected during future construction, but comprehensive planning under the new Master Plan could potentially facilitate implementing best management practices to minimize the temporary noise effects during construction.

5 CUMULATIVE EFFECTS

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impact of the action. A cumulative impact is defined as *“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR§1508.7).”* Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. These actions include on- or off-site projects conducted by government agencies, businesses, or individuals that are within the spatial and temporal boundaries of the actions considered.

The Master Plan is intended to guide the Corps of Engineers toward achieving its goal of managing, conserving and enhancing natural resources, while providing quality opportunities for outdoor recreation to the public. The plan is consistent with authorized project purposes and relevant legislation and regulations, and was developed in response to regional and local needs, resource capabilities and suitability, and expressed public interests. Any future development by the Corps of Engineers or the Indiana DNR on the Project lands could produce some temporary and minor construction-related effects (e.g., noise, fugitive dust, etc.), but the updated Master Plan does not contain any specific proposals for construction projects. No other adverse impacts were identified as a direct or indirect effect of the Corps of Engineers’ proposed adoption of the updated Master Plan. Thus, the proposed action will not have any negative incremental impacts when added to other past, present, and reasonably foreseeable future actions in the Project area. On the contrary, adoption and implementation of the updated Master Plan is expected to have beneficial effects on several resources in and around the NWCA, aligning with the resource objectives identified in the updated Master Plan. The cumulative impact of these beneficial effects will enhance other recreational and resource protection measures in the Project area, and may also serve to mitigate the potential negative effects of increased population growth and development in the area on key resources such as water quality, species habitat, and cultural and recreational opportunities.

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6 SUMMARY OF ENVIRONMENTAL EFFECTS

The updated Master Plan provides guidelines and direction for future Project development and use and is based on authorized Project purposes, Corps of Engineers policies and regulations on the operation of Corps of Engineers projects, responses to regional and local needs, resource capabilities and suitable uses, and expressed public interests consistent with authorized Project purposes and pertinent legislation.

Careful planning, sound engineering, appropriate coordination with resource agencies, and effective execution have developed the recreational resources at the Project while protecting and enhancing the important environmental resources; these practices would be expected to continue.

If and when future development projects are implemented, localized and temporary construction-related effects (e.g., diesel/gasoline engine emissions, noise, fugitive dust, minor earth-moving) would be the expected extent of the environmental consequences.

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7 COMPLIANCE WITH ENVIRONMENTAL LAWS

Revision of the NWCA Master Plan and the subsequent construction of the potential future modifications to existing infrastructure as well as new features would not commence until the proposed actions achieve environmental compliance with the applicable laws and regulations, as described below. Environmental compliance for any proposed actions has been achieved upon coordination of this Environmental Assessment with appropriate agencies, organizations, and individuals for their review and comments.

Bald Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 668a-668d.

In compliance.

The Bald Eagle Protection Act contains requirements on Corps of Engineers projects concerning bald eagles. Approval and implementation of the updated Master Plan would not adversely affect bald eagles or their habitat.

Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.

In compliance.

The purpose of this Act is to protect public health and welfare by the control of air pollution at its source, and to set forth primary and secondary National Ambient Air Quality Standards to establish criteria for States to attain, or maintain. Minor and temporary emissions would occur during construction activities for actions to maintain or improve facilities at the Project (e.g., fugitive dust, internal combustion engine emissions); however, these emissions would be short term, small-scale, and air quality would not be affected to any measurable degree.

Clean Water Act, as amended, (Federal Water Pollution Control Act) 33 U.S.C. 1251, et seq.

In compliance.

The objective of this Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters (33 U.S.C. 1251). The Corps of Engineers regulates discharges of dredge or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. This permitting authority applies to all waters of the United States including navigable waters and wetlands. Section 404 requires authorization to place dredged or fill material into water bodies or wetlands. If a Section 404 authorization is required, a Section 401 water quality certification from the state in which the discharge originates is also needed. Implementation of the updated Master Plan would not result in the placement of dredged or fill material into water bodies or wetlands.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

Not applicable.

Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment that presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. The implementation of the updated Master Plan would not involve real estate transactions.

Endangered Species Act, as amended. 16 U.S.C. 1531, et seq.

In compliance.

Section 7 (16 U.S.C. 1536) states that all Federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior (Secretary), insure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered (T&E) species, or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary to be critical.

This EA represents the assessment and findings regarding the proposed updated Master Plan and serves as the Biological Assessment with a determination of no effect to the species listed in Section 4.8.1 of this EA.

Environmental Justice (E.O. 12898).

In compliance.

Federal agencies shall make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. The proposed action does not disproportionately affect minority or low-income populations.

Fish and Wildlife Coordination Act (FWCA), as amended, 16 U.S.C. 661, et seq.

In compliance.

The FWCA requires governmental agencies, including the Corps of Engineers, to coordinate activities so that adverse effects on fish and wildlife would be minimized when water bodies are proposed for modification. No modifications to water bodies are proposed in association with the proposed update to the Master Plan. Via phone call on October 17th, 2018, the USFWS, Frankfort Ecological Field Office stated that they had reviewed the Master Plan and EA and had no further comments.

Migratory Bird Treaty Act

In compliance.

The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. Executive Order 13186 (2001) directs agencies to take certain actions to implement the act. The Corps of Engineers has consulted with the USFWS (through their review of the draft EA) with regard to their consideration of the effects of the actions identified in the Master Plan revision for potential effects on migratory birds. No effects are anticipated.

National Historic Preservation Act, as amended, 16 U.S.C. 470a, et seq.

In compliance.

Federal agencies having direct or indirect jurisdiction over a proposed federal or federally assisted undertaking must take into account the effect of the undertaking on any district, site, building, structure, or object that is included in, or eligible for inclusion in, the National Register of Historic Places. The Corps of Engineers determined that the proposed action has no potential to cause effects on historic properties, according to 36 CFR 800.3(a)(1). Future proposals for specific actions would still be reviewed on an individual basis and coordinated with the appropriate State Historic Preservation Officer.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321, et seq.

In compliance.

This Environmental Assessment and Finding of No Significant Impact (FONSI) has been prepared in accordance with the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508). An Environmental Impact Statement (EIS) is not required.

Noise Control Act of 1972, 42 U.S.C. Sec. 4901 to 4918.

In compliance.

This Act establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. Federal agencies are required to limit noise emissions to within compliance levels. Noise emission levels at the Project site would increase above current levels temporarily in the event of construction of improvements or features identified in the proposed Master Plan revision. Appropriate measures would be taken to keep the noise level within the compliance levels.

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

In compliance.

This law prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The actions identified in the proposed Master Plan revision would not involve the construction of structures within the NWCA.

Floodplain Management (E.O. 11988).

In compliance.

Section 1 requires each agency to provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal

activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. The actions identified in the proposed Master Plan revision would not affect the flood holding capacity or flood surface profiles of the Ohio River at the NWCA.

Protection of Wetlands (E.O. 11990).

In compliance.

Federal agencies shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies responsibilities. Each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The actions identified in the proposed Master Plan revision would not involve construction in, or affects to, wetlands.

8 Public Involvement

In compliance with 40 CFR 1501.4(e)(2), on September 12th, 2018, this EA was circulated for a 30-day review to concerned agencies, organizations, and the interested public. All comments received during this review period were evaluated and resulted in no significant changes to the EA. All received comments are located in the EA Appendix. The EA and Finding of no Significant Impact (FONSI) will be retained in the Louisville District's administrative files for future reference and as a record of NEPA compliance.

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9 REFERENCES

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Environmental Assessment (EA) Appendix

NRCS Soil Mapping

Soil Map—Clark County, Indiana, Floyd County, Indiana, and Jefferson County, Kentucky
(Falls of the Ohio WCA)



Map Scale: 1:28,500 if printed on A landscape (11" x 8.5") sheet.

0 400 800 1600 2400 Meters

0 1000 2000 4000 6000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84



**Natural Resources
Conservation Service**


Web Soil Survey
National Cooperative Soil Survey

11/14/2017
Page 1 of 3

Soil Map—Clark County, Indiana, Floyd County, Indiana, and Jefferson County, Kentucky
(Falls of the Ohio WCA)


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

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

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Clark County, Indiana

Survey Area Data: Version 20, Sep 18, 2017

Soil Survey Area: Floyd County, Indiana

Survey Area Data: Version 22, Sep 18, 2017

Soil Survey Area: Jefferson County, Kentucky

Survey Area Data: Version 16, Sep 25, 2017

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: May 24, 2014—Jul 5, 2014

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HufAK	Huntington silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration	4.5	0.3%
Uaa	Udorthents, cut and filled	20.0	1.4%
UaoAK	Udifluvents, cut and filled- Urban land complex, 0 to 2 percent slopes, occasionally flooded, brief duration	44.9	3.1%
UnpA	Urban land-Udarents, loamy substratum, complex, terrace, 0 to 3 percent slopes	2.4	0.2%
W	Water	61.0	4.2%
Subtotals for Soil Survey Area		132.8	9.2%
Totals for Area of Interest		1,444.7	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Uaa	Udorthents, cut and filled	0.4	0.0%
UaoAK	Udifluvents, cut and filled- Urban land complex, 0 to 2 percent slopes, occasionally flooded, brief duration	12.8	0.9%
W	Water	18.1	1.3%
Subtotals for Soil Survey Area		31.3	2.2%
Totals for Area of Interest		1,444.7	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CnF	Chagrín-Nelse-Wheeling complex, 2 to 75 percent slopes, frequently flooded	74.7	5.2%
Co	Combs fine sandy loam, occasionally flooded	13.6	0.9%
Ua	Urban land	0.9	0.1%
UaiC	Urban land-Udorthents complex, 0 to 12 percent slopes, rarely flooded	248.3	17.2%
UakF	Urban land-Udorthents complex, smoothed, 0 to 50 percent slopes	3.1	0.2%
W	Water	940.0	65.1%
Subtotals for Soil Survey Area		1,280.6	88.6%
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Flora of the NWCA

Flora of the Falls of the Ohio State Park (excluding grasses, sedges, ferns, and fungi).

Flora of the Falls of the Ohio State Park & National Wildlife Conservation Area

This inventory of the flowering plants, conducted by William and Margaret Adams, began June 1, 1993, and ended on May 31, 1994, with a full cycle of seasons. Included are all flowering plants, native and naturalized, with the exceptions of planted species and grasses, sedges, ferns, and fungi. The flora list is separated into two groups, herbaceous and woody. Herbaceous plants are those that die back to the ground in the winter, and woody plants are mainly the trees, shrubs, and a few vines. Species with an (*) in front of them indicate naturalized species (Adams, et al., 1994).

Herbaceous Flowering Plants:

Acanthaceae (Acanthus Family)

Justicia americana (Water Willow)

Ruellia strepens (Smooth Ruellia)

Aizoaceae (Carpetweed Family)

**Mollugo verticillata* (Carpetweed)

Alismataceae (Arrowhead Family)

Alisma subcordatum (Small Water Plantain)

Sagittaria latifolia (Common Arrowhead)

Amaranthaceae (Amaranth Family)

**Amaranthus hybridus* (Slender Amaranth)

Apocynaceae (Dogbane Family)

Apocynum cannabinum (Indian Hemp)

Araceae (Arum Family)

Arisaema dracontium (Green Dragon)

Aristolochiaceae (Birthwort Family)

Asarum canadense (Wild Ginger)

Asclepiadaceae (Milkweed Family)

Ampelamus albidus (Bluevine)

Balsaminaceae (Touch-me-not Family)

Impatiens capensis (Spotted Touch-me-not)

Impatiens pallida (Pale Touch-me-not)

Boraginaceae (Forget-me-not Family)

**Lithospermum arvense* (Corn Cromwell)

Caryophyllaceae (Pink Family)

**Stellaria media* (Common Chickweed)

Chenopodiaceae (Goosefoot Family)

**Chenopodium album* (Lamb's Quarters)

**Chenopodium ambrosioides* (Mexican Tea)

Commelinaceae (Spiderwort Family)

**Commelina communis* (Asiatic Dayflower)

Compositae (Composite Family)

Actinomeris alternifolia (Wingstem)

Ambrosia artemisiifolia (Common Ragweed)

Ambrosia trifida (Great Ragweed)

**Arctium minus* (Common Burdock)

**Artemissa vulgaris* (Common Mugwort)

Aster lateriflorus (Calico Aster)

Aster pilosus (Heath Aster)

Bidens bipinnata (Spanish Needles)

Bidens cernua (Nodding Bur Marigold)

Bidens frondosa (Beggar Ticks)

Compositae (Composite Family) cont.

Bidens polyepis (Tickseed Sunflower)

**Cichorium intybus* (Chicory)
Eclipta prostrata (Yerba De Tajo)
Erigeron canadensis (Horseweed)
Erigeron philadelphicus (Common Fleabane)
Eupatorium coelestinum (Mistflower)
Eupatorium fistulosum (Hollow Joe-Pye Weed)
Eupatorium perfoliatum (Boneset)
Eupatorium rugosum (White Snakeroot)
Eupatorium serotinum (Late-flowering Bonset)
Helenium autumnale (Sneezeweed)
Helianthus tuberosus (Jerusalem Artichoke)
Lactuca biennis (Tall Blue Lettuce)
**Lactuca scariola* (Prickly Lettuce)
Rudbeckia laciniata (Green-headed Coneflower)
Senecio glabellus (Butter-weed)
Solidago gigantea (Late Goldenrod)
**Sonchus asper* (Spiny-leaved Sow Thistle)
**Taraxacum officinale* (Common Dandelion)
Veronia altissima (Tall Ironweed)
Xanthium chinense (Common Cocklebur)

Convolvulaceae (Morning-Glory Family)

**Convolvulus arvensis* (Field Bindweed)
Convolvulus sepium (Hedge Bindweed)
Cuscuta gronovii (Common Dodder)
**Ipomoea coccinea* (Small Red Morning Glory)
**Ipomoea hederacea* (Ivy-leaved Morning Glory)
Ipomoea lacunose (Small White Morning Glory)
Ipomoea pandurata (Wild Potato)

Crassulaceae (Sedum Family)

**Sedum sarmentosum* (Bunge)

Cruciferae (Mustard Family)

**Alliaria officinalis* (Garlic Mustard)
**Capsella bursa-pastoris* (Shepherd's Purse)
Cardamine pensylvanica (Pennsylvania Bitter Cress)
**Draba verna* (Whitlow Grass)
Lepidium virginicum (Wild Peppergrass)
**Rorippa sylvestris* (Creeping Yellow Cress)
**Thlaspi arvense* (Field Pennycress)

Cucurbitaceae (Gourd Family)

Sicyos angulatus (One-seeded Bur Cucumber)

Dipsacaceae (Teasel Family)

**Dipsacus sylvestris* (Teasel)

Euphorbiaceae (Spurge Family)

Acalypha ostryifolia (none)
Acalypha rhomboidea (Three-seeded Mercury)
**Euphorbia dentata* (Wild Poinsettia)
Euphorbia maculata (Eyebane)
Euphorbia supina (Milk Purslane)

Fabaceae (Bean Family)

Amphicarpa bracteata (Hog Peanut)
Apios americana (Groundnut)
Cassia nictitans (Wild Sensitive Plant)
Desmanthus illinoensis (Prairie Mimosa)
Desmodium canescens (Hoary Tick Trefoil)

Fabaceae (Bean Family) cont.

**Lathyrus latifolius* (Everlasting Pea)

- **Medicago lupulina* (Black Medick)
- Strophostyles helvola* (Trailing Wild Bean)
- **Trifolium dubium* (Least Hop Clover)
- **Trifolium pretense* (Red Clover)
- **Trifolium repens* (White Clover)
- Fumariaceae (Bleeding Heart Family)
 - Corydalis flavula* (Yellow Corydalis)
- Geraniaceae (Geranium Family)
 - Geranium carolinianum* (Carolina Cranesbill)
- Iridaceae (Iris Family)
 - Sisyrinchium angustifolium* (Stout Blue-eyed Grass)
- Labiatae (Mint Family)
 - **Clechoma hederacea* (Ground Ivy)
 - **Lamium amplexicaule* (Henbit)
 - **Lamium purpureum* (Purple Dead Nettle)
 - **Leonurus cardiaca* (Motherwort)
 - Lycopus americanus* (Water Horehound)
 - Lycopus virginicus* (Virginia Bugleweed)
 - **Perilla frutescens* (Beef-steak Plant)
 - Physostegia virginiana* (Obedient Plant)
 - Scutellaria lateriflora* (Mad-dog Skullcap)
 - Stachy tenuifolia* (Common Hedge Nettle)
 - Teucrium canadense* (American Germander)
- Liliaceae (Lily Family)
 - **Allium vineale* (Field Garlic)
 - Erythronium americanum* (Trout Lily)
 - **Ornithogalum umbellatum* (Star-of-Bethlehem)
 - Polygonatum biflorum* (Smooth Solomon's Seal)
- Lobeliaceae (Lobelia Family)
 - Lobelia siphilitica* (Great Lobelia)
- Lythraceae (Loosestrife Family)
 - **Lythrum salicaria* (Purple Loosestrife)
- Malvaceae (Mallow Family)
 - **Abutilon theophrasti* (Velvetleaf)
 - Hibiscus moscheutos* (Swamp Rose Mallow)
- Moraceae (Mulberry Family)
 - **Humulus japonicus* (Common Hop)
- Onagraceae (Evening-Primrose Family)
 - Epilobium coloratum* (Purple-leaved Willow Herb)
 - Jussiaea decurrens* (Upright Primrose-willow)
 - Jussiaea repens* (Creeping Primrose-willow)
 - Oenothera biennis* (Common Evening Primrose)
- Oxalidaceae (Wood Sorrel Family)
 - Oxalis europaea* (Yellow Wood Sorrel)
- Passifloraceae (Passion Flower Family)
 - Passiflora incarata* (Passionflower)
- Phytolaccaceae (Pokeweed Family)
 - Phytolacca americana* (Pokeweed)
- Plantaginaceae (Plantain Family)
 - **Plantago lanceolata* (English Plantain)
 - Plantago rugelii* (Red-stemmed Plantain)
- Polygonaceae (Buckwheat Family)
 - **Polygonum cuspidatum* (Japanese Bamboo)
 - Polygonum lapathifolium* (Nodding Smartweed)
- Polygonaceae (Buckwheat Family) cont.
 - Polygonum pennsylvanicum* (Pink Knotweed)

- **Polygonum persicaria* (Lady's Thumb)
- Polygonum scandens* (Climbing False Buckwheat)
- Polygonum virginiana* (Jumpseed)
- **Rumex crispus* (Curled Dock)

Primulaceae (Primrose Family)

- **Lysimachia nummularia* (Moneywort)
- **Lysimachia vulgaris* (Garden Loosestrife)

Ranunculaceae (Buttercup Family)

- **Clematis terniflora* (Clematis)
- Ranunculus abortivus* (Small-flowered Crowfoot)

Rosaceae (Rose Family)

- **Duchesnea indica* (Indian Strawberry)
- Geum canadense* (White Avens)

Rubiaceae (Madder Family)

- Diodia teres* (Small Buttonweed)
- Diodia virginiana* (Buttonweed)
- Galium aparine* (Cleavers)
- Spermacoce glabra* (Smooth Buttonweed)

Saxifragaceae (Saxifrage Family)

- Penthorum sedoides* (Ditch Stonecrop)

Scrophulariaceae (Figwort Family)

- Conoclinium multifidum* (Conoclinium)
- Lindernia dubia* (False Pimpernel)
- Mimulus alatus* (Winged Monkey Flower)
- Mimulus ringens* (Monkey Flower)
- **Verbascum blattaria* (Moth Mullein)
- **Veronica arvensis* (Corn Speedwell)
- **Veronica hederifolia* (Speedwell)

Solanaceae (Nightshade Family)

- **Datura stramonium* (Jimsonweed)
- Physalis subglabrata* (Smooth Ground Cherry)
- Solanum carolinense* (Horse Nettle)
- **Solanum dulcamara* (Bittersweet Nightshade)
- **Solanum nigrum* (Black Nightshade)

Typhaceae (Cattail Family)

- Typha latifolia* (Common Cattail)

Umbelliferae (Parsley Family)

- Chaerophyllum procumbens* (Wild Chervil)
- **Conium maculatum* (Poison Hemlock)
- Cryptotaenia canadensis* (Honestwort)

Urticaceae (Nettle Family)

- Boehmeria cylindrica* (False Nettle)
- Laportea canadensis* (Wood Nettle)
- Pilea pumila* (Clearweed)
- Urtica procera* (Tall Nettle)

Valerianaceae (Valerian Family)

- Valerianella radiata* (Corn Salad)

Verbenaceae (Vervain Family)

- Phyla lanceolata* (Fog-fruit)
- Verbena hastata* (Blue Vervain)
- Verbena urticifolia* (White Vervain)

Violaceae (Violet Family)

- Viola papilionacea* (Common Blue Violet)

Woody Flowering Plants:

Aceraceae (Maple Family)

- Acer negundo* (Box Elder)
- Acer rubrum* (Red Maple)
- Acer saccharinum* (Silver Maple)
- Acer saccharum* (Sugar Maple)

Anacardiaceae (Cashew Family)

- Rhus glabra* (Smooth Sumac)
- Rhus radicans* (Poison Ivy)

Annonaceae (Custard Apple Family)

- Asimina triloba* (Pawpaw)

Betulaceae (Birch Family)

- Betula nigra* (River Birch)

Bignoniaceae (Bignonia Family)

- Bignonia capreolata* (Cross Vine)
- Campsis radicans* (Trumpet Creeper)
- Catalpa speciosa* (Northern Catalpa)

Caprifoliaceae (Honeysuckle Family)

- **Lonicera japonica* (Japanese Honeysuckle)
- **Lonicera maackii* (Amur Honeysuckle)
- Sambucus canadensis* (Common Elderberry)
- Symphoricarpos orbiculatus* (Coralberry)

Fabaceae (Bean Family)

- Amorpha fruticosa* (Indigobush)
- Cleditsia triacanthos* (Honey Locust)
- Robinia pseudo-acacia* (Black Locust)

Hippocastanaceae (Buckeye Family)

- Aesculus glabra* (Ohio Buckeye)

Juglandaceae (Walnut Family)

- Juglans nigra* (Black Walnut)

Lauraceae (Laurel Family)

- Lindera benzoin* (Spicebush)

Liliaceae (Lily Family)

- Smilax hispida* (Bristly Greenbrier)

Menispermaceae (Moonseed Family)

- Menispermum canadense* (Canada Moonseed)

Moraceae (Mulberry Family)

- **Broussonetia papyrifera* (Paper Mulberry)
- Maclura pomifera* (Osage-orange)
- **Morus alba* (White Mulberry)
- Morus rubra* (Red Mulberry)

Oleaceae (Olive Family)

- **Forsythia viridissima* (Forsythia)
- Fraxinus pennsylvanica* (Green Ash)

Platanaceae (Sycamore Family)

- Plantanus occidentalis* (Sycamore)

Rosaceae (Rose Family)

- **Crataegus calpodendron* (Pear Hawthorn)
- Prunus serotina* (Black Cherry)
- **Rosa multiflora* (Multiflora Rose)
- Rubus allegheniensis* (Blackberry)

Rubiaceae (Madder Family)
 Cephalanthus occidentalis (Buttonbush)
Salicaceae (Willow Family)
 Populus deltoids (Cottonwood)
 Salix interior (Sandbar Willow)
 Salix nigra (Black Willow)
 Salix caroliniana (Ward Willow)
Scrophulariaceae (Figwort Family)
 **Paulownia tomentosa* (Princess-tree)
Simarubiaceae (Quassia Family)
 **Ailanthus altissima* (Tree-Of-Heaven)
Ulmaceae (Elm Family)
 Celtis occidentalis (American Hackberry)
 Ulmus americana (American Elm)
 Ulmus rubra (Slippery Elm)
Vitaceae (Grape Family)
 Ampelopsis cordata (American Ampelopsis)
 Parthocissus quinquefolia (Virginia Creeper)
 Vitis aestivalis (Summer Grape)
 Vitis riparia (Riverbank Grape)

Flora of the Buttonbush Woods

The inventory of the vascular plants of the Buttonbush Woods was done by William Adams beginning in early March of 2002 and concluding in late October with the first hard freeze. Listed below are all families of vascular plants, native and naturalized, with the exceptions of Juncaceae, Cyperaceae, and Poaceae. Species with an (*) in front of them indicate naturalized species (Adams, 2002).

Aceraceae
 Acer nugundo (Box Elder Tree), very common
 Acer saccharinum (Silver Maple Tree), very common
Alismataceae
 Sagittaria latifolia (Common Arrowhead), common
Amaranthaceae
 **Achyranthes japonica* (Japanese Chaff Flower), common
 Amaranthus hybridus (Slender Amaranth), very common
Anacardiaceae
 Rhus glabra (Smooth Sumac Shrub/Tree), uncommon
 Rhus radicans (Poison Ivy), very common
Annonaceae
 Asimina triloba (Tall Pawpaw Shrub/Tree), uncommon
Apiaceae
 Chaerophyllum procumbens (Wild Chervil), common
 Cicuta maculate (Water Hemlock), uncommon
 **Daucus carota* (Queen Anne's lace), uncommon
Apocynaceae
 Apocynum cannabinum (Indiana Hemp), common
Aristolochiaceae
 Asarum canadense (Wild Ginger), common
Asclepiadaceae
 **Ampelamus albidus* (Bluevine), uncommon
 Asclepias incarnate (Swamp Milkweed), common

Asteraceae

Actinomeris alternifolia (Wingstem), common
Ambrosia artemisiifolia (Common Ragweed), common
Ambrosia trifida (Great Ragweed), common
**Artemisia annua* (Annual Wormwood), uncommon
**Artemisia vulgaris* (Common Mugwort), common
Aster lateriflorus (Calico Aster), common
Aster pilosus (Heath Aster), very common
Bidens cernua (Nodding Bur Marigold), uncommon
Bidens frondosa (Beggar Ticks), common
**Cichorium intybus* (Chicory), uncommon
Cirsium discolor (Field Thistle), uncommon
Eclipta prostrata (Yerba De Tajo), uncommon
Erechtites hieracifolia (Pilewort), common
Erigeron annuus (Daisy Fleabane), common
Erigeron canadensis (Horseweed), common
Erigeron philadelphicus (Common Fleabane), common
Erigeron strigosus (Lesser Daisy Fleabane), common
Eupatorium perfoliatum (Boneset), very common
Eupatorium rugosum (White Snakeroot), very common
Eupatorium serotinum (Late-flowering Boneset), common
Helianthus tuberosus (Jerusalem Artichoke), common
Iva annua (Marsh Elder), uncommon, Clark County record with voucher at IUS
Lactuca biennis (Tall Blue Lettuce), common
Rudbeckia laciniata (Green-headed Coneflower), uncommon
Senecio aureus (Golden Ragwort), uncommon
Senecio glabellus (Butter-weed), uncommon
Solidago gigantea (Late Goldenrod), common
**Taraxacum officinale* (Common Dandelion), common
Veronia altissima (Tall Ironweed), common
Xanthium strumarium (Common Clotbur), common

Balsaminaceae

Impatiens capensis (Spotted Touch-me-not), common
Impatiens pallida (Pale Touch-me-not), common

Bignoniaceae

Campsis radicans (Trumpet Creeper), very common
Catalpa speciosa (Northern Catalpa Tree), uncommon

Boraginaceae

**Lithospermum arvense* (Corn Gromwell), uncommon

Brassicaceae

**Alliaria officinalis* (Garlic Mustard), very common
Cardamine pensylvanica (Pennsylvania Bitter Cress), common
**Draba verna* (Whitlow Grass), uncommon
Rorippa islandica (Marsh Yellow Grass), uncommon

Caesalpiniaceae

Gleditsia triacanthos (Honey Locust Tree), uncommon

Caryophyllaceae

**Lychnis alba* (White Campion), uncommon
**Stellaria media* (Common Chickweed), very common

Caprifoliaceae

**Lonicera maackii* (Amur Honeysuckle Shrub), common
**Lonicera japonica* (Japanese Honeysuckle), very common
Sambucus canadensis (Elderberry Shrub/Tree), uncommon
Symphoricarpos orbiculatus (Coralberry Shrub), uncommon

Celastraceae

Eunonymus americanus (Strawberry Bush), uncommon

Chenopodiaceae

**Chenopodium album* (Lamb's Quarters), uncommon

Commelinaceae

**Commelina communis* (Asiatic Dayflower), uncommon

Tradescantia virginiana (Spiderwort), uncommon

Convolvulaceae

**Convolvulus arvensis* (Field Bindweed), uncommon

Convolvulus sepium (Hedge Bindweed), common

**Ipomoea hederacea* (Ivy-leaved Morning Glory), uncommon

Ipomoea lacunose (Small White Morning Glory), common

Ipomoea pandurata (Wild Potato Vine), common

Cornaceae

Cornus oblique (Pale Dogwood Tree), uncommon, Clark County record with voucher at IUS

Cucurbitaceae

Melothria pendula (Creeping Cucumber), uncommon, considered extirpated until recently, voucher at IUS

Sicyos angulatus (One-seeded Bur Cucumber), common

Cupressaceae

Juniperus virginiana (Red Cedar Tree), uncommon

Equisetaceae

Equisetum arvense (Field Horsetail), uncommon

Euphorbiaceae

Acalypha rhomboidea (Three-seeded Mercury), common

**Euphorbia dentata* (Wild Poinsettia), uncommon

Fabaceae

Amorpha fruticosa (Indigobush Shrub/Tree), common

Amphicarpa bracteata (Hog Peanut), common

Apios americana (Groundnut), uncommon

Cassia marilandica (Souther Wild Senna), uncommon

Desmodium canescens (Hoary Tick Trefoil), very common

Robinia pseudo-acacia (Black Locust Tree), common

**Trifolium pretense* (Red Clover), common

**Trifolium repens* (White Clover), common

Fagaceae

Quercus shumardii (Shumard Oak Tree), uncommon

Juglandaceae

Juglans nigra (Black Walnut Tree), uncommon

Lamiaceae

**Glechoma hederacea* (Ground Ivy), very common

**Lamium purpureum* (Purple Dead Nettle), common

Lycopus americanus (Water Horehound), common

Lycopus virginicus (Virginia Bugleweed), uncommon

**Perilla frutescens* (Perilla), uncommon

Scutellaria lateriflora (Mad-dog Skullcap), common

Stachys tenuifolia (Common Hedge Nettle), uncommon

Liliaceae

**Allium vineale* (Field Garlic), common

Smilax rotundifolia (Common Greenbrier), common

Smilax tamnoides (Bristly Greenbrier), common

Lythraceae

**Lythrum salicaria* (Purple Loosestrife), uncommon

Malvaceae

Hibiscus militaris (Halbred-leaved Swamp Rose Mallow), uncommon

Hibiscus moscheutos (Swamp Rose Mallow), common

Menispermaceae

Menispermum canadense (Moonseed), common

Mimosaceae

Desmanthus illinoensis (Prairie Mimosa), common

Moraceae

Maclura pomifera (Osage Orange Tree), uncommon

**Morus alba* (White Mulberry Shrub/Tree), very common

Oleaceae

Fraxinus pennsylvanica (Green Ash Tree), very common

Onagraceae

Epilobium coloratum (Purple-leaved Willow Herb), uncommon

Jussiaea decurrens (Upright Primrose-willow), uncommon

Oenothera biennis (Common Evening Primrose), uncommon

Oxalidaceae

Oxalis europaea (Yellow Wood Sorrel), very common

Phytolaccaceae

Phytolacca americana (Pokeweed), very common

Plantaginaceae

**Plantago lanceolata* (English Plantain), common

Plantago rugelii (Red-stemmed Plantain), common

Platanaceae

Platanus occidentalis (Sycamore Tree), common

Polemoniaceae

Phlox paniculata (Garden Phlox), common

Polygonaceae

Polygonum hydropiper (Water Pepper), uncommon

Polygonum lapathifolium (Nodding Smartweed), very common

**Polygonum persicaria* (Lady's Thumb), very common

Polygonum scandens (Climbing False Buckwheat), common

Polygonum virginianum (Jumpseed), common

**Rumex crispus* (Curled Dock), very common

Primulaceae

**Lysimachia nummularia* (Moneywort), common

Ranunculaceae

Clematis virginiana (Virgin's Bower), uncommon

Ranunculus abortivus (Small-flowered Crowfoot), common

Rosaceae

**Crataegus calpodendron* (Pear Hawthorn Tree), uncommon

**Duchesnea indica* (Indian Strawberry), common

Geum canadense (White Avena), uncommon

**Potentilla recta* (Rough-fruited Cinquefoil), uncommon

Prunus serotina (Black Cherry Tree), common

Rosa setigera (Prairie Rose), uncommon

**Rosa multiflora* (Multiflora Rose), common

Rubus allegheniensis (Common Blackberry), uncommon

Rubiaceae

Cephalanthus occidentalis (Buttonbush Shrub), common

Diodia teres (Small Buttonweed), uncommon

Galium aparine (Cleavers), common

Galium obtusum (Wild Madder), uncommon

Salicaceae

Populus deltoides (Common Cottonwood Tree), common

Salix interior (Sandbar Willow Tree), common

Salix nigra (Black Willow Tree), common

Saururaceae

Saururus cernuus (Lizard's Tail), uncommon

Saxifragaceae

Penthorum sedoides (Ditch Stonecrop), common

Scrophulariaceae

- Lindernia dubia* (False Pimpernel), uncommon
- Mimulus alatus* (Winged Monkey Flower), common
- * *Veronica hederifolia* (Speedwell), common
- * *Veronica polita* (Wayside Speedwell), uncommon

Solanaceae

- Solanum carolinense* (Horse Nettle), common
- * *Solanum nigrum* (Black Nightshade), uncommon

Sparganiaceae

- Sparganium eurycarpum* (Great Bur Reed), common, Clark County record with voucher at IUS

Typhaceae

- Typha latifolia* (Common Cattail), common

Ulmaceae

- Celtis occidentalis* (American Hackberry Tree), very common
- Ulmus americana* (American Elm), very common
- Ulmus rubra* (Slippery Elm Tree), uncommon

Urticaceae

- Boehmeria cylindrical* (False Nettle), common
- Laportea Canadensis* (Wood Nettle), very common
- Pilea pumila* (Clearweed), very common

Verbenaceae

- Phyla lanceolata* (Fog Fruit), uncommon
- Verbena hastata* (Blue Vervain), uncommon
- Verbena urticifolia* (White Vervain), uncommon

Violaceae

- Viola papilionacea* (Common Blue Violet), common

Vitaceae

- Parthenocissus quinquefolia* (Virginia Creeper), very common
- Vitis aestivalis* (Summer Grape), common

Fish of the Middle Ohio River
(Pearson and Pearson 1989)

Fish of the Middle Ohio River, organized according to Pearson and Pearson, 1989

<i>Ichthyomyzon bdellium</i>	Ohio Lamprey
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey
<i>Lampetra appendix</i>	American Brook Lamprey
<i>Acipenser fulvescens</i>	Lake Sturgeon
<i>Scaphiromhynchus platorhynchus</i> †	Shovel-nose Sturgeon
<i>Polyodon spathula</i>	Paddlefish
<i>Lepisosteus oculatus</i>	Spotted Gar
<i>Lepisosteus osseus</i>	Longnose Gar
<i>Lepisosteus platostomus</i> †	Shortnose Gar
<i>Lepisosteus spatula</i>	Alligator Gar
<i>Amia calva</i>	Bowfin
<i>Anguilla rostrata</i>	American Eel
<i>Alosa alabamae</i>	Alabama Shad
<i>Alosa chrysochloris</i> †	Skipjack Shad
<i>Alosa pseudoharengus</i> *	Alewife
<i>Alosa sapidissima</i> †	American Shad
<i>Dorosoma cepedianum</i>	American Gizzard Shad
<i>Dorosoma petense</i>	Threadfin Shad
<i>Hiodon alosoides</i> †	Goldeye
<i>Hiodon tergisus</i> †	Mooneye
<i>Oncorhynchus kisutch</i> *	Coho Salmon
<i>Salmo trutta</i> *	Sea Trout
<i>Osmerus mordax</i>	Atlantic Rainbow Smelt
<i>Esox americanus vermiculatus</i>	Grass Pickerel
<i>Esox lucius</i> *	Northern Pike
<i>Esox masquinongy</i>	Muskellunge
<i>Campostoma anomalum</i>	Stoneroller
<i>Carassius auratus</i> *	Goldfish
<i>Clinostomus elongatus</i>	Redside Dace
<i>Ctenopharyngodon idella</i> *	Grass Carp
<i>Cyprinus carpio</i> *	Carp
<i>Ericymba buccata</i>	Silverjaw Minnow
<i>Hybognathus nuchalis</i>	Silvery Minnow
<i>Hybopsis aestivalis</i>	Speckled Chub
<i>Hybopsis amblops</i> †	Bigeye Chub
<i>Hybopsis dissimilis</i>	Streamline Chub
<i>Hybopsis storeriana</i>	Silver Chub
<i>Hypophthalmichthys molitrix</i> *	Silver Carp
<i>Nocomis biguttatus</i>	Hornyhead Chub
<i>Nocomis micropogon</i>	River Chub
<i>Notemigonus crysoleucas</i>	Golden Shiner
<i>Notropis ardens</i>	Rosefin Shiner
<i>Notropis atherinoides</i>	Emerald Shiner
<i>Notropis blennioides</i>	River Shiner
<i>Notropis boops</i>	Bigeye Shiner
<i>Notropis burchanani</i>	Ghost Shiner
<i>Notropis chrysocephalus</i>	Striped Shiner
<i>Notropis cornutus</i>	Common Shiner
<i>Notropis fumeus</i>	Ribbon Shiner
<i>Notropis hudsonius</i>	Spottail Shiner
<i>Notropis photogenis</i>	Silver Shiner
<i>Notropis rubellus</i>	Rosyface Shiner
<i>Notropis spiloterus</i>	Spotfin Shiner
<i>Notropis stamineus</i>	Sand Shiner

<i>Notropis volucellus</i>	Mimic Shinner
<i>Notropis whipplei</i>	Steelcolor Shiner
<i>Phenacobius mirabilis</i>	Suckermouth Minnow
<i>Pimephales notatus</i> [†]	Bluntnose Minnow
<i>Pimephales promelas</i>	Fathead Minnow
<i>Pimephales vigilax</i>	Bullhead Minnow
<i>Rhinichthys atraculatus</i>	Blacknose Dace
<i>Semotilus atromaculatus</i>	Cheek Chub
<i>Carpionodes carpio</i> [†]	River Carpsucker
<i>Carpionodes cyprinus</i>	Quillback
<i>Carpionodes velifer</i> [†]	Highfin Sucker
<i>Catostomus commersoni</i>	White Sucker
<i>Cycleptus elongates</i> [†]	Blue Sucker
<i>Erimyzon sucetta</i>	Lake Chubsucker
<i>Hypentelium nigricans</i>	Northern Hogsucker
<i>Ictiobus bubalus</i> [†]	Smallmouth Buffalo
<i>Ictiobus cyprinellus</i>	Bigmouth Buffalo
<i>Ictiobus niger</i> [†]	Black Buffalo
<i>Minytrema melanops</i> [†]	Spotted Sucker
<i>Moxostoma anisurum</i> [†]	Silver Redhorse
<i>Moxostoma carinatum</i>	River Redhorse
<i>Moxostoma duquesnei</i> [†]	Black Redhorse
<i>Moxostoma erythrurum</i> [†]	Golden Redhorse
<i>Moxostoma macrolepidotum</i>	Shortnose Redhorse
<i>Moxostoma valenciennesi</i>	Greater Redhorse
<i>Icatulurus catus</i>	White Catfish
<i>Icatulurus furcatus</i>	Blue Catfish
<i>Icatulurus melas</i> [†]	Black Bullhead
<i>Icatulurus natalis</i>	Yellow Bullhead
<i>Icatulurus nebulosus</i>	Brown Bullhead
<i>Icatulurus punctatus</i> [†]	Channel Catfish
<i>Noturus eleutherus</i>	Mountain Madtom
<i>Noturus flavus</i> [†]	Stonecat
<i>Noturus gyrinus</i>	Tadpole Madtom
<i>Noturus miurus</i>	Brindled Madtom
<i>Pylodictis olivaris</i> [†]	Flathead Catfish
<i>Aphredoderus sayanus</i>	Pirateperch
<i>Percopsis omiscomaycus</i>	Troutperch
<i>Lota lota</i>	American Burbot
<i>Fundulus notatus</i>	Blackstripe Topminnow
<i>Gambusia affinis</i>	Mosquito Fish
<i>Labidesthes sicculus</i>	Brook Silverside
<i>Morone chrysops</i>	White Bass
<i>Morone mississippiensis</i>	Yellow Bass
<i>Morone saxatilis</i> [*]	Striped Bass
<i>Ambloplites rupestris</i>	Rock Bass
<i>Leponis cyanellus</i>	Green Sunfish
<i>Leponis gibbosus</i>	Pumpkinseed
<i>Leponis gulosus</i>	Warmouth
<i>Leponis humilis</i>	Orangespotted Sunfish
<i>Leponis macrochirus</i> [†]	Bluegill
<i>Leponis megalotis</i>	Longear Sunfish
<i>Leponis microlophus</i>	Redear Sunfish
<i>Micropterus dolomieu</i>	Smallmouth Bass
<i>Micropterus punctulatus</i>	Spotted Bass
<i>Micropterus salmoides</i>	Largemouth Bass

<i>Pomoxis annularis</i> ^t	White Crappie
<i>Pomoxis nigromaculatus</i>	Black Crappie
<i>Ammocrypta asperella</i>	Crystal Darter
<i>Ammocrypta pellucida</i>	Eastern Sand Darter
<i>Etheostoma blennioides</i> ^t	Greenside Darter
<i>Etheostoma caeruleum</i>	Rainbow Darter
<i>Etheostoma flabellare</i> ^t	Fantail Darter
<i>Etheostoma kennicotti</i>	Stripetail Darter
<i>Etheostoma nigrum</i>	Johnny Darter
<i>Etheostoma spectabile</i>	Orangethroat Darter
<i>Etheostoma variatum</i>	Variegated Darter
<i>Etheostoma zonale</i>	Banded Darter
<i>Perca flavescens</i>	Yellow Perch
<i>Percina caprodes</i> ^t	Logperch
<i>Percina phoxocephala</i>	Slenderhead Darter
<i>Percina sciera</i>	Dusky Darter
<i>Percina shumardi</i>	River Darter
<i>Stizostedion canadense</i>	Sauger
<i>Stizostedion vitreum vitreum</i>	Walleye
<i>Aplodinotus grunniens</i> ^t	Freshwater Drum
<i>Cottus carolinae</i>	Mottled Sculpin

^t = type species

* = introduced

Birds of the Falls of the Ohio Seasonal
Checklist (Palmer-Ball)

Birds of the Falls of the Ohio Seasonal Checklist (Palmer-Ball)

Legend

Seasons

W = winter (Dec.-Feb.)
 s = spring (Mar.-May)
 S = summer (June-July)
 F = fall (Aug.-Nov.)

Abundance

- = not recorded
 o = occasional
 r = rare, but not to be expected, but sometimes observed
 u = uncommon, or often present, but can be hard to find
 f = fairly common, or usually present, and observed most of the time
 c = common, or usually numerous and should be observed
 An asterisk (*) after the species name indicates breeding has been confirmed within the Falls of the Ohio Area.

	W	s	S	F
LOONS & GREBES				
Common Loon (<i>Gavia immer</i>).....	r	u	-	f
Pied-billed Grebe (<i>Podilymbus podiceps</i>).....	u	f	o	f
Horned Grebe (<i>Podiceps auritus</i>)	r	u	-	u
CORMORANTS				
Double-crested Cormorant (<i>Phalacrocorax auritus</i>)	u	f	r	f
HERONS & EGRETS				
Great Blue Heron (<i>Ardea herodias</i>)	u	f	f	f
Great Egret (<i>Ardea alba</i>).....	-	r	u	u
Snowy Egret (<i>Egretta thula</i>).....	-	o	r	r
Little Blue Heron* (<i>Egretta caerulea</i>)	-	r	r	r
Cattle Egret* (<i>Bubulcus ibis</i>)	-	r	r	r
Green Heron* (<i>Butorides virescens</i>).....	-	f	f	f
Black-crowned Night Heron* (<i>Nycticorax nycticorax</i>)	-	c	c	f
Yellow-crowned Night Heron* (<i>Nyctanassa violacea</i>)	-	r	r	r
VULTURES				
Black Vulture (<i>Coragyps atratus</i>)	o	r	r	r
Turkey Vulture (<i>Cathartes aura</i>)	r	u	u	f
WATERFOWL				
Snow Goose (<i>Chen caerulescens</i>)	r	r	-	r
Canada Goose (<i>Branta canadensis</i>).....	u	u	r	u
Wood Duck* (<i>Aix sponsa</i>)	-	u	u	u
Gadwall (<i>Anas strepera</i>)	u	u	-	f
American Widgeon (<i>Anas Americana</i>)	u	u	-	u
American Black Duck (<i>Anas rubripes</i>)	f	f	o	f
Mallard* (<i>Anas platyrhynchos</i>)	c	c	f	c
Blue-winged Teal* (<i>Anas discors</i>).....	-	f	o	f
Northern Shoveler (<i>Anas clypeata</i>).....	o	u	-	u
Northern Pintail (<i>Anas acuta</i>).....	o	r	-	r
Green-winged Teal (<i>Anas crecca</i>)	r	r	-	u
Canvasback (<i>Aythya valisineria</i>)	f	u	-	u
Redhead (<i>Aythya Americana</i>).....	r	u	-	u
Ring-necked Duck (<i>Aythya collaris</i>)	f	f	o	f
Greater Scaup (<i>Aythya marila</i>).....	r	r	-	r
	W	s	S	F

WATERFOWL (cont.)

Lesser Scaup (<i>Aythya affinis</i>)	f f - f
Surf Scoter (<i>Melanitta perspicillata</i>)	o - - r
White-winged Scoter (<i>Melanitta fusca</i>)	o - - o
Black Scoter (<i>Melanitta nigra</i>)	o - - o
Long-tailed Duck (<i>Clangula hyemalis</i>)	o o - o
Bufflehead (<i>Bucephala albeola</i>)	u f - f
Common Goldeneye (<i>Bucephala clangula</i>)	u u - u
Hooded Merganser (<i>Lophodytes cucullatus</i>)	u u - u
Common Merganser (<i>Mergus merganser</i>)	u r - r
Red-breasted Merganser (<i>Mergus serrator</i>)	u f o f
Ruddy Duck (<i>Oxyura jamaicensis jamaicensis</i>)	r u - u

HAWKS

Osprey (<i>Pandion haliaetus</i>)	- u o f
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	r - - r
Northern Harrier (<i>Circus cyaneus</i>)	o - - o
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	u u - u
Cooper's Hawk (<i>Accipiter cooperii</i>)	u u r f
Red-shouldered Hawk (<i>Buteo lineatus</i>)	u u u u
Broad-winged Hawk (<i>Buteo platypterus</i>)	- r - u
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	f f f f
Rough-legged Hawk (<i>Buteo lagopus</i>)	o - - -
American Kestrel* (<i>Falco sparverius</i>)	f f f f
Merlin (<i>Falco columbarius</i>)	- - - r
Peregrine Falcon* (<i>Falco peregrinus</i>)	u u u u

GAME & MARSH BIRDS

Northern Bobwhite* (<i>Colinus virginianus</i>)	r r r r
Sora (<i>Porzana carolina</i>)	- - - r
American Coot (<i>Fulica americana</i>)	u f o f
Sandhill Crane (<i>Grus canadensis</i>)	r r - u

SHOREBIRDS

Black-bellied Plover (<i>Pluvialis squatarola</i>)	- r - u
American Golden-Plover (<i>Pluvialis dominica</i>)	- - - u
Semipalmated Plover (<i>Charadrius semipalmatus</i>)	- r o u
Piping Plover (<i>Charadrius melodus</i>)	- o - r
Killdeer* (<i>Charadrius vociferous</i>)	u f c c
American Avocet (<i>Recurvirostra americana</i>)	- o - r
Greater Yellowlegs (<i>Tringa melanoleuca</i>)	- r r u
Lesser Yellowlegs (<i>Tringa flavipes</i>)	- u r f
Solitary Sandpiper (<i>Tringa solitaria</i>)	- u r u
Willet (<i>Catoptrophorus semipalmatus</i>)	- r o r
Spotted Sandpiper* (<i>Actitis macularia</i>)	- u u f
Upland Sandpiper (<i>Bartramia longicauda</i>)	- - - o
Marbled Godwit (<i>Limosa fedoa</i>)	- o - o
Ruddy Turnstone (<i>Arenaria interpres</i>)	- r o u
Red Knot (<i>Calidris canutus</i>)	- - - o
Sanderling (<i>Calidris alba</i>)	- o o u
Semipalmated Sandpiper (<i>Calidris pusilla</i>)	- u r f
Western Sandpiper (<i>Calidris mauri</i>)	- - o u
Least Sandpiper (<i>Calidris minutilla</i>)	r u u f
White-rumped Sandpiper (<i>Calidris fuscicollis</i>)	- r o o
Baird's Sandpiper (<i>Calidris bairdii</i>)	- - - u
Pectoral Sandpiper (<i>Calidris melanotos</i>)	o u u f
Dunlin (<i>Calidris alpina</i>)	o r - u
Stilt Sandpiper (<i>Calidris himantopus</i>)	- - - u

W s S F

SHOREBIRDS (cont.)

Buff-breasted Sandpiper (<i>Tryngites subruficollis</i>).....	- - - u
Short-billed Dowitcher (<i>Limnodromus griseus</i>).....	- r r u
Long-billed Dowitcher (<i>Limnodromus scolopaceus</i>).....	- - - o
Common Snipe (<i>Gallinago gallinago</i>).....	- - - r
American Woodcock* (<i>Scolopax minor</i>).....	- u r -
Wilson's Phalarope (<i>Phalaropus tricolor</i>).....	- - - r
Red-necked Phalarope (<i>Phalaropus lobatus</i>).....	- - - o
Red Phalarope (<i>Phalaropus fulicarius</i>).....	- - - o

GULLS & TERNS

Laughing Gull (<i>Larus atricilla</i>).....	- r o o
Franklin's Gull (<i>Larus pipixcan</i>).....	o o - r
Bonaparte's Gull (<i>Larus Philadelphia</i>).....	r f o f
Ring-billed Gull (<i>Larus delawarensis</i>).....	c f r f
Herring Gull (<i>Larus argentatus</i>).....	f u o u
Glaucous Gull (<i>Larus hyperboreus</i>).....	o - - -
Caspian Tern (<i>Sterna caspia</i>).....	- u r f
Common Tern (<i>Sterna hirundo</i>).....	- r o r
Forster's Tern (<i>Sterna forsteri</i>).....	o u o u
Least Tern (<i>Sterna antillarum</i>).....	- o o o
Black Tern (<i>Chlidonias niger</i>).....	- r o u

DOVES

Rock Dove* (<i>Columba livia</i>).....	c c c c
Mourning Dove* (<i>Zenaida macroura</i>).....	f c c c

CUCKOOS

Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>).....	- r - r
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>).....	- f r f

OWLS

Eastern Screech-Owl (<i>Otus asio</i>).....	u u u u
Great Horned Owl* (<i>Bubo virginianus</i>).....	u u u u
Barred Owl (<i>Strix varia</i>).....	o o o o

GOATSUCKERS & ALLIES

Common Nighthawk (<i>Chordeiles minor</i>).....	- u u f
Whip-poor-will (<i>Caprimulgus vociferus</i>).....	- r - -
Chimney Swift (<i>Chaetura pelagica</i>).....	- f f c
Ruby-throated Hummingbird (<i>Archilochus colubris</i>).....	- u u f
Belted Kingfisher* (<i>Ceryle alcyon</i>).....	u u f f

WOODPECKERS

Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>).....	- u - u
Red-bellied Woodpecker* (<i>Melanerpes carolinus</i>).....	f f f f
Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>).....	- u - u
Downy Woodpecker* (<i>Picoides pubescens</i>).....	c c c c
Hairy Woodpecker (<i>Picoides villosus</i>).....	u u u u
Northern Flicker* (<i>Colaptes auratus</i>).....	f f f f
Pileated Woodpecker* (<i>Dryocopus pileatus</i>).....	r r r r

FLYCATCHERS

Olive-sided Flycatcher (<i>Contopus cooperi</i>).....	- r - r
Eastern Wood-Pewee (<i>Contopus virens</i>).....	- f u f
Yellow-bellied Flycatcher (<i>Empidonax flaviventris</i>).....	- r - r
Acadian Flycatcher (<i>Empidonax virescens</i>).....	- u - r
Alder Flycatcher (<i>Empidonax alnorum</i>).....	- r - -
Willow Flycatcher* (<i>Empidonax traillii</i>).....	- u u -
Least Flycatcher (<i>Empidonax minimus</i>).....	- f - u
Eastern Phoebe (<i>Sayornis phoebe</i>).....	- u - u

W s S F

FLYCATCHERS (cont.)

Great Crested Flycatcher (<i>Myiarchus crinitus</i>).....	- u o u
Eastern Kingbird* (<i>Tyrannus tyrannus</i>).....	- f r r

VIREOS

White-eyed Vireo (<i>Vireo griseus</i>).....	- u - u
Yellow-throated Vireo (<i>Vireo flavifrons</i>).....	- u - u
Blue-headed Vireo	- u - u
Warbling Vireo (<i>Vireo gilvus</i>).....	- f u u
Philadelphia Vireo (<i>Vireo philadelphicus</i>).....	- u - u
Red-eyed Vireo (<i>Vireo olivaceus</i>).....	- f r f

CROWS & JAYS

Blue Jay* (<i>Cyanocitta cristata</i>).....	c c c c
American Crow* (<i>Corvus brachyrhynchos</i>).....	c c c c

LARKS

Horned Lark (<i>Eremophila alpestris</i>).....	o o - o
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SWALLOWS

Purple Martin (<i>Progne subis</i>).....	- u f u
Tree Swallow (<i>Tachycineta bicolor</i>).....	- r o u
Northern Rough-winged Swallow (<i>Stelgidopteryx serripennis</i>).....	- u r u
Bank Swallow (<i>Riparia riparia</i>).....	- u o r
Cliff Swallow (<i>Petrochelidon pyrrhonota</i>).....	- r - r
Barn Swallow* (<i>Hirundo rustica</i>).....	- u u f

CHICKADEES & TITMOUSES

Carolina Chickadee* (<i>Poecile carolinensis</i>).....	c c c c
Tufted Titmouse* (<i>Baeolophus bicolor</i>).....	c c c c

NUTHATCHES

Red-breasted Nuthatch (<i>Sitta canadensis</i>).....	- - - r
White-breasted Nuthatch (<i>Sitta carolinensis</i>).....	r r r r

CREEPERS

Brown Creeper (<i>Certhia americana</i>).....	u f - f
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WRENS

Carolina Wren* (<i>Thryothorus ludovicianus</i>).....	c c c c
House Wren* (<i>Troglodytes aedon</i>).....	- c c f
Winter Wren (<i>Troglodytes troglodytes</i>).....	r u - u
Sedge Wren (<i>Cistothorus platensis</i>).....	- - - o
Marsh Wren (<i>Cistothorus palustris</i>).....	- - - r

KINGLETS, GNATCATCHERS, & THRUSHES

Golden-crowned Kinglet (<i>Regulus satrapa</i>).....	u f - f
Ruby-crowned Kinglet (<i>Regulus calendula</i>).....	- f - f
Blue-gray Gnatcatcher (<i>Poliophtila caerulea</i>).....	- f - f
Eastern Bluebird (<i>Sialia sialis</i>).....	r r r r
Veery (<i>Catharus fuscescens</i>).....	- u - r
Gray-cheeked Thrush (<i>Catharus minimus</i>).....	- f - f
Swainson's Thrush (<i>Catharus ustulatus</i>).....	- c - c
Hermit Thrush (<i>Catharus guttatus</i>).....	- u - u
Wood Thrush (<i>Hylocichla mustelina</i>).....	- u o r
American Robin* (<i>Turdus migratorius</i>).....	u c c c

MIMIC THRUSHES

Gray Catbird* (<i>Dumetella carolinensis</i>).....	- f u f
Northern Mockingbird* (<i>Mimus polyglottos</i>).....	u u u u
Brown Thrasher* (<i>Toxostoma rufum</i>).....	o f r f

STARLINGS

European Starling* (<i>Sturnus vulgaris</i>).....	c c c c
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W s S F

PIPITS

American Pipit (*Anthus rubescens*)..... o o - u

WAXWINGS

Cedar Waxwing (*Bombycilla cedrorum*)..... r f r f

WOOD WARBLERS

Blue-winged Warbler (*Vermivora pinus*) - u o u

Golden-winged Warbler (*Vermivora chrysoptera*)..... - r - u

Tennessee Warbler (*Vermivora peregrina*)..... - c - c

Orange-crowned Warbler (*Vermivora celata*) - r - u

Nashville Warbler (*Vermivora ruficapilla*) - f - f

Northern Parula (*Parula americana*) - r o u

Yellow Warbler* (*Dendroica petechia*) - f f u

Chestnut-sided Warbler (*Dendroica pensylvanica*) - f - f

Magnolia Warbler (*Dendroica magnolia*) - f - c

Cape May Warbler (*Dendroica tigrina*) - u - r

Black-throated Blue Warbler (*Dendroica caerulescens*)..... - o - o

Yellow-rumped Warbler (*Dendroica coronata*)..... u c - c

Black-throated Green Warbler (*Dendroica virens*)..... - f - f

Blackburnian Warbler (*Dendroica fusca*) - u - u

Yellow-throated Warbler (*Dendroica dominica*) - o o r

Prairie Warbler (*Dendroica discolor*)..... - o o r

Palm Warbler (*Dendroica palmarum*) - f - f

Bay-breasted Warbler (*Dendroica castanea*)..... - f - c

Blackpoll Warbler (*Dendroica striata*) - f - o

Cerulean Warbler (*Dendroica cerulean*) - r - o

Black-and-white Warbler (*Mniotilta varia*) - f o f

American Redstart (*Setophaga ruticilla*) - f - c

Prothonotary Warbler (*Protonotaria citrea*) - o - -

Worm-eating Warbler (*Helminthos vermivorus*)..... - r r r

Ovenbird (*Seiurus aurocapillus*)..... - f - f

Northern Waterthrush (*Seiurus noveboracensis*)..... - u - u

Louisiana Waterthrush (*Seiurus motacilla*) - - - o

Kentucky Warbler (*Oporornis formosus*)..... - u - r

Connecticut Warbler (*Oporornis agilis*) - o - o

Mourning Warbler (*Oporornis philadelphia*) - r - r

Common Yellowthroat* (*Geothlypis trichas*) - f u f

Hooded Warbler (*Wilsonia citrina*) - r - -

Wilson's Warbler (*Wilsonia pusilla*)..... - u - u

Canada Warbler (*Wilsonia canadensis*)..... - u - u

Yellow-breasted Chat (*Icteria virens*)..... - u r r

TANAGERS

Summer Tanager (*Piranga rubra*)..... - u - u

Scarlet Tanager (*Piranga olivacea*) - f - u

SPARROWS & ALLIES

Eastern Towhee* (*Pipilo erythrophthalmus*) u f u f

American Tree Sparrow (*Spizella arborea*)..... r r - r

Chipping Sparrow (*Spizella passerina*)..... - u - u

Field Sparrow (*Spizella pusilla*)..... u u r u

Vesper Sparrow (*Pooecetes gramineus*) - o - o

Savannah Sparrow (*Passerculus sandwichensis*) - o - r

Fox Sparrow (*Passerella iliaca*) r u - u

Song Sparrow* (*Melospiza melodia*)..... c c c c

Lincoln's Sparrow (*Melospiza lincolni*) - u - u

Swamp Sparrow (*Melospiza georgiana*) u u - u

W s S F

SPARROWS & ALLIES (cont.)

White-throated Sparrow (<i>Zonotrichia albicollis</i>).....	f c - c
White-crowned Sparrow (<i>Zonotrichia leucophrys</i>).....	o r - r
Dark-eyed Junco (<i>Junco hyemalis</i>).....	f f - f
Lapland Longspur (<i>Calcarius lapponicus</i>).....	r - - r

CARDINALS & GROSBEAKS

Northern Cardinal* (<i>Cardinalis cardinalis</i>).....	c c c c
Rose-breasted Grosbeak (<i>Pheucticus ludovicianus</i>).....	- f - f
Blue Grosbeak (<i>Guiraca caerulea</i>).....	o - - -
Indigo Bunting* (<i>Passerina cyanea</i>).....	- c f u
Dickcissel (<i>Spiza americana</i>).....	- o - o

BLACKBIRDS & ORIOLES

Bobolink (<i>Dolichonyx oryzivorus</i>).....	- - - o
Red-winged Blackbird* (<i>Agelaius phoeniceus</i>).....	r u u u
Eastern Meadowlark* (<i>Sturnella magna</i>).....	r r r r
Rusty Blackbird (<i>Euphagus carolinus</i>).....	- r - r
Common Grackle* (<i>Quiscalus quiscula</i>).....	r c f c
Brown-headed Cowbird* (<i>Molothrus ater</i>).....	r f f u
Orchard Oriole (<i>Icterus spurius</i>).....	- u r -
Northern Oriole* (<i>Icterus galbula</i>).....	- f u u

FINCHES

Purple Finch (<i>Carpodacus purpureus</i>).....	r r - r
House Finch* (<i>Carpodacus mexicanus</i>).....	c c c c
Pine Siskin (<i>Carduelis pinus</i>).....	- - - r
American Goldfinch* (<i>Carduelis tristis</i>).....	f c c c
House Sparrow (<i>Passer domesticus</i>).....	c c c c

EXTREMELY RARE AND ACCIDENTAL

Red-throated Loon (<i>Gavia stellata</i>)	Gull-billed Tern (<i>Sterna nilotica</i>)
Red-necked Grebe (<i>Podiceps grisegena</i>)	Snow Bunting (<i>Plectrophenax nivalis</i>)
Eared Grebe (<i>Podiceps nigricollis</i>)	Snowy Owl (<i>Nyctea scandiaca</i>)
Western Grebe (<i>Aechmophorus occidentalis</i>)	Bewick's Wren (<i>Thryomanes bewickii</i>)
American White Pelican (<i>Pelecanus erythrorhynchos</i>)	Barn Owl (<i>Tyto alba</i>)
American Bittern (<i>Botaurus lentiginosus</i>)	Sabine's Gull (<i>Xema sabini</i>)
Black-legged Kittiwake (<i>Rissa tridactyla</i>)	Curlew Sandpiper (<i>Calidris ferruginea</i>)
Least Bittern (<i>Ixobrychus exilis</i>)	Purple Sandpiper (<i>Calidris maritima</i>)
Tricolored Heron (<i>Egretta tricolor</i>)	Tundra Swan (<i>Cygnus columbianus</i>)
Reddish Egret (<i>Egretta rufescens</i>)	Mute Swan (<i>Cygnus olor</i>)
White Ibis (<i>Eudocimus albus</i>)	Gull-billed Tern (<i>Sterna nilotica</i>)
White-faced Ibis (<i>Plegadis chihi</i>)	Iceland Gull (<i>Larus glaucoides</i>)
Glossy Ibis (<i>Plegadis falcinellus</i>)	Thayer's Gull (<i>Larus thayeri</i>)
Wood Stork (<i>Mycteria americana</i>)	Black-headed Gull (<i>Larus ridibundus</i>)
Brant (<i>Branta bernicla</i>)	Wild Turkey (<i>Meleagris gallopavo</i>)
King Rail (<i>Rallus elegans</i>)	
Common Moorhen (<i>Gallinula chloropus</i>)	
Great Black-backed Gull (<i>Larus marinus</i>)	
Black-legged Kittiwake (<i>Rissa tridactyla</i>)	
Hudsonian Godwit (<i>Limosa haemastica</i>)	

USFWS Species Lists



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Indiana Ecological Services Field Office

620 South Walker Street

Bloomington, IN 47403-2121

Phone: (812) 334-4261 Fax: (812) 334-4273

<http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html>



In Reply Refer To:

November 21, 2017

Consultation Code: 03E12000-2018-SLI-0266

Event Code: 03E12000-2018-E-00785

Project Name: Falls of the Ohio WCA Master Plan Update

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:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project "may affect" listed species or critical habitat.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website <http://ecos.fws.gov/ipac/> at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at - <http://www.fws.gov/midwest/endangered/section7/s7process/index.html>. This website contains step-by-step instructions which will help you determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all **wind energy projects** and **projects that include installing towers that use guy wires or are over 200 feet in height**, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project or may be affected by your proposed project.

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.) and Migratory Bird Treaty Act (16 U.S.C. 703 et seq), as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at <http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html> to help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

Indiana Ecological Services Field Office

620 South Walker Street
Bloomington, IN 47403-2121
(812) 334-4261

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Kentucky Ecological Services Field Office

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

Project Summary

Consultation Code: 03E12000-2018-SLI-0266

Event Code: 03E12000-2018-E-00785

Project Name: Falls of the Ohio WCA Master Plan Update

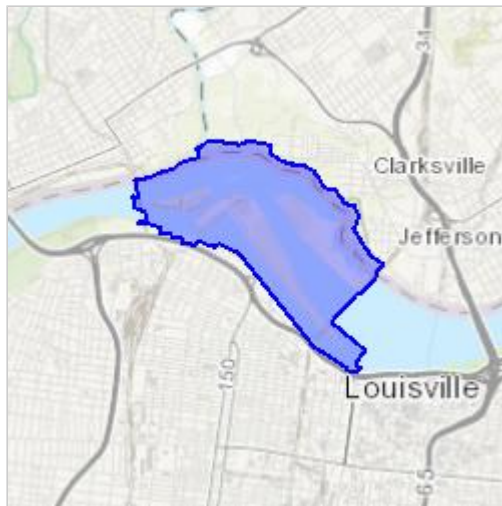
Project Type: ** OTHER **

Project Description: Update of the WCA Master Plan, for planning purposes

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/38.27431387422563N85.77258073540767W>



Counties: Clark, IN | Jefferson, KY

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions. 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.

Mammals

NAME	STATUS
<p>Gray Bat <i>Myotis grisescens</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/6329</p>	Endangered
<p>Indiana Bat <i>Myotis sodalis</i></p> <p>There is final critical habitat for this species. Your location is outside the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/5949</p> <p>Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/1/office/31440.pdf</p>	Endangered
<p>Northern Long-eared Bat <i>Myotis septentrionalis</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> Incidental take of the NLEB is not prohibited here. Federal agencies may consult using the 4(d) rule streamlined process. Transportation projects may consult using the programmatic process. See www.fws.gov/midwest/endangered/mammals/nleb/index.html <p>Species profile: https://ecos.fws.gov/ecp/species/9045</p> <p>Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/10043/office/31440.pdf</p>	Threatened

Clams

NAME	STATUS
<p>Sheepnose Mussel <i>Plethobasus cyphus</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/6903</p>	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S

JURISDICTION.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Kentucky Ecological Services Field Office

J C Watts Federal Building, Room 265

330 West Broadway

Frankfort, KY 40601-8670

Phone: (502) 695-0468 Fax: (502) 695-1024

<http://www.fws.gov/frankfort/>

In Reply Refer To:

November 21, 2017

Consultation Code: 04EK1000-2018-SLI-0139

Event Code: 04EK1000-2018-E-00474

Project Name: Falls of the Ohio WCA Master Plan Update

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:

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

The Information in Your Species List:

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

substantial impacts to water quality), we highly recommend that you coordinate with the Service early to appropriately define your action area and ensure that you are evaluating all the species that could potentially be affected.

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

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

ESA Obligations for Federal Projects:

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

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

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). Recommended contents of a Biological Assessment are described at 50 CFR 402.12. For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat.

ESA Obligations for Non-federal Projects:

Proposed projects that do not have a federal nexus (non-federal projects) are not subject to the

obligation to consult under section 7 of the ESA. However, section 9 of the ESA prohibits certain activities that directly or indirectly affect federally-listed species. These prohibitions apply to all individuals subject to the jurisdiction of the United States. Non-federal project proponents can request technical assistance from the Service regarding recommendations on how to avoid and/or minimize impacts to listed species. The project proponent can choose to implement avoidance, minimization, and mitigation measures in a proposed project design to avoid ESA violations.

Additional Species-specific Information:

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

Next Steps:

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

Kentucky Ecological Services Field Office

J C Watts Federal Building, Room 265

330 West Broadway

Frankfort, KY 40601-8670

(502) 695-0468

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Indiana Ecological Services Field Office

620 South Walker Street

Bloomington, IN 47403-2121

(812) 334-4261

Project Summary

Consultation Code: 04EK1000-2018-SLI-0139

Event Code: 04EK1000-2018-E-00474

Project Name: Falls of the Ohio WCA Master Plan Update

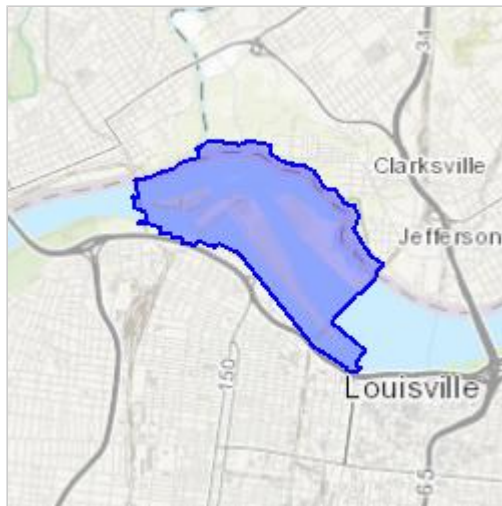
Project Type: ** OTHER **

Project Description: Update of the WCA Master Plan, for planning purposes

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/38.27431387422563N85.77258073540767W>



Counties: Clark, IN | Jefferson, KY

Endangered Species Act Species

There is a total of 15 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions. 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.

Mammals

NAME	STATUS
<p>Gray Bat <i>Myotis grisescens</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/6329</p> <p>General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/21/office/42431.pdf</p>	Endangered
<p>Indiana Bat <i>Myotis sodalis</i></p> <p>There is final critical habitat for this species. Your location is outside the critical habitat.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ All activities in this location should consider possible effects to this species. The project area includes "potential" habitat. <p>Species profile: https://ecos.fws.gov/ecp/species/5949</p> <p>General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/1/office/42431.pdf</p>	Endangered
<p>Northern Long-eared Bat <i>Myotis septentrionalis</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species. <p>Species profile: https://ecos.fws.gov/ecp/species/9045</p>	Threatened

Birds

NAME

STATUS

Least Tern *Sterna antillarum*

Endangered

Population: interior pop.

No critical habitat has been designated for this species.

Species profile: <https://ecos.fws.gov/ecp/species/8505>

Clams

NAME	STATUS
<p>Clubshell <i>Pleurobema clava</i></p> <p>Population: Wherever found; Except where listed as Experimental Populations No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/3789 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/352/office/42431.pdf</p>	Endangered
<p>Fanshell <i>Cyprogenia stegaria</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4822 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/368/office/42431.pdf</p>	Endangered
<p>Northern Riffleshell <i>Epioblasma torulosa rangiana</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/527 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/374/office/42431.pdf</p>	Endangered
<p>Orangefoot Pimpleback (pearlymussel) <i>Plethobasus cooperianus</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1132 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/340/office/42431.pdf</p>	Endangered
<p>Purple Cat's Paw (=purple Cat's Paw Pearlymussel) <i>Epioblasma obliquata obliquata</i></p> <p>Population: Wherever found; Except where listed as Experimental Populations No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/5602 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/323/office/42431.pdf</p>	Endangered
<p>Rabbitsfoot <i>Quadrula cylindrica cylindrica</i></p> <p>There is final critical habitat for this species. Your location is outside the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/5165 General project design guidelines: https://ecos.fws.gov/ipac/guideline/design/population/3645/office/42431.pdf</p>	Threatened
<p>Ring Pink (mussel) <i>Obovaria retusa</i></p> <p>No critical habitat has been designated for this species.</p>	Endangered

Species profile: <https://ecos.fws.gov/ecp/species/4128>

General project design guidelines:

<https://ecos.fws.gov/ipac/guideline/design/population/341/office/42431.pdf>

Rough Pigtoe *Pleurobema plenum*

Endangered

No critical habitat has been designated for this species.

Species profile: <https://ecos.fws.gov/ecp/species/6894>

General project design guidelines:

<https://ecos.fws.gov/ipac/guideline/design/population/338/office/42431.pdf>

Sheepnose Mussel *Plethobasus cyphus*

Endangered

No critical habitat has been designated for this species.

Species profile: <https://ecos.fws.gov/ecp/species/6903>

General project design guidelines:

<https://ecos.fws.gov/ipac/guideline/design/population/7816/office/42431.pdf>

Spectaclecase (mussel) *Cumberlandia monodonta*

Endangered

No critical habitat has been designated for this species.

Species profile: <https://ecos.fws.gov/ecp/species/7867>

General project design guidelines:

<https://ecos.fws.gov/ipac/guideline/design/population/4490/office/42431.pdf>

Flowering Plants

NAME

STATUS

Running Buffalo Clover *Trifolium stoloniferum*

Endangered

No critical habitat has been designated for this species.

Species profile: <https://ecos.fws.gov/ecp/species/2529>

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Environmental Justice Screening Report

Location: User-specified polygonal location
 Ring (buffer): 0-mile radius
 Description:

Summary of ACS Estimates		2011 - 2015		
Population		1,025,658		
Population Density (per sq. mile)		1,053		
Minority Population		262,588		
% Minority		26%		
Households		405,860		
Housing Units		449,102		
Housing Units Built Before 1950		91,663		
Per Capita Income		27,642		
Land Area (sq. miles) (Source: SF1)		973.93		
% Land Area		97%		
Water Area (sq. miles) (Source: SF1)		27.14		
% Water Area		3%		
		2011 - 2015 ACS Estimates	Percent	MOE (±)
Population by Race				
Total		1,025,658	100%	1,240
Population Reporting One Race		997,157	97%	2,757
White		795,255	78%	921
Black		170,604	17%	750
American Indian		1,712	0%	122
Asian		21,216	2%	523
Pacific Islander		322	0%	109
Some Other Race		8,048	1%	332
Population Reporting Two or More Races		28,501	3%	387
Total Hispanic Population		44,655	4%	498
Total Non-Hispanic Population		981,003		
White Alone		763,070	74%	874
Black Alone		168,608	16%	750
American Indian Alone		1,461	0%	122
Non-Hispanic Asian Alone		21,118	2%	523
Pacific Islander Alone		285	0%	109
Other Race Alone		1,048	0%	227
Two or More Races Alone		25,413	2%	356
Population by Sex				
Male		498,757	49%	671
Female		526,901	51%	976
Population by Age				
Age 0-4		64,730	6%	341
Age 0-17		236,463	23%	465
Age 18+		789,195	77%	936
Age 65+		143,075	14%	252

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.

Source: U.S. Census Bureau, American Community Survey (ACS) 2011 - 2015.

Location: User-specified polygonal location

Ring (buffer): 0-mile radius

Description:

	2011 - 2015 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	699,720	100%	568
Less than 9th Grade	24,986	4%	229
9th - 12th Grade, No Diploma	53,119	8%	263
High School Graduate	202,192	29%	408
Some College, No Degree	212,242	30%	351
Associate Degree	55,056	8%	216
Bachelor's Degree or more	207,181	30%	336
Population Age 5+ Years by Ability to Speak English			
Total	960,928	100%	1,206
Speak only English	891,266	93%	1,220
Non-English at Home ¹⁺²⁺³⁺⁴	69,662	7%	577
¹ Speak English "very well"	40,105	4%	325
² Speak English "well"	14,575	2%	286
³ Speak English "not well"	11,020	1%	378
⁴ Speak English "not at all"	3,962	0%	247
³⁺⁴ Speak English "less than well"	14,982	2%	378
²⁺³⁺⁴ Speak English "less than very well"	29,557	3%	446
Linguistically Isolated Households*			
Total	6,863	100%	137
Speak Spanish	3,682	54%	126
Speak Other Indo-European Languages	1,219	18%	96
Speak Asian-Pacific Island Languages	1,023	15%	80
Speak Other Languages	939	14%	72
Households by Household Income			
Household Income Base	405,860	100%	231
< \$15,000	54,091	13%	272
\$15,000 - \$25,000	44,481	11%	202
\$25,000 - \$50,000	101,032	25%	249
\$50,000 - \$75,000	75,016	18%	212
\$75,000 +	131,240	32%	272
Occupied Housing Units by Tenure			
Total	405,860	100%	231
Owner Occupied	264,898	65%	259
Renter Occupied	140,962	35%	238
Employed Population Age 16+ Years			
Total	815,289	100%	1,202
In Labor Force	534,672	66%	649
Civilian Unemployed in Labor Force	42,607	5%	294
Not In Labor Force	280,618	34%	629

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2011 - 2015.

*Households in which no one 14 and over speaks English "very well" or speaks English only.

Location: User-specified polygonal location

Ring (buffer): 0-mile radius

Description:

	2011 - 2015 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	960,928	100%	1,206
English	891,266	93%	1,218
Spanish	33,399	3%	506
French	2,539	0%	219
French Creole	421	0%	134
Italian	219	0%	55
Portuguese	156	0%	30
German	2,106	0%	126
Yiddish	42	0%	34
Other West Germanic	352	0%	95
Scandinavian	152	0%	152
Greek	230	0%	75
Russian	1,219	0%	145
Polish	98	0%	41
Serbo-Croatian	1,960	0%	188
Other Slavic	557	0%	322
Armenian	12	0%	20
Persian	699	0%	178
Gujarathi	914	0%	275
Hindi	1,483	0%	174
Urdu	713	0%	194
Other Indic	2,203	0%	305
Other Indo-European	864	0%	216
Chinese	2,320	0%	173
Japanese	845	0%	141
Korean	924	0%	101
Mon-Khmer, Cambodian	322	0%	302
Hmong	79	0%	106
Thai	345	0%	214
Laotian	338	0%	208
Vietnamese	2,095	0%	209
Other Asian	2,723	0%	256
Tagalog	1,052	0%	145
Other Pacific Island	256	0%	79
Navajo	0	0%	16
Other Native American	334	0%	205
Hungarian	153	0%	64
Arabic	3,044	0%	367
Hebrew	57	0%	41
African	4,381	0%	330
Other and non-specified	56	0%	37
Total Non-English	69,662	7%	1,714

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2011 - 2015.

*Population by Language Spoken at Home is available at the census tract summary level and up.

EJSCREEN Report (Version 2017)

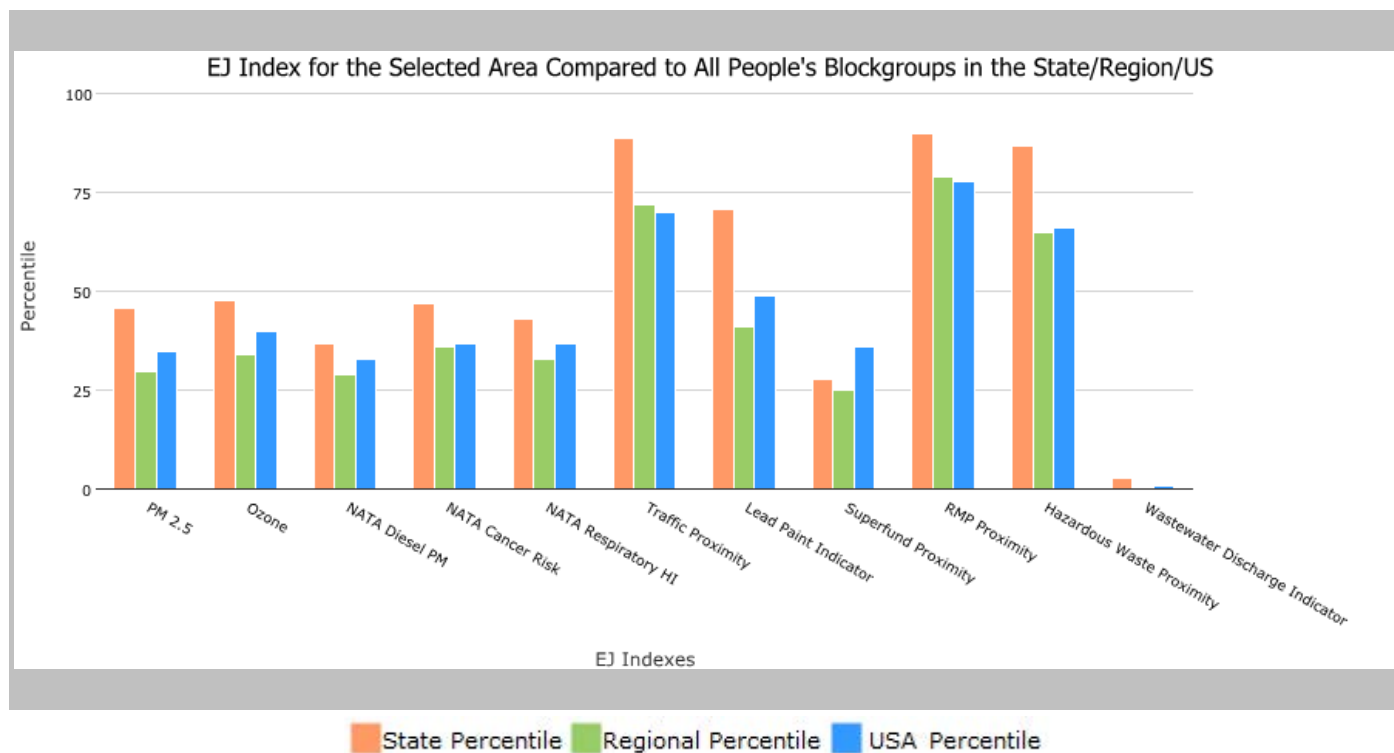
the User Specified Area, KENTUCKY, EPA Region 4

Approximate Population: 1,017,393

Input Area (sq. miles): 963.77

(The study area contains 1 blockgroup(s) with zero population.)

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	46	30	35
EJ Index for Ozone	48	34	40
EJ Index for NATA* Diesel PM	37	29	33
EJ Index for NATA* Air Toxics Cancer Risk	47	36	37
EJ Index for NATA* Respiratory Hazard Index	43	33	37
EJ Index for Traffic Proximity and Volume	89	72	70
EJ Index for Lead Paint Indicator	71	41	49
EJ Index for Superfund Proximity	28	25	36
EJ Index for RMP Proximity	90	79	78
EJ Index for Hazardous Waste Proximity	87	65	66
EJ Index for Wastewater Discharge Indicator	3	0	1



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2017)

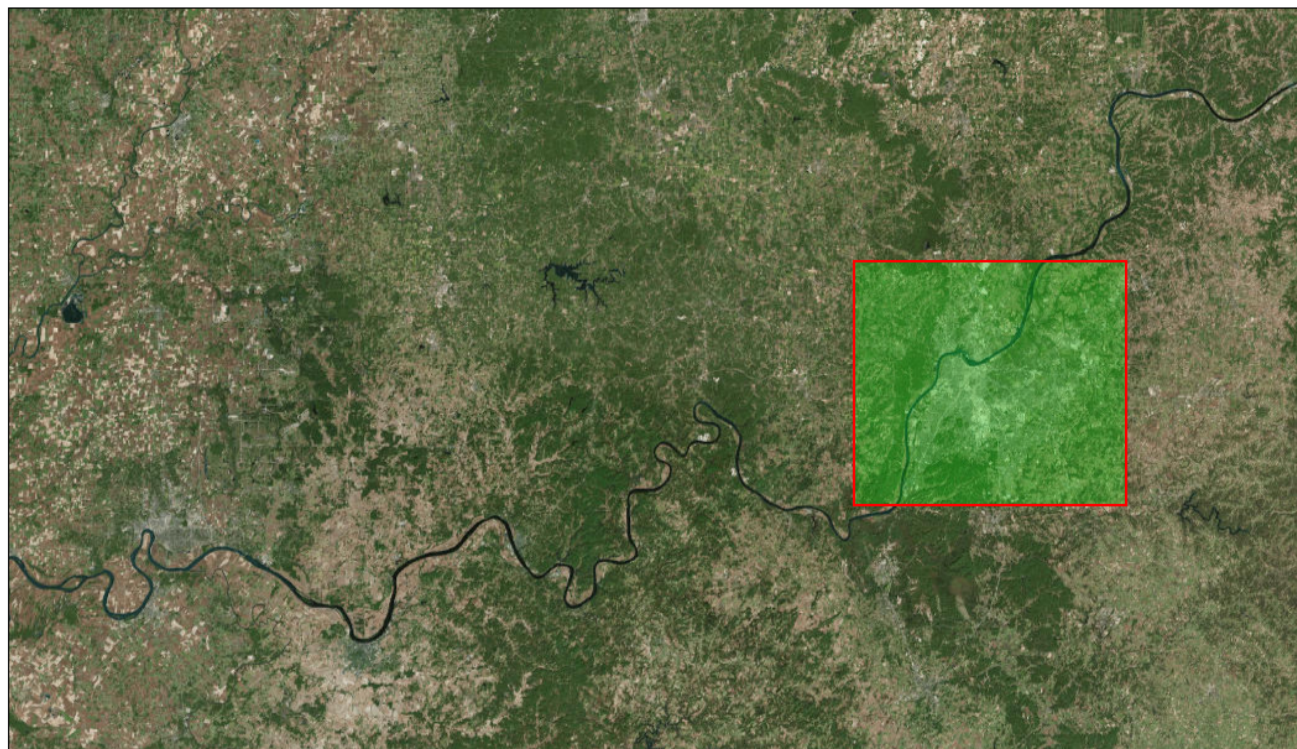


the User Specified Area, KENTUCKY, EPA Region 4

Approximate Population: 1,017,393

Input Area (sq. miles): 963.77

(The study area contains 1 blockgroup(s) with zero population.)



May 2, 2018

■ Digitized Polygon

1:1,155,581
0 10 20 40 mi
0 15 30 60 km
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Sites reporting to EPA

Superfund NPL	2
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	2

EJSCREEN Report (Version 2017)

the User Specified Area, KENTUCKY, EPA Region 4

Approximate Population: 1,017,393

Input Area (sq. miles): 963.77

(The study area contains 1 blockgroup(s) with zero population.)

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	11.2	10.1	86	8.46	98	9.14	90
Ozone (ppb)	38.6	38.9	31	36.4	87	38.4	60
NATA* Diesel PM ($\mu\text{g}/\text{m}^3$)	1	0.668	79	0.754	70-80th	0.938	60-70th
NATA* Cancer Risk (lifetime risk per million)	46	39	82	42	60-70th	40	70-80th
NATA* Respiratory Hazard Index	2.2	1.6	81	1.7	80-90th	1.8	70-80th
Traffic Proximity and Volume (daily traffic count/distance to road)	580	230	90	290	87	590	80
Lead Paint Indicator (% Pre-1960 Housing)	0.34	0.25	77	0.16	86	0.29	64
Superfund Proximity (site count/km distance)	0.057	0.04	83	0.083	63	0.13	47
RMP Proximity (facility count/km distance)	1.3	0.67	85	0.59	86	0.73	82
Hazardous Waste Proximity (facility count/km distance)	0.14	0.075	86	0.067	90	0.093	84
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	1.7	0.55	95	0.26	98	30	96
Demographic Indicators							
Demographic Index	29%	27%	64	38%	41	36%	48
Minority Population	26%	14%	82	37%	44	38%	46
Low Income Population	32%	39%	39	39%	40	34%	52
Linguistically Isolated Population	2%	1%	80	3%	61	5%	54
Population With Less Than High School Education	11%	16%	38	14%	45	13%	53
Population Under 5 years of age	6%	6%	55	6%	57	6%	55
Population over 64 years of age	14%	14%	51	15%	53	14%	56

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

Comments

From: [Allison, Carrie](#)
To: [Russell, Drew C CIV USARMY CELRL \(US\)](#)
Subject: [Non-DoD Source] Draft Environmental Assessment for the Falls of the Ohio National Wildlife Conservation Area
Date: Friday, October 19, 2018 1:40:54 PM

Dear Mr. Russell:

The U.S. Fish and Wildlife Service Kentucky Field Office has reviewed the draft Environmental Assessment for the above-referenced project. We have no comments or concerns related to federally-listed species or designated critical habitat on the proposed updates to the NWCA Master Plan. If you have any questions, please contact me at your earliest convenience.

Sincerely,

Carrie L. Allison
U.S. Fish and Wildlife Service
330 W. Broadway, Rm. 265
Frankfort, KY 40601
502-695-0468 ext. 103 (office)
502.695.1024 (fax)

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

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.



River City Paddle Sports
The Community Boat House
1325 River Road
Louisville, KY 40202
www.rivercitypaddlesports.org
(Waterfront Park Yellow Parking Lot)

Comments on the Environmental Assessment for the Falls of the Ohio National Wildlife Conservation Area Master Plan

Date: September 18, 2018

Submitted by: Dr. David Wicks, River City Paddlesports, the Community Boat House, 1325 River Road, Louisville KY 40206 dwicks1@gmail.com

A very comprehensive review and set of proposals for the management of the Falls of the Ohio National Wildlife Conservation Area Master Plan. We specifically would like to praise the Corps of Engineers for their inclusive and transparent approach to developing the plan. The Community involvement was excellent, and the partnerships develop will continue to protect and encourage sustainable use of the area.

Below are several overall comments,

- 1) There might be more islands in Metro Louisville's section than any other stretch of the Ohio River. 12-mile (Metro Louisville/Oldham County); Six Mile (Kentucky State Nature Preserve); Shippingport; Lewis and Clark and Sand Island (Army Corps of Engineers). Then immediately upstream in Oldham County there is 18- Mile Island (Steve Wilson and Laura Lee Brown). The U.S. Fish and Wildlife operates [The Islands in the Ohio National Wildlife Refuge](#). They manage 22 islands, but over 362 miles.
 - a. Could section on Resource: Analysis 3.0 be expanded to cover the 7 islands in the Metro Louisville region, why Louisville has so many and how are they similar or different ecologically. It would be interesting to explore the historical uses of the island holistically.
 - b. Could there be a new segment added to the report examining and comparing the management and ongoing research of the U.S. Fish and Wildlife Island in the Ohio River National Wildlife Refuge and your work with the Falls of the Ohio Conservation Area. Are there collaborative research projects, or common best management practices that could or should be established?
- 2) 4.0 Recreation Program Analysis 4.9.4 - the section on Louisville Waterfront Park, should mention, the Community Boat House where the [River City Paddle Sports](#), the [Louisville Rowing Club](#) and the [Derby City Dragons](#) offer programs for approximately 6,000 participant days annually.
- 3) In the 4.0 recreation program analysis, there should be some discussion about the Proposed Ohio River - Cincinnati to Louisville water trail. I believe there should also be some discussion about the overall Ohio River? How many recreational boaters pass through the locks?
- 4) Page 87 Recreational Boating (canoe / kayak / raft): - There is significant discussion about regulating the flow for white water paddlers, which is great, it should go on. But at the same time, attention should be paid to creating flat water or slack water opportunities on a scheduled



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basis. Or at least a way to let paddlers know when there is no flow. That is the opportunity for families and pleasure boaters to experience and investigate the conservation area.

- 5) In 4.1.2 Recreational Demand Analysis - while analyzing Kentucky and Indiana recreational needs, the Ohio River trail should be included.
- 6) Objective 3: Enhance and maintain visitor experience at the NWCA - We believe that there should be a comprehensive assessment done of illegal or inappropriate behavior in the entire National Conservation Area. Then develop strategies and partnerships to minimize such activity. Safety for current employees and visitors alike is crucial. Is there an analysis of all police reports over the past 10 years? Closing down the area or restricting access is not the answer. Having better relationships with the neighboring communities is crucial.
- 7) We are a huge supporter of 5.3.1 Objective 3 Supporting Measures on page 93: • Provide full-time staff to manage visitation to the NWCA (Resident's Office has the potential to serve as the primary Kentucky gateway / project office). We would hope this person is actively engaged in outreach to area schools, community organizations as well as facilitating daily visitor use.
- 8) Objective 4: Increase opportunities for scientific research, interpretive and environmental uses. Another supporting measure for this objective would be to identify a research agenda for the wildlife conservation area that could be shared with universities and area schools. Such a research agenda could be the basis for collaboration with the U.S. Fish and Wildlife Island in the Ohio National Refuge.

Overall, we encourage the corps to continue their water quality and biodiversity sampling and record keeping. Having a base line to measure change is important.

Thank you for the opportunity to comment.

Falls of the Ohio National Wildlife Conservation Area Master Plan Update



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Appendix C Public Comments

Public Meeting/Open House on the Falls of the Ohio National Wildlife Conservation Area Master Plan Update



US Army Corps
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October 17, 5:00 – 7:00 p.m.
Falls of the Ohio Interpretative Center
201 W. Riverside Dr.
Clarksville, IN 47129

October 24, 5:00 – 7:00 p.m.
Portland Museum
2308 Portland Ave.
Louisville, KY 40212

Both meetings will cover the same information

Please join us for a public meeting/open house as the Corps of Engineers seeks input on updating the Master Plan for the 1,400 acre **National Wildlife Conservation Area (WCA)** located in the Ohio River between the Pennsylvania Central Railroad Bridge and the Kentucky and Indiana Railroad Bridge.

The Master Plan is intended to guide the Corps in protecting, managing, conserving and enhancing natural resources and features of the WCA while providing research and interpretive opportunities to the public.



If you have questions, please contact: Nathan.a.moulder@usace.army.mil or 502-315-6776.

FALLS OF THE OHIO NATIONAL WILDLIFE CONSERVATION AREA

2017 MASTER PLAN UPDATE

Public Meeting / Open House

October 17th & 24th

5:00 – 7:00 P.M.



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



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AGENDA

- Introductions
- WCA Overview
- Master Plan Purpose & Process
- Area history
- Existing Conditions
- Open House / Map Review
- Adjourn





K&I Bridge

Falls of the Ohio State Park

Mc Alpine

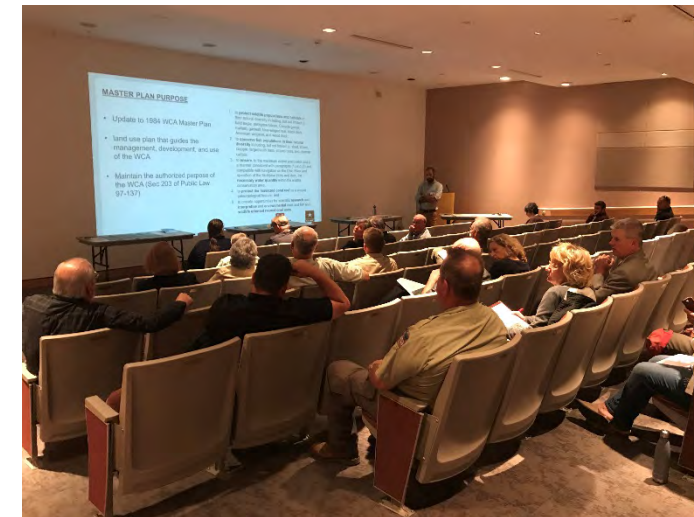
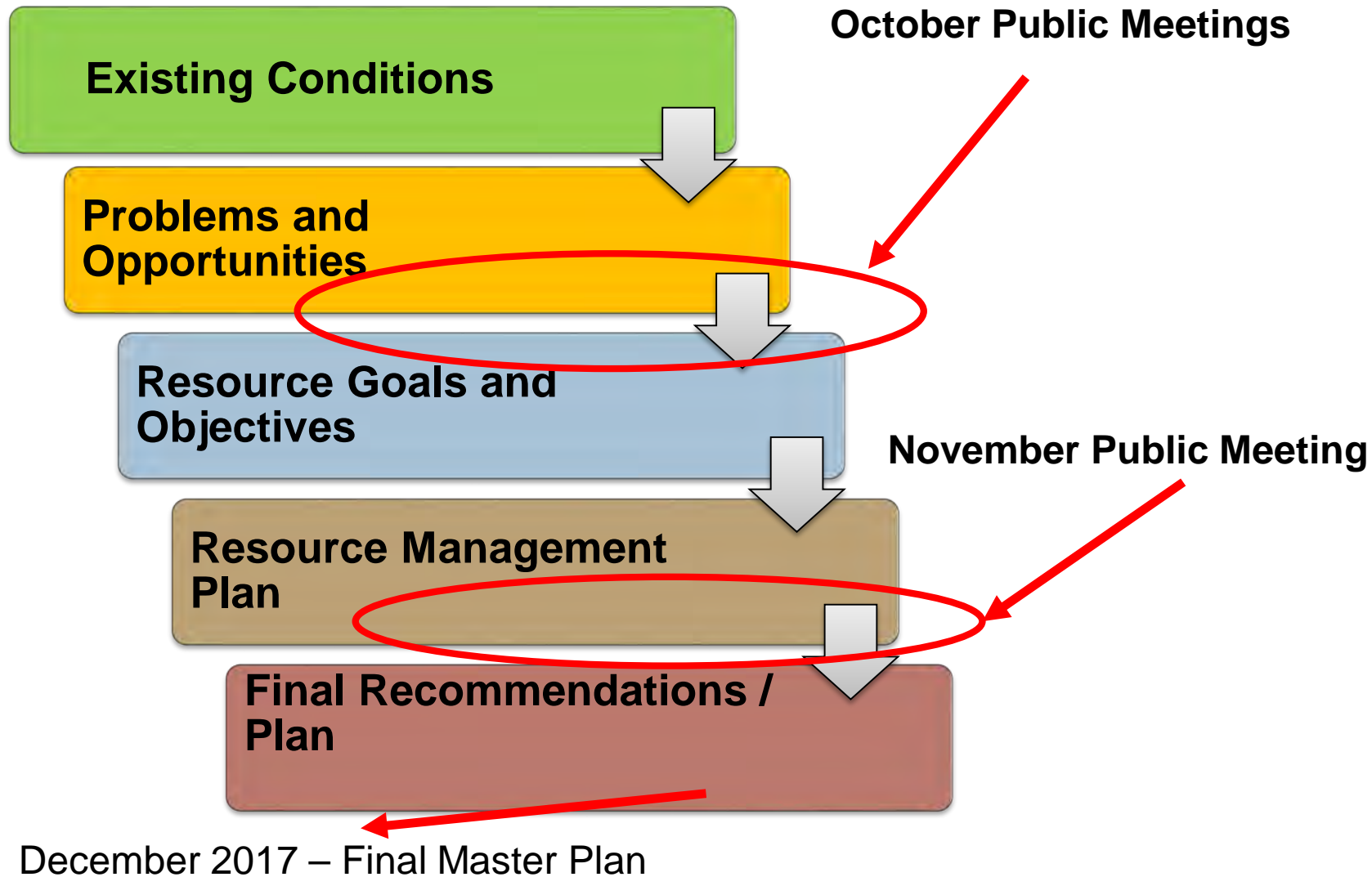
Portland Museum

L&I Bridge

MASTER PLAN PURPOSE

- Update to 1984 WCA Master Plan
 - land use plan that guides the management, development, and use of the WCA
 - Maintain the authorized purpose of the WCA (Sec 203 of Public Law 97-137)
1. to **protect wildlife populations and habitats** in their natural diversity including, but not limited to, bald eagle, peregrine falcon, Canada geese, mallard, gadwall, blue-winged teal, black duck, American widgeon, and wood duck;
 2. to **conserve fish populations in their natural diversity** including, but not limited to, shad, shiner, crappie, largemouth bass, striped bass, and channel catfish;
 3. to **ensure**, to the maximum extent practicable and in a manner consistent with paragraphs (1) and (2) and compatible with navigation on the Ohio River and operation of the McAlpine locks and dam, the **necessary water quantity** within the wildlife conservation area;
 4. to **protect the fossilized coral reef** as a unique paleontological feature; and
 5. to provide opportunities for scientific **research** and **interpretive** and **environmental** uses and fish and **wildlife oriented recreational uses**.

MASTER PLAN PROCESS



**US Army Corps
of Engineers**















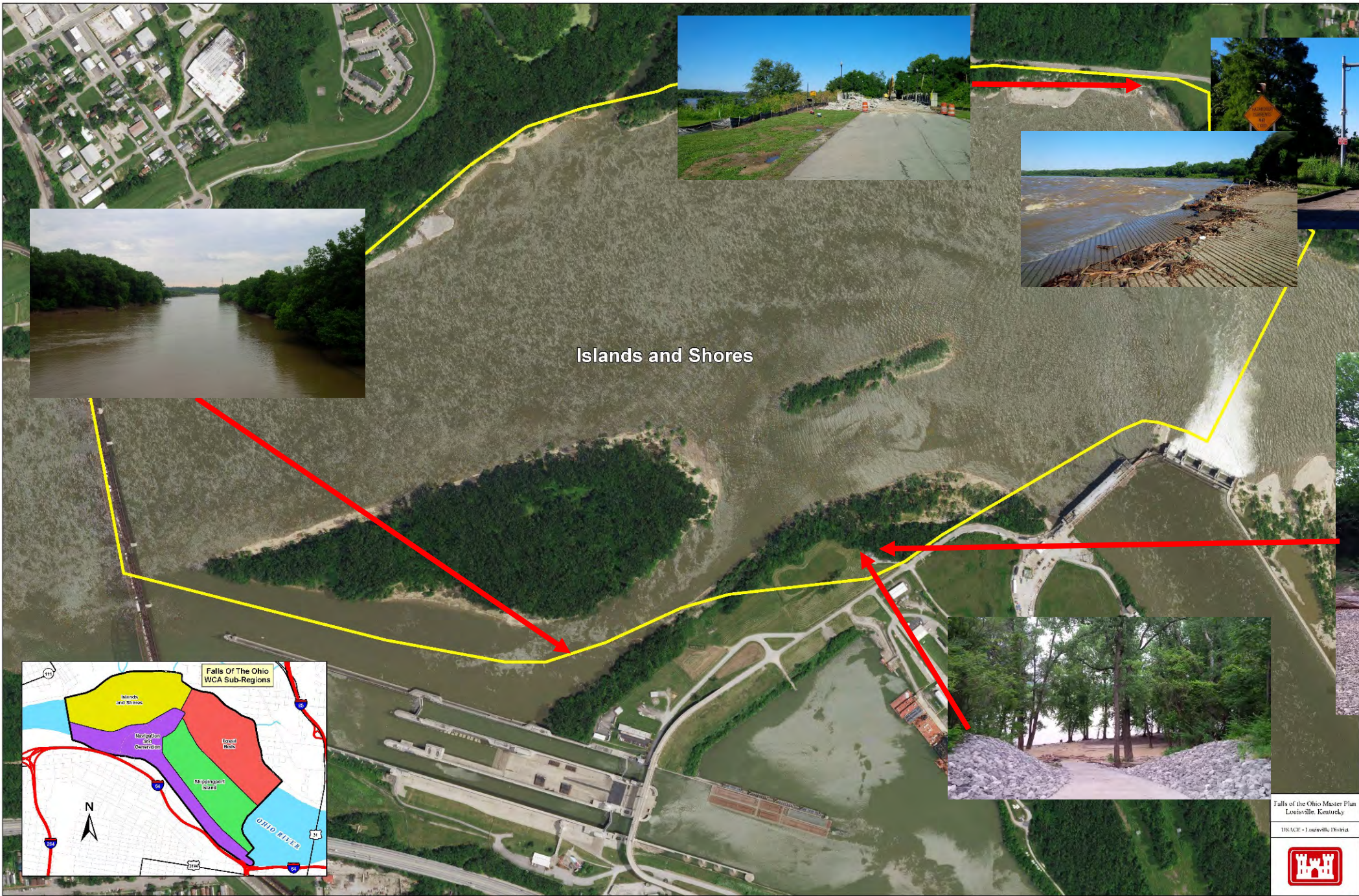




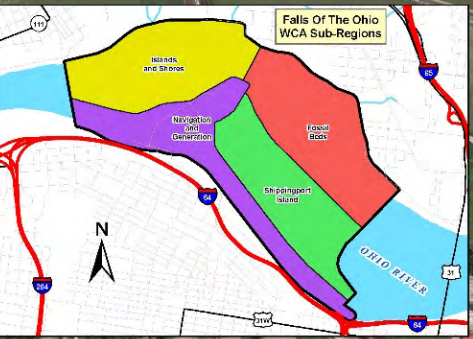








Islands and Shores



Falls of the Ohio Master Plan
Louisville, Kentucky
USACE - Louisville District











Legend

-  WCA Boundary
-  Point of Interest

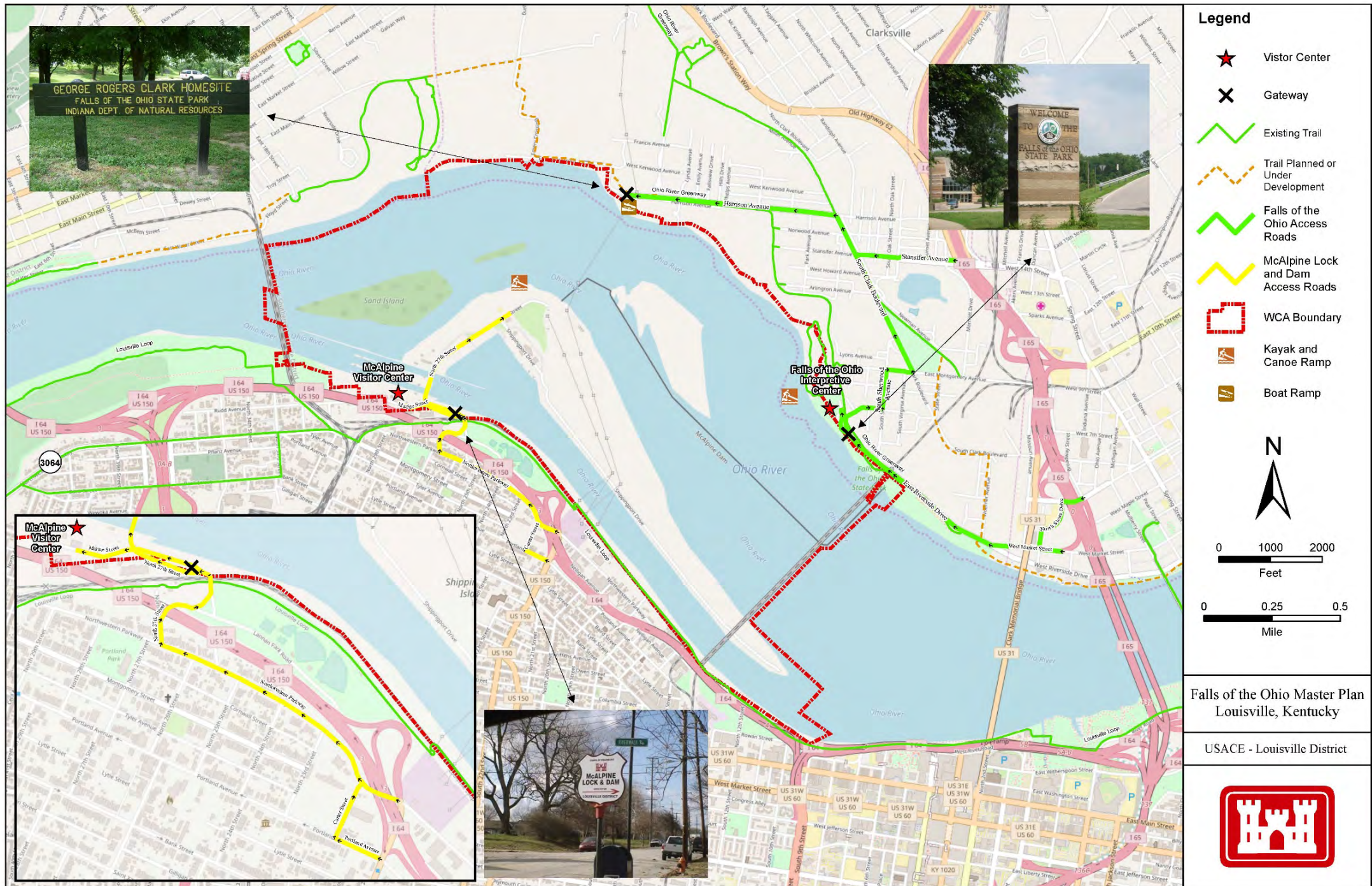


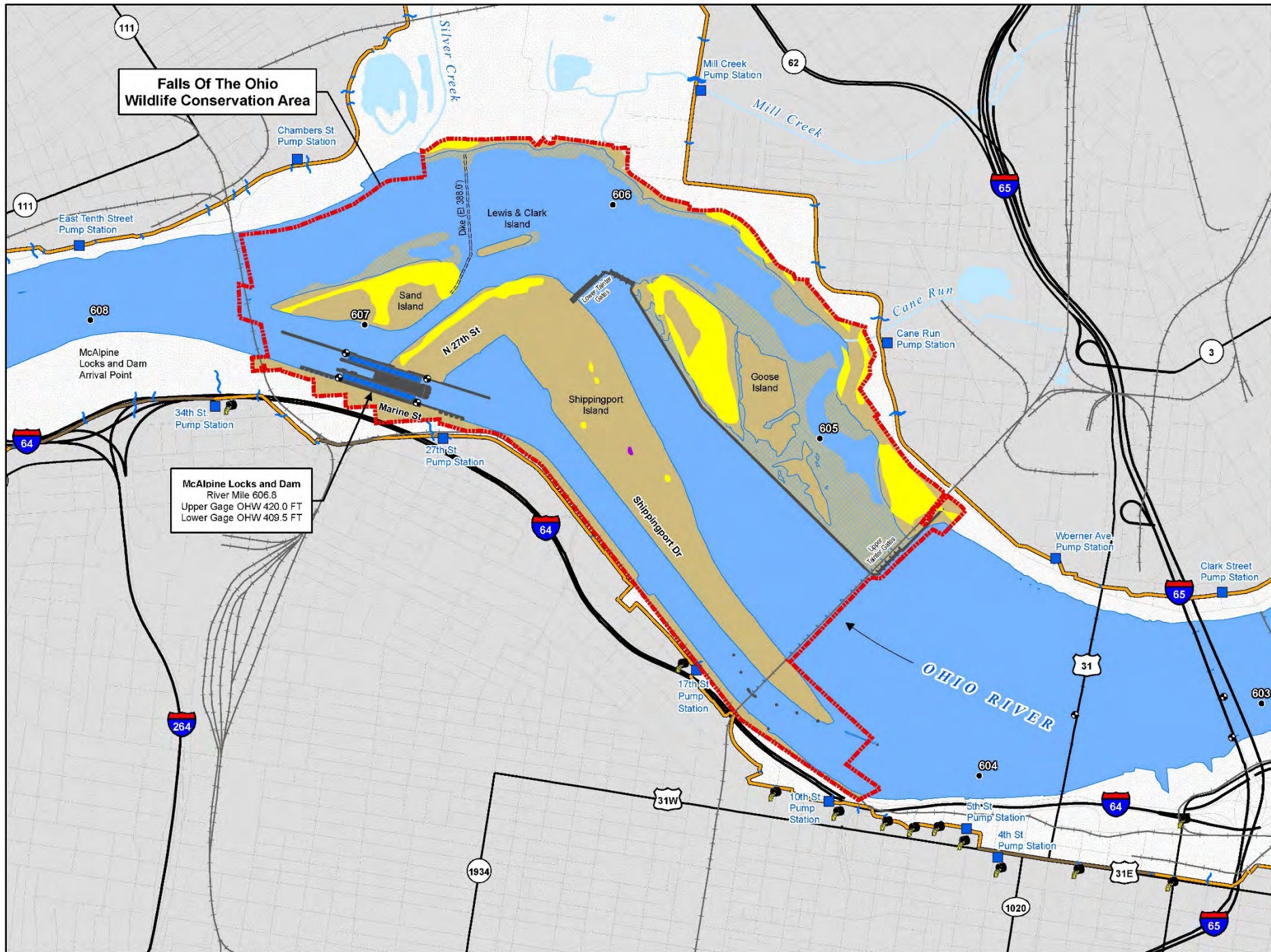
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Feet

Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District







Legend

- River Mile
- Stream Gauge
- Combined Sewer Overflow
- Pump Station
- Gravity Drain
- Dike
- Stream
- Levee / Floodwall
- High Ground
- Area Behind Levee
- Water Body
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Ohio River Low Pool
- Ohio River Normal Pool
- WCA Boundary



0 1000 2000
Feet

0 0.25 0.5
Mile

Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District










**Falls Of The Ohio
Wildlife Conservation Area**

George Rogers Park
Boat Ramp

Kayak/Canoe
Put-In

River Walk Trail

Legend

-  WCA Boundary
- Land Classifications**
-  Project Operations
-  Open Recreation
-  Low Density Recreation
-  High Density Recreation
-  Environmentally Sensitive Area
-  Vegetative Management
-  Wildlife Management
-  Restricted



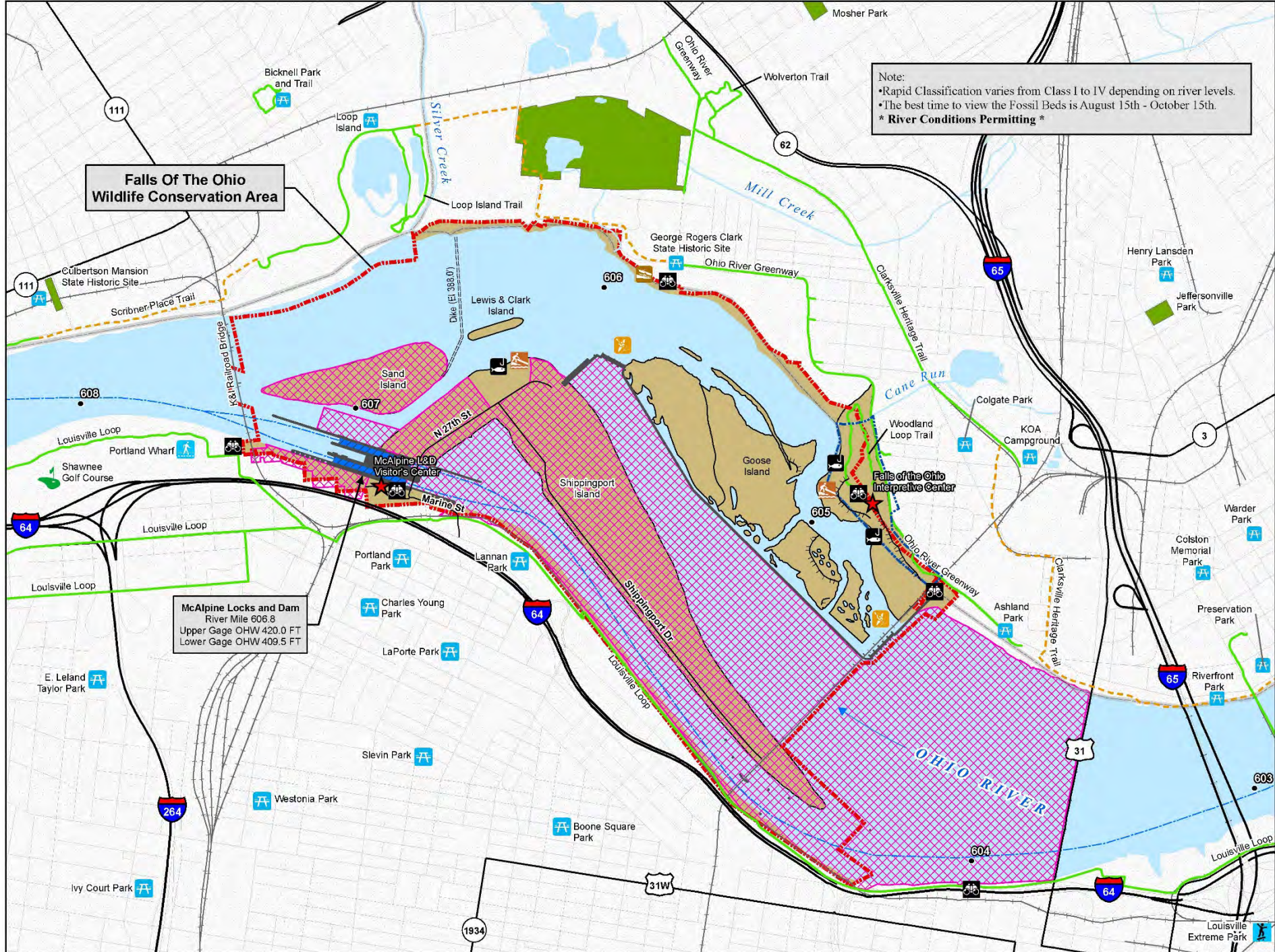
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Feet

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Mile

Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District





QUESTIONS?

COMMENT CARDS ARE AVAILABLE AT EACH MAP LOCATION



**US Army Corps
of Engineers**





Falls of the Ohio National Wildlife Conservation Area - Master Plan Update

October 17, 2017

NAME	ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Vicki Basman	DNR	vbasman@dnr.IN.gov	317-234-4926
Mark Young	FOTO Foundation Board		
WARREN WILLIAMS	GEOCACHE	MarkaYoung90@gmail.com	64-582-7913
		AIRRAIDFAN@GMAIL.COM	502-303-0985
DARREN WINKLER	GEOCACHE	VTXCUSTOMS@YAHOO.COM	505-550-5508
Jane Jarles	Clarksville FALLS volunteer	sorlesor3m3@gmail.com	502-502-649
TOM BIBB		swathdoc@gmail.com	3434
PAUL OLLIGES	FALLS VOL.	POTLIGES44@AOL.COM	502-473-1977
DANI CUMMINGS	Ex. Dir. Falls Foundation	dani@falls-of-the-ohio.org	812-283-4949
Kenny Karam	Falls Board	Kenny@tikals@gmail.com	502-895-6073
Michael D. Hatcher	USACE	michael.d.hatcher@usace.army.mil	502-315-6726
Candace Aldenhorn	Falls of the Ohio Found	candace.hilderbrand@falls-of-the-ohio.org	812-283-4999
Davey Taxeay	USACE	Theodore.d.taxeay@usace.army.mil	855-242-0194
Nicole Yates	Falls Foundation	NicoleYates1217@gmail.com	

NAME	ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Nathan Montoya	USACE	nathan.a.montoya@usace.army.mil	502-513-6776
Evan McKinney	USACE	evan.s.mckinney@usace.army.mil	502-477-8882
Amy Babey	USACE	amy.s.babey@usace.army.mil	502-315-6880
Todd Hagman	USACE	todd.e.hagman@usace.army.mil	502-315-6683
Lisa Freeman	USACE	lisa.a.freeman@usace.army.mil	502-477-8882
Willie L. Whitaker	USACE	Willie.L.WHITAKER@USACE.ARMY.MIL	642-3098 606- 502
Matthew Pore	IPNR	mpore@dnr.IN.gov	317-234-0176
Brittany Montgomery	Clarks ville	barbant.gemmy@townofclarksville.com	812-293-1431
Brian Kessians	Falls of the Ohio Falls Ohio Foundation IN AM Water	BKessians@dhs.in.gov	812-782-8620
William J Reedy	Falls of Ohio Foundation	William.reedy@amwater.com	812-218-1512
Jill Young	Clarksville Parks & Rec.	jillyoung90@gmail.com	614 582-7914
Brian Kaluzny	Falls Park	bkaluzny@clarksvilleparks.com	812 283-5313
Michael Ellis		IUNWIKEDD@AOL.com	502- 321-6769

PAUL W. OLLIGES

112 Gardiner Lake Road
Louisville KY 40205-2787
Home (502) 473-1977
Cell (502) 939-6274
polliges44@aol.com



Dani Cummins *Executive Director*

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dani@fallsoftheohio.org
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CLARKSVILLE INDIANA

Brittany Montgomery *Utility Director*

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O: (812) 283-1431
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Robert "Brian" Kaluzny *Superintendent*



Clarksville Parks & Recreation
2000 Broadway, Suite 221
Clarksville, IN 47129

Office: (812) 283-5313
Cell: (502) 724-3487

bkaluzny@clarksvilleparks.com
ClarksvilleParks.com

Clarksville
Parks & Recreation

Falls of the Ohio National Wildlife Conservation Area Master Plan Update – Comment Sheet



US Army Corps
of Engineers
Louisville District

Use this form to submit your comments
at the public meeting or mail/email to:

USACE Louisville District
ATTN: PMC-PL
Mr. Nathan Moulder
P.O. Box 59, RM 708
Louisville, KY 40201
Nathan.A.Moulder@usace.army.mil
502-315-6776

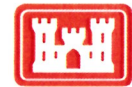


Name: Dale Brown
Address: 2309 Reed Ave New Albany IN 47150
Affiliation: Naturalist Falls of the Ohio State Park

Comment: Method to block garbage/trash from
entering Falls of the Ohio WCA. Block trash
from flowing through upper gates and over
wall. Method to collect trash that does
go through and end up on outer fossil beds
and on Indiana shore

Please submit comments by October 31st.

**Falls of the Ohio
National Wildlife Conservation Area (WCA)
Master Plan Update –Questions**



**US Army Corps
of Engineers**
Louisville District®

1. How often and when do you visit the WCA?
*A couple times a year. Usually weekends
and late afternoons*
2. What location do you typically use to enter the WCA?
Indiana side. Falls of Ohio
3. What mode of transportation do you typically use to access the WCA?
Car and then pedestrian access
4. When you visit, what activities do you participate in at the WCA?
Hike and sight-seeing.
5. What facilities do you use in the WCA?
Visitor Center Falls of Ohio, McAlpine lock area
6. Are there additional facilities or improvements that would enhance your experience at the WCA?
*Complete loop access, Interpretive info
security*
7. Are there additional communication materials that would enhance your experience at the WCA?
Interpretive info. Rules
8. Do you have any specific concerns when visiting the WCA? What locations?
Safety, lots of trash, ease of access
9. Do you have any suggestions for protecting and enhancing aquatic habitat in the WCA?
Manage gate flows to reduce erosion
10. Do you have any suggestions for protecting and terrestrial habitat in the WCA?
Conduct Baseline survey to know what is there
11. Do you have any suggestions for increasing protection of the fossil beds?
Promote passive recreation and National significance
12. What other information should we know about your experience with the WCA or adjacent projects?
13. Any general comments or feedback that should be considered for the Master Plan update?

Falls of the Ohio National Wildlife Conservation Area Master Plan Update – Comment Sheet



US Army Corps
of Engineers
Louisville District®

Use this form to submit your comments
at the public meeting or mail/email to:

USACE Louisville District
ATTN: PMC-PL
Mr. Nathan Moulder
P.O. Box 59, RM 708
Louisville, KY 40201
Nathan.A.Moulder@usace.army.mil
502-315-6776



Name: PAUL OLLIGES
Address: POLLIGES 44 @ AOL
Affiliation: FALLS VOLUNTEER, com

Comment: PENN CENTRAL BRIDGE?
- NOT FOR DECADES.
- ISN'T IT THE
'LOU. + INDIANA RR BRIDGE'

Please submit comments by October 31st.

Falls of the Ohio National Wildlife Conservation Area Master Plan Update – Comment Sheet



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Mr. Nathan Moulder
P.O. Box 59, RM 708
Louisville, KY 40201
Nathan.A.Moulder@usace.army.mil
502-315-6776



Name: DARRELL WINKLER

Address: _____

Affiliation: _____

Comment: ALLOW LIMITED ACCESS TO HISTORIC
SHIPPING-PORT ISLAND, AREAS LIKE THE OLD MILL,

Please submit comments by October 31st.

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502-315-6776



Name: _____

Address: _____

Affiliation: _____

Comment: _____

~~lock 2 way traffic on map~~

Dike → Track on outer fossil beds / Remove
Brown

find a different way to illustrate public access
through the lock

Please submit comments by October 31st.

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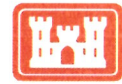


Name: Mark Young
Address: 214 Bramton Rd
Affiliation: Falls of the Ohio Foundation Board

Comment: Create a water trail with interpretive
signage - access from boat ramp ("George Rogers Clark"
Historic Site) or another appropriate access
point for non-motorized watercraft.

Please submit comments by October 31st.

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P.O. Box 59, RM 708
Louisville, KY 40201
Nathan.A.Moulder@usace.army.mil
502-315-6776



Name: Kenny Karam
Address: 738 Wicklow Rd, Louisville, Ky 40207
Affiliation: Falls of Ohio Foundation Board, Falls author, guide, teacher

Comment: ① The study that the Corps completed regarding the issue of the hazardous creek crossing at the Malpene Dam spillway caused by the construction of the dam project by the Corps. The final recommendation advanced no proposal to fix the problem. Many people affiliated with the Falls Center advocated concrete stepping pads across the creek. The Corps rejected this suggestion, saying it would be clogged by drift wood. DNR constantly clears driftwood from the two concrete pads that connect the visitor center

Please submit comments by October 31st.
to the fossil beds for visitors and handicapped. This is routine maintenance, so why can't the proposed stepping pads across the creek be cleared as routine maintenance along with paths? ?

**Falls of the Ohio
National Wildlife Conservation Area (WCA)
Master Plan Update –Questions**



US Army Corps
of Engineers
Louisville District®

1. How often and when do you visit the WCA? *40 times a year, year around*
2. What location do you typically use to enter the WCA? *Falls State Park*
3. What mode of transportation do you typically use to access the WCA? *sometimes Portland Canal
car Lo 4ks*
4. When you visit, what activities do you participate in at the WCA?
*hiking, teaching, bird watching, sketching, writing,
research, photography, tours*
5. What facilities do you use in the WCA?
*Falls State Park, Portland Canal Locks, Shippensburg Island
River Walk, LGE power plant tour*
6. Are there additional facilities or improvements that would enhance your experience at the WCA?
*(1) improve creek crossing at spillway so
outer fossil beds can be accessed by boat
(2) get a boat so visitors & students can be ferried
to outer fossil beds*
7. Are there additional communication materials that would enhance your experience at the WCA?
*(1) Portland Canal locks brochure, booklets,
overlook are excellent
(2) a new DVD on Portland Canal, Locks, McAlpine DAM*
8. Do you have any specific concerns when visiting the WCA? What locations?
creek crossing to spillway is often hazardous
9. Do you have any suggestions for protecting and enhancing aquatic habitat in the WCA?
*(1) with Col Beck on tour, we requested permission to put
in a pole, osprey platform for the WCA*
10. Do you have any suggestions for protecting and terrestrial habitat in the WCA?
(1) create a monarch butterfly station around Falls Park?
11. Do you have any suggestions for increasing protection of the fossil beds?
(1) increase the fine for stealing fossils, harming wildlife
12. What other information should we know about your experience with the WCA or adjacent projects?
13. Any general comments or feedback that should be considered for the Master Plan update?
Can the Corps request Federal

Responses may also be emailed to: Nathan.A.Moulder@usace.army.mil

(OVER)

(2)

Contact University of Louisville
IU SE -
Bellarmine

Biology, Science departments
for wildlife studies of Shippingport
Island by students to
catalogue plants, animals, birds
etc to identify endangered,
species -

- not asking that it
be open to the public
- but allow free study
research and a few
guided (controlled) tours

(3)

can you request
Federal brown tourism signs for
WCA for Interstate Bridges
I-71 I-64 - I-65?

**Falls of the Ohio
National Wildlife Conservation Area (WCA)
Master Plan Update –Questions**



US Army Corps
of Engineers
Louisville District®

1. How often and when do you visit the WCA?

Falls of Ohio - Frequently - Volunteer

2. What location do you typically use to enter the WCA?

Falls of Ohio

3. What mode of transportation do you typically use to access the WCA?

CAR

4. When you visit, what activities do you participate in at the WCA?

Volunteer Activities

5. What facilities do you use in the WCA?

Interp. Center / Fossil Beds

6. Are there additional facilities or improvements that would enhance your experience at the WCA?

7. Are there additional communication materials that would enhance your experience at the WCA?

8. Do you have any specific concerns when visiting the WCA? What locations?

Litter on Fossil Beds left by visitors

9. Do you have any suggestions for protecting and enhancing aquatic habitat in the WCA?

10. Do you have any suggestions for protecting and terrestrial habitat in the WCA?

11. Do you have any suggestions for increasing protection of the fossil beds

I think more signage is needed for protection of fossil beds and litter. See where rocks have been broken or chipped.

12. What other information should we know about your experience with the WCA or adjacent projects?

ON SIGNS ARE AT TOP of STAIRS. Needed at HANDICAP RAMP AND PATHWAY to "POINT" AREA.

13. Any general comments or feedback that should be considered for the Master Plan update?

Responses may also be emailed to: Nathan.A.Moulder@usace.army.mil

*Jim MEAD
(812) 283-7629 home (502) 645-7383 (cell)*

**Falls of the Ohio
National Wildlife Conservation Area (WCA)
Master Plan Update –Questions**



US Army Corps
of Engineers
Louisville District®

1. How often and when do you visit the WCA?

Falls of Ohio - Frequently - Volunteer

2. What location do you typically use to enter the WCA?

Falls of Ohio

3. What mode of transportation do you typically use to access the WCA?

CAR

4. When you visit, what activities do you participate in at the WCA?

Volunteer Activities

5. What facilities do you use in the WCA?

Interp. Center / Fossil Beds

6. Are there additional facilities or improvements that would enhance your experience at the WCA?

7. Are there additional communication materials that would enhance your experience at the WCA?

8. Do you have any specific concerns when visiting the WCA? What locations?

Litter on Fossil Beds left by visitors

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11. Do you have any suggestions for increasing protection of the fossil beds

I think more signage is needed for protection of fossil beds and litter. See where rocks have been broken or chipped.

12. What other information should we know about your experience with the WCA or adjacent projects?

ON SIGNS ARE AT TOP of STAIRS. Needed at HANDICAP RAMP AND PATHWAY to "POINT" AREA.

13. Any general comments or feedback that should be considered for the Master Plan update?

Responses may also be emailed to: Nathan.A.Moulder@usace.army.mil

*Jim MEAD
(812) 283-7629 home (502) 645-7383 (cell)*

From: [Paul O.](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [EXTERNAL] Falls of the Ohio National WCA Master Plan Update -- my responses to your Questions sheet....
Date: Thursday, October 19, 2017 11:55:35 PM

Hi Nate,

I'm the tall(est) fellow at the mtg Tues evening at the Falls Park.

1 How often?

I'm a volunteer at the Park since it's opening in 1994 and am closing in on 3000 vol. hours w/IDNR.

I lead hikes to the Indiana side (upper and lower beds) and the KY side outer-beds (in the middle of the river; done in mid-Aug to mid-Oct), and do outreach talks (via Powerpoint) and do other vol work as needed. In recent years I've been clocking around 140 or more hours a year vol time; a minimal amount of that would be at outreach events, ie. outside the WCA.

2. Entering?

I use Riverside Drive in Jeff/Clarksville. (I live in Louisville and use I-65 or the 2nd Street/Clark Bridge to get to Southern Indiana.).

3. Trans mode?

My car.

4. Activities?

See Q1 answer.

I lead hikes, help the Naturalists w/other duties as needed, interpret (we call in 'roving') on the deck or on the beds to visitors and answer their questions if I can.

(Often questions are about the location of the Lou. and Portland Canal and McAlpine Locks.)

5. Facilities?

The Interpretation Center at the Park; occasionally the boat ramp across from the lower gates.

6. Additional facilities?

Volunteers from the Falls Park in Clarksville lead several outer-bed hikes during the 'summer program' in late summer/early fall. This season 55 people took advantage of the guided hikes to the outer-beds.

The water hazard caused by the cuts in the dam toward the Indiana side can sometimes make it difficult or even impossible to gain access to the spillway and then to the outer fossil beds. This affects our ability to safely lead visitors on outer-bed hikes, fisherpeople, birders, and individuals or groups of explorers/visitors of all kind who access the spillway. Anything that could be done to mitigate the hazard would be a great thing, but the ACOE studied this a lot last year or so and no viable solution was found, at the time; but it remains on a wish list.

7. Additional materials?

A brochure that address what the WCA is, its uniqueness, history, what can be seen from various vantage points might be a good idea. Maybe the Falls Park would like to have that to give to visitors to the Park. And certainly at the Lock overlook.

8. Concerns?

See # 6.

9. Aquatic habitat?

No.

10. Terrestrial habitat?

No.

11. Protecting the fossil beds?

Yes; have more surveillance for catch/stop people from chipping out the fossils. Several of us Park Volunteers can show you spots where over the years, good specimens have been taken. (It's possible some may have worn out on their own, but the ones I remember that are gone were anchored in the limestone pretty good.

12. Other info?

Can't think of anything right now, other than it's a local area that probably 80+% of people in the Lou/Southern IN aren't aware of; they have a clue about what a neat place it is. The Falls area deals with: geology, paleontology, history, including the founding of all the Falls cities, wildlife (mainly fish and birds), the McAlpine Locks and Dam, the LG&E Hydro plant, river dynamics and engineering, the bridges, etc.

13. General comments?

See # 12.

Paul Olliges
home 502-473-1977
polliges44@aol.com

From: brainard@mindspring.com
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [EXTERNAL] Re: Falls of the Ohio Wildlife Conservation Area - Master Plan Update
Date: Monday, October 23, 2017 12:44:05 PM

Mr. Moulder,

Comments for Master Plan update; not sure what format these comments should take, but here they are, some reflecting on comments at meeting last week.

1) I don't think increased public access is necessary or needed at Shippingport Island. There **is** one management item that might be undertaken to encourage the Black-crowned Night-Herons (BCNHs) to continue to nest there. BCNHs prefer shorter trees in which to nest. The mulberry trees they are nesting in near the upstream end of the island are about as tall as the herons prefer. Not sure if they will leave if these trees get any taller, but mulberries tend not to get too huge so maybe they will be OK. In the mid-1980s, the BCNHs were nesting about 1/2 out the island in some mulberry trees that were only about 15-20 ft tall. It could be that a portion of the island could be looked at to maintain some trees that don't get very tall. This all being said, I **think** there is plenty of habitat for them to move to if they want to, but I would be happy to discuss this more with Lisa/Evan if we need to survey the island's veg for potential spots to manage for suitable nest trees.

2) I believe that a full time ranger/biologist is needed for the WCA. There are too many little things that don't get taken care of by shared staff (Taylorsville Lake/Falls WCA). Daily or at least five-days-per-week presence would go a long way to assuring that wildlife and recreational benefits are maximized.

3) This Master Plan update would be a good time to revisit the 1135 (I think you said that is what the project was referred to) that installed castellations on the upper dam near the Indiana shoreline. These castellations are serving no real purpose, but **are** restricting access to the outer fossil beds **and** also are pulling an extraordinary amount of debris over towards the corner of the McAlpine Pool above the dam that is left when water recedes. Far less flood debris used to accumulate in the northwest corner of the pool before the castellations were installed and began pulling flow towards the Indiana shoreline. The project either needs to be completed as designed or, probably even better, the castellations sealed to eliminate the effects of this poorly conceived project.

4) This is a real stretch, but I have always thought that outer fossil beds should be "off limits" to recreational use when there is flow thru the upper gates ... or at least maybe flow above a certain amount. When there is flow, the birds (mostly herons and egrets) all want to be out at the upper end of the outer fossil beds to fish, but fishermen (predominantly) that access the outer beds by boat scare them all away. Sometimes one small party of fishermen will frighten the birds away for many hours, or groups of fishermen switch out during a day, keeping the birds from feeding for long periods. Especially during the nesting season for herons and egrets, the birds depend on the fishing at the Falls to supply food for young. A very limited number of fishermen thus negatively impact the nesting success of the birds. This restriction would obviously need to be advertised with new signage and probably policed by someone periodically. This change would not restrict fishing opportunities very much; most fishermen anchor in the channel during good runs for sauger and striped bass. It would only impact a small number of fishermen but provide a **great** benefit to the nesting waterbirds of the WCA.

5) Finally, and this is another stretch ... the IN DNR put in place a fee for parking at the State Park Interpretive Center lot a number of years ago. As a user of the WCA, I do not believe that I should have to pay to access the federally owned public resource. I could, of course, park farther up the river and walk down to the Interpretive Center to overlook the Falls, but I do not believe that I should have to do this. In short, when the only reasonably accessible site for viewing the federal WCA is the Interpretive Center area, I do not believe that the state of Indiana should charge those not utilizing the Interpretive Center, but are just accessing the federally owned WCA public resource.

Thank you for your consideration of these ideas/suggestions.

Brainard Palmer-Ball, Jr.

-----Original Message-----

>From: "Moulder, Nathan A CIV USARMY CELRL (US)" <Nathan.A.Moulder@usace.army.mil>

>Sent: Oct 5, 2017 3:00 PM

>To: "Moulder, Nathan A CIV USARMY CELRL (US)" <Nathan.A.Moulder@usace.army.mil>

>Cc: "Turner, William M CIV USARMY CELRL (US)" <Michael.Turner@usace.army.mil>, "Freeman, Lisa A CIV USARMY CELRL (US)" <Lisa.A.Freeman@usace.army.mil>

>Subject: Falls of the Ohio Wildlife Conservation Area - Master Plan Update

>

>Good Afternoon,

>

>The U.S. Army Corps of Engineers will be hosting two public meetings / open houses to gather public input as we update the Master Plan for the Falls of the Ohio National Wildlife Conservation Area (WCA). The Master Plan is intended to guide the Corps in protecting, managing, conserving and enhancing natural resources and features of the WCA while providing research and interpretive opportunities to the public.

>

>Meeting Times and Locations:

>

>October 17, 5:00 - 7:00 p.m.

>Falls of the Ohio Interpretative Center

>201 W. Riverside Dr.

>Clarksville, IN 47129

>

>October 24, 5:00 - 7:00 p.m.

>Portland Museum

>2308 Portland Ave.

>Louisville, KY 40212

>

>Please feel free to forward to any groups or individuals that you feel may be interested in attending.

>

>Thanks,

>Nate

>

>

>Nathan A. Moulder

>Community Planner

>USACE-Louisville District

>P: 502.315.6776

>C: 502.689.8404

>F: 502.315.6864

>

>

>

From: [Babey, Amy S CIV USARMY CELRL \(US\)](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: FW: [EXTERNAL] Public meeting
Date: Monday, October 23, 2017 12:27:57 PM

FYU

Amy S. Babey, PMP
Chief, Planning Section
Civil Works - Planning, Programs, and Project Management Branch
USACE - Louisville District
Phone: 502.315.6880
Cell: 502.645.7199
Fax: 502.315.6864

-----Original Message-----

From: Michael Ellis [<mailto:iumikecoo@aol.com>]
Sent: Monday, October 23, 2017 11:12 AM
To: Babey, Amy S CIV USARMY CELRL (US) <Amy.S.Babey@usace.army.mil>
Subject: [EXTERNAL] Public meeting

Amy,

Thank you for the opportunity to learn more about the relationship between the Corp/ DNR/ and the Falls foundation.

As I said briefly, during the meeting,. I came to listen and learn. I regret having a second commitment at 7:00 PM which took me away midway through the session on October 17th.

As I understood the master plan, it does not incorporate efforts at public outreach to seek research and interpretive opportunities.

Rather the framework of the document is structured so as to accept and consider those projects which are brought for the from the public.

One of the participates described it as "wiggle room within the plan for just about anything." The five steps listed as the Master Plan on the Powerpoint presentation seemed to be more of a mission statement.

You may be aware of a group that works with the foundation referred to as it Coummunity Council. These business people meet quarterly to devise plans for projects to bring the interpretive center forward on new projects, help facilitate efforts and share information.

The Master Plan might benefit from forming such a group...composed of people who were in the room for the October 17 session.

One of the current idea that has come from our group is an effort to explore an application for the fossil beds to be declared a United Nation World Heritage site.

Another project involve the significance of the site with regards to its former native American residents...involving IU. These ideas are also coming by way of people who might also be funding sources for the projects. Will the master plan include a list of long range projects the Corps would feel significant to categorize and place on an agenda?.

I asked the question about Shippingport Island as a living laboratory for students to study from IU U of L and Bellarmine. Agenda item ..as I see it..would be to formalize and outreach to entities. I know for a fact that U of L's MBA program requires each student to engage in a study project before degree completion. A student team could investigate options and build a program for the corps' Maser Plan (funded by an existing and ongoing portion of a department at U of L.)

Mike Ellis, Board Member Falls of the Ohio Foundation.

From: [brendaduffey.](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [EXTERNAL] Wildlife Conservation Area in Portland
Date: Friday, October 27, 2017 8:24:36 PM

I came to the presentation last week and failed to mention a use for the McAlpine Interpretive Center. The Audobon Society is a local group and having bird walks and educational lectures there would be awesome.

Brenda Duffey

Blocked<http://kentuckywoman.net>

Blocked<http://angelbandproductions.com>

NAME	ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Jill Young	Falls of the Ohio Fdn	jillyoung90@gmail.com	614-582-7914
Mark Young	Falls of the Ohio Foundation	markayoung90@gmail.com	614-582-7913
Jim Pigram	land owner	J.Pigram@aol.com	812-923-9262
PAUL OLLIGERS	FOTD STATE PARK	POLLIGERS44@AOL.com	502-473-1977
Roy Taylor		roytaylor@earthlink.net	
SHAWN ZIEGLER	KY STATE NATURE PRESERVED	Shawn.Ziegler@ky.gov	502-573-2886
Scott Martin	River Heritage Conservancy	smartin@riverheritageconservancy.org	812-784-3420
Nathalie Andrews	Portland Museum	pmuse@iglu.com	502-776-7678
Ward Wilson	KY Waterways Alliance	ward@kwalliance.org	502-584-8008
DANNY SEIM	PORTLAND NOW, INC.	dannyseim@gmail.com	503-914-7964

[illegible]

Falls of the Ohio

National Wildlife Conservation Area (WCA)

Master Plan Update –Questions



US Army Corps
of Engineers
Louisville District®

1. How often and when do you visit the WCA?
Weekly
2. What location do you typically use to enter the WCA?
State Park
3. What mode of transportation do you typically use to access the WCA?
Automobile
4. When you visit, what activities do you participate in at the WCA?
Volunteer naturalist - hiking - interpreting
5. What facilities do you use in the WCA?
Interpretive Center
6. Are there additional facilities or improvements that would enhance your experience at the WCA?
~~Convert~~ the unused building into an activity hub
7. Are there additional communication materials that would enhance your experience at the WCA?
Have material directing people between the Museum, Interpretive Center, McAbrin facility, Louisville Visitor Center, et cetera, (include aforementioned hub)
8. Do you have any specific concerns when visiting the WCA? What locations?
Cut bank erosion & related sediments/erosion projects
9. Do you have any suggestions for protecting and enhancing aquatic habitat in the WCA?
Control sediments
10. Do you have any suggestions for protecting and terrestrial habitat in the WCA?
Connect the three green areas in a way that enables easier access for wildlife.
11. Do you have any suggestions for increasing protection of the fossil beds
12. What other information should we know about your experience with the WCA or adjacent projects?
13. Any general comments or feedback that should be considered for the Master Plan update?

Falls of the Ohio National Wildlife Conservation Area Master Plan Update – Comment Sheet



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of Engineers
Louisville District®

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ATTN: PMC-PL
Mr. Nathan Moulder
P.O. Box 59, RM 708
Louisville, KY 40201
Nathan.A.Moulder@usace.army.mil
502-315-6776



Name: Brenda Duffey
Address: Portland Now — duffey.brenda@gmail.com
Affiliation: Portland Neighborhood Association

Comment: Coordinate with River City
Paddle Sports (David Wicks) to set
up guided paddle of area beginning
at McAlpine & D Visitor's Center —
especially on the day of the
Portland Art & Heritage Fair.

Please submit comments by October 31st.

**Falls of the Ohio
National Wildlife Conservation Area (WCA)
Master Plan Update –Questions**



**US Army Corps
of Engineers**
Louisville District®

1. How often and when do you visit the WCA?
about 1st a month
2. What location do you typically use to enter the WCA?
Iron boat ramp bike path
3. What mode of transportation do you typically use to access the WCA?
bike & car
4. When you visit, what activities do you participate in at the WCA?
biking & hiking
5. What facilities do you use in the WCA?
Canal overlook
6. Are there additional facilities or improvements that would enhance your experience at the WCA? *Tours of Hydro plant.*
7. Are there additional communication materials that would enhance your experience at the WCA? *Better direction to canal in Ky. from I-64*
8. Do you have any specific concerns when visiting the WCA? What locations?
9. Do you have any suggestions for protecting and enhancing aquatic habitat in the WCA?
10. Do you have any suggestions for protecting and terrestrial habitat in the WCA?
11. Do you have any suggestions for increasing protection of the fossil beds
12. What other information should we know about your experience with the WCA or adjacent projects?
13. Any general comments or feedback that should be considered for the Master Plan update? *Maintain Museum*

Responses may also be emailed to: Nathan.A.Moulder@usace.army.mil

October 26, 2017

Nathan A. Moulder
Community Planner
USACE-Louisville District

Subject: Comment on the Falls of the Ohio National Wildlife Refuge Plan.

Dear Mr. Moulder,

We are writing to support and to acknowledge the work of the Army Corps of Engineers in its management of the Falls of the Ohio National Wildlife Refuge.

We write about updating the management plan of the Falls of the Ohio National Wildlife Refuge. River City Paddle Sports is a not for profit organization who manages a component of the Community Boat House on Louisville's Waterfront. River City Paddlesport's mission is to expand community access to all paddle sports in the Greater Louisville area through education, outreach, and competition. In addition to providing membership services for kayakers and canonists who store their boats at the boathouse, we offer environmental education program and paddle sports instruction on the Ohio, Beargrass Creek, and other area tributary streams. River City Paddle Sports also works to partner with Metro Louisville water-related organizations to promote safety, additional access and paddlesport infrastructure in our community and finally we actively advocate for clean streams, rivers, and healthy watersheds.

In the study area of the Falls of the Ohio, River City Paddle Sports assists the Metro Louisville Mayor's office with the Mayor's Hike Bike and Paddle. On Labor Day each year, we bring up to 1,000 paddlers through the locks, the event sponsored by the Metro Louisville Health Department celebrates active lifestyles, outdoor education and nature exploration. We sponsor an annual race called the Louisville 50. An adventure program that goes 50 miles from Westport to West Point. The Falls of the Ohio is at the halfway mark. We have led canoe trips – using 30-foot voyager canoes, leaving from the two boat ramps in southern Indiana with a purpose of exploring the outer banks of the Falls of the Ohio.

Personally, I have been involved with Ohio River educational and experiential education programs for over 40 years as I was director of environmental education at the Jefferson County Public Schools.

We enjoyed participating in the public meeting at the Portland Museum. We wanted to share with several ideas that we are requesting that you consider them in your planning.

1. Increase paddling access and information. It would be beneficial if there could be an easier way to find out the water levels that flow through the wildlife refuge. There are three parts to this idea:
 - a. Determine the ideal levels of flow for calm family paddling, great waves for kayaking surfing right below the dam and downstream.
 - b. Create a web interface that shows the current and forecast of current flow
 - c. To the extent possible schedule releases so families can know when there will be little or no current, or the opposite, when there is sufficient water to create play waves. Ideally, maybe Saturdays could be limited current and Sundays more water.

2. Increase education and scientific research, education and information about the value of the Wildlife Refuge.
 - a. Hire a full-time education/research manager who will coordinate and promote community/university research, education and information.
 - b. At each of the access points create interpretive exhibits that explain the value of the wildlife refuges and information on the flora and fauna of the refuge.
 - c. Create a scientific research advisory committee comprised of IUS, U of L, Spalding, and Bellarmine. Build a funding source for the Universities and their students to conduct research.
 - d. Recently, in K-12 education all Kentucky 8th grade science teachers are required to spend two months on watersheds and biodiversity. There is the significant need for professional development of the teachers and field study opportunities for every 8th-grade student. The Corps should create a week-long summer institute for 8th grade science teachers. This would improve education in our local community while at the same time encourage systematic approach to increase the community's environmental stewardship.
3. To protect the refuge, we believe you have to have a regional impact.
 - a. As you protect wildlife populations and habitats in their natural diversity of the Islands in Falls of the Ohio National Wildlife Refuge, consider the implications for the management of the other islands immediately upstream of the refuge: Tow Head, 6 Mile, 12 Mile and 18-mile islands. The four islands are impacted by the impounded water, they are impacted by commercial barge traffic and are being overrun by invasive species. The four islands are management by Metro Louisville, the state of Kentucky and private individuals and local corporation. We hope that the scientists of the Falls of the Ohio National Wildlife Refuge could provide leadership and assistance as the owners of the islands and the community restore the ecological integrity of the islands in our region.
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 - c. The same goes with protecting the fishes. Falls of the Ohio National Wildlife Refuge is required to conserve fish populations in their natural diversity. One important strategy to protect the fish of the Falls of the Ohio is to protect the ecological integrity of tributary streams upstream of the falls: Beargrass Creek, Goose Creek, Harrods Creek, 14-mile Creek. If the Corp could bring together the managing agencies and the user groups to form collaborative problem-solving teams, we believe that the fish habitat of the regions tributary streams could be greatly improved.

- d. The immediate health of the refuge is directly related to the health of Silver Creek. It would be great if the Corps could acquire the natural areas that are left.



RIVER HERITAGE CONSERVANCY

Army Corps of Engineers Louisville District
ATTN: Mr. Nathan A. Moulder, CELRL-PM-P-F
P.O. Box 59
Louisville, KY 40201

RE: Falls of the Ohio National Wildlife Conservation Area Master Plan Update

Dear Mr. Moulder:

Thank you for the opportunity to submit comments for consideration as the US Army Corps of Engineers updates the Master Plan for the Falls of the Ohio National Wildlife Conservation Area (WCA). The Falls area is a truly special resource for the region. River Heritage Conservancy is pleased to see the Corps actively engaged in a refresh of the WCA master plan. RHC is interested in developing substantive and lasting partnerships with the Corps, similar to its partnerships with Indiana DNR, to aid in ongoing stewardship activities.

River Heritage Conservancy, Inc. (RHC) is a new non-profit park conservancy operating in Floyd and Clark Counties, Indiana. As a non-profit park conservancy, its aim is to plan, develop, and operate a series of public parks that run alongside the Ohio River Greenway. To do so, it will acquire existing privately held lands and begin conversion of them into a systemic public park. It is anticipated that the new park system will share property boundaries with the Falls of the Ohio National Wildlife Conservation Area. The planning work will occur over the next 1-2 years with construction of the park beginning within five years. The park system will then likely be built in phases.

RHC's work is aimed at restoring the Ohio River waterfront and increasing public use and enjoyment of it. Additionally, as new parks are added by River Heritage Conservancy to the areas adjacent to the WCA, wildlife conservation opportunities will be enhanced and expanded. The RHC project will be a gamechanger for the Ohio River waterfront.

To this end, RHC identifies four core areas that are ripe for Corps collaboration and coordination to the benefit of the resource and visitors:

- Master Park Plan Development and Site Integration
- Visitor Services (Safety & Interpretation)
- Recreational Amenity Provision
- Natural Resource Stewardship

While the above are bigger ticket items requiring sustained engagement and collaboration, there are several areas of immediate action to be considered within the WCA's current master planning process that impact RHC initiatives, and the resources/visitors going forward. We request that the Corps address these items in the WCA Master Plan update.

Clarksville Shoreline Erosion

RHC is concerned about shoreline erosion. Significant acreage has been lost and continued erosion exists. While studies are underway to evaluate engineering/operational options that can slow erosion, we are interested in exploring funding options to address this area in the short-term through PAS programs. Time is of the essence. The updated master plan should identify solutions and funding strategies to reduce bank erosion. Given that LG&E's operations are a significant

contributor to erosion, we request that the Corps take the lead in bringing them to the shoreline stabilization planning process.

Riparian and Wildlife Habitat Enhancement Opportunities

The ecological integrity of banks along the Ohio River main stem and feeder tributaries like Mill and Silver Creek are impaired. The Ohio's flow regimens and lack of active stewardship of these areas has resulted in the removal of healthy riparian ecosystem functions. Continued variations in water levels produce stresses on shoreline plant communities. What vegetation is present tends to be low value species, and includes significant invasive plant incursions. The existing banks are nearly industrial in their current condition.

RHC would very much like to engage with the Corps in the development of a collaborative/system-wide plan to begin improving the natural conditions of the banks to the benefit of the many bird and wildlife species that require them for habitat. RHC is interested in working with the Corps to expand partnerships with the conservation community to fund the installation and maintenance of habitat enhancement structures and features as part of our ongoing park work. Creation of "watchable wildlife" opportunities within the WCA and its direct environs would do much to expand awareness of the Corps and its work in natural resource stewardship. Finally, stabilizing and conserving the existing naturalized banks should be part of any shoreline stabilization effort.

Paddle Sports Activities in WCA

A unique attribute of the Falls of the Ohio is its service as a destination for non-motorized boating activities such as canoeing, kayaking, whitewater boating, and paddleboarding. Clear separation of commercial traffic, significant public shoreline access, accessibility of natural and cultural resources, and natural features that produce relatively consistent whitewater surf waves, make the WCA a unique recreational amenity within the Ohio River. While the WCA's 1984 master plan does not specify outdoor recreation as a mission of the area, the Corps' overall functions direct the agency to deliver public recreation services at its project sites. Further, the presence of the WCA in the middle of a Metro area with over 1.2 million residents naturally requires consideration of recreational use of these unique public waterway assets and experiences.

When the WCA master plan was adopted in 1984, paddle sports was an activity with low rates of interest. Over the last thirty years, the paddle sports industry has undergone a revolution resulting in significant increases in participation. Participation in recreational kayaking and paddle boarding have grown the most. Anecdotal information from Louisville area paddle sports retail outlets indicates a five-fold increase in the number of kayaks sold over the last ten years.

At the WCA, there are unique opportunities to serve non-motorized paddle sports participants. RHC requests that the Corps, one of the federal government's largest providers of public recreation, evaluate paddle sports participation and opportunities to expand public enjoyment of the WCA resources within the parameters set by the original master plan. RHC will be happy to bring our expertise and data forward as part of this process.

We are interested in the potential of the WCA to support two specific recreational boating communities. First, the ability to regulate low flows makes this section of the Ohio a great space to provide non-motorized recreational paddle sports experiences. The low current, and presence of a tremendous amount of aquatic and terrestrial communities makes this a great place to explore by recreational kayak or canoe IF conditions on the water are maintained. The challenge with this community of recreational paddlers lies in providing participants with safe ways to enjoy the sport. The Ohio River in the Falls vicinity can be a challenging environment to paddle for a beginner. But, the Corps has the unique ability to shape the experience for this community of boaters through its existing structures, water release protocols, and by working with LG&E at the hydropower facility. The Corps should evaluate locations in the WCA where recreational paddling can be sustained. This evaluation should include consideration of stream flows, parking, boat ramps, interpretive materials/information, and safety response systems. Opportunities to provide unique wildlife viewing opportunities through more structured and interpreted paddling routes should also be considered.

Second, the Corps should evaluate water releases within the WCA to enhance the predictability and consistency of existing whitewater surf features. Whitewater paddle sports is a different community with different needs than recreational boaters. The unique limestone ledges within the WCA, coupled with consistent water releases made possible by existing Corps structures, may produce the only dependable whitewater features on the entire Ohio River. These features are some of the only predictable whitewater within one hundred miles of Louisville. We request that the Corps reach out to American Whitewater and the local boating community to test and evaluate water flows that could support consistent and predictable year-long whitewater activities within the WCA. Clearly this activity would need to be balanced against other conservation and recreation goals within the WCA. RHC will bring its expertise and experience to this evaluation and study effort.

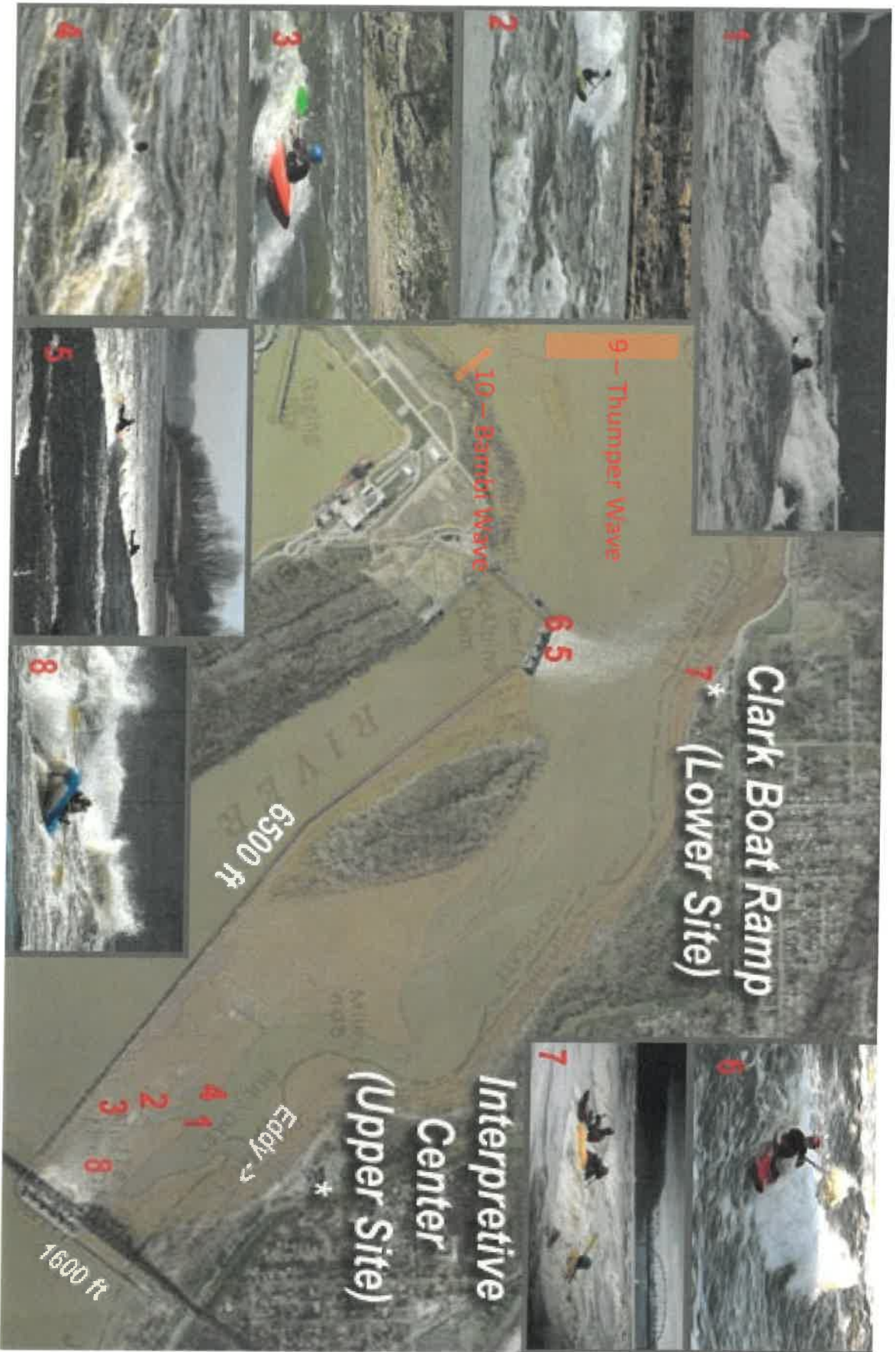
Thank you again for this opportunity to submit comments relating to the WCA Master Plan Update. On behalf of RHC, we look forward to working together with the Corps to improve and enhance the shared resources within the project area.

Sincerely,

A handwritten signature in dark ink, appearing to read "Scott Martin", is written over a horizontal line.

Scott Martin, Executive Director
River Heritage Conservancy, Inc.

CC: RHC Board
DNR – Falls of the Ohio State Park
Town of Clarksville, IN



From: [brendaduffey.](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [EXTERNAL] Wildlife Conservation Area in Portland
Date: Friday, October 27, 2017 8:24:36 PM

I came to the presentation last week and failed to mention a use for the McAlpine Interpretive Center. The Audobon Society is a local group and having bird walks and educational lectures there would be awesome.

Brenda Duffey

Blocked<http://kentuckywoman.net>

Blocked<http://angelbandproductions.com>

From: [David Wicks](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [EXTERNAL] Fwd: Indian Shoot - Falls of the Ohio
Date: Thursday, November 02, 2017 8:15:25 AM

[Blockedhttps://www.urbanohio.com/forum/index.php?topic=22724.0](https://www.urbanohio.com/forum/index.php?topic=22724.0)

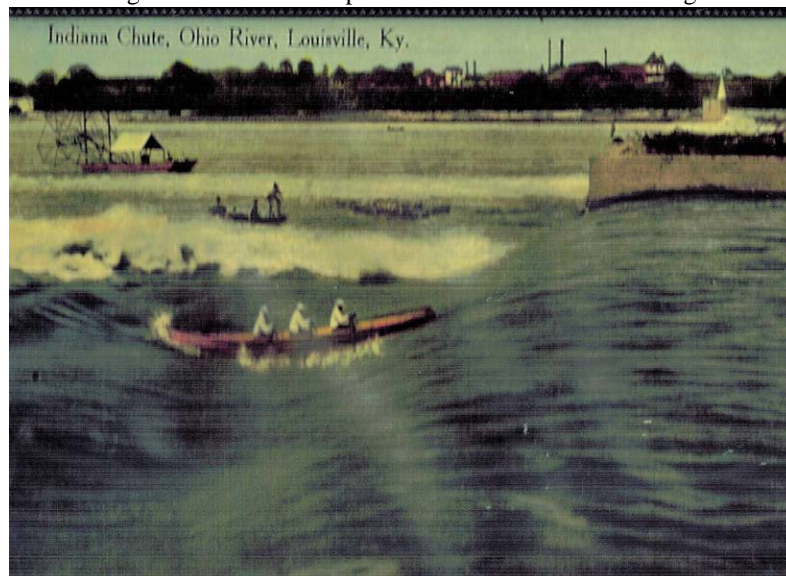
Have you seen this post, it gives one of the best overviews of the falls that I have seen.

----- Forwarded message -----

From: **David Wicks** <dwicks1@gmail.com>
Date: Thu, Nov 2, 2017 at 8:13 AM
Subject: Indian Shoot - Falls of the Ohio
To: "Moulder, Nathan A LRL" <Nathan.A.Moulder@usace.army.mil>

Hey Nate,

A friend of mine collects old Louisville postcards, he has framed about 10 of them - the history of the lock and dam. No dates on them, but most likely between 1850 and 1920. What got me thinking was the one that depicts three men in a canoe surfing the wave at wave



rock in the Indiana Chute.

At least I think it is at Wave Rock, what do you think, can you geographically place this photo? and maybe come up with a year?

Anyway, this supports the idea of that part of the new management plan for the wildlife refuge, the Corps could conduct studies to determine the ideal flow to produce the ideal waves and eddies for kayakers to have a spot to do what they have been doing for years, as evidenced by this postcard, for over a hundred years.

It would also be equally advantageous to have times of no flow, that families and or educational programs could take canoes or kayaks to the out fossil beds or explore the rest of the wildlife refuge.

Eventually, it would be great to have identifiable periods of time that the corps and or LG and E would have set releases or no releases in order to promote safe exploration of the refuge by canoe or kayak. I could just see it, that every Saturday from 9 to 4 there will be a release that creates the perfect wave and eddy system and then on Sunday from 9 to 4, there would be no release thereby allowing smaller groups to leisurely paddle. then do the same during the week to accommodate school groups.

the size of the mayor's hike bike and paddle has demonstrated the community interest in exploring the falls of the

ohio national wildlife refuge by small boat.

Let me know if you would like to see some of the other photos.

David

--

Dr. David Wicks

dwicks1@gmail.com

502-671-3595 (cell)

[Blockedhttp://www.beargrassdocumentary.org/](http://www.beargrassdocumentary.org/)

[Blockedwww.rivercitypaddlesports.org](http://www.rivercitypaddlesports.org)

--

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From: [David Wicks](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [EXTERNAL] Another idea for the Falls of the Ohio National Wildlife Refuge
Date: Monday, November 13, 2017 9:03:58 AM

Nate,

I am encouraging the U.S. Army Corps of Engineers to develop and disseminate biodiversity information relating to the Falls of the Ohio National Wildlife Refuge in a booklet and interactive web page.

Currently, in Kentucky, every 8th grader spends 2 months in science class focusing on watersheds and biodiversity. It would be great if the Army Corps' book "Triumph at the Falls" could be adapted for an 8th-grade audience and in the same book present information on the Ohio River and the biodiversity of the falls of the Ohio.

Having it focus on 8th grade would make such a document very readable by the average citizen as well.

David Wicks

PS: As most of the refuge is not accessible to the average citizen, such a booklet/website would allow the corps to full fill the goal: -to provide opportunities for scientific research and interpretive and environmental uses and fish and wildlife oriented recreational uses.

--

Dr. David Wicks
dwicks1@gmail.com <<mailto:dwicks1@gmail.com>>
502-671-3595 (cell)
Blocked<http://www.beargrassdocumentary.org/>
Blockedwww.rivercitypaddlesports.org <Blocked<http://www.rivercitypaddlesports.org>>

From: [Scott Martin](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Cc: [Kevin Colburn](#)
Subject: [EXTERNAL] Falls of the Ohio Master Plan - Paddle Sports Working Group
Date: Friday, November 03, 2017 3:23:10 PM

Army Corps of Engineers Louisville District

ATTN: Mr. Nathan A. Moulder, CELRL-PM-P-F

P.O. Box 59

Louisville, KY 40201

RE: Falls of the Ohio National Wildlife Conservation Area Master Plan Update – Whitewater Interests

Dear Mr. Moulder:

Thank you for the opportunity to submit comments for consideration as the US Army Corps of Engineers updates the Master Plan for the Falls of the Ohio National Wildlife Conservation Area (WCA). Per our last discussion, I shared news of the Master Planning process with individuals in the region's paddle sports community and industry.

A number of very knowledgeable and skilled paddlers have indicated an interest in participating in a working group to help the Corps explore opportunities for expanded use of the public recreational amenities related to paddle sports found within the WCA's boundaries. These volunteers have a wealth of data and experience from the Falls area that they are anxious and interested to share with the Corps. The preponderance of these boaters are in the local Viking Canoe Club.

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Kevin Hisel - kevinuofk@gmail.com <<mailto:kevinuofk@gmail.com>>

David Wicks – dwicksl@gmail.com <<mailto:dwicksl@gmail.com>>

Spalding Hurts – spaldinghurts@gmail.com <<mailto:spaldinghurts@gmail.com>>

Jeff Gardner – gardnerjff@yahoo.com <<mailto:gardnerjff@yahoo.com>>

Daniel Spitler – Daniel.spitler@gmail.com <<mailto:Daniel.spitler@gmail.com>>

Jim Gunn – gunn0515@bellsouth.net <<mailto:gunn0515@bellsouth.net>>

James Schmuckie – jwschmuc@gmail.com <<mailto:jwschmuc@gmail.com>>

Additionally, American Whitewater (AW) has indicated an interest in joining this effort. AW brings a depth of experience working on large volume rivers with multiple user groups and activities to balance. A notable large river project they recently assisted on is the Susquehanna at Holtwood. Information on this project is found at -
Blocked<https://www.americanwhitewater.org/content/Project/view/id/5/> The point staff member for AW is:

Kevin Colburn, National Stewardship Director

P.O. Box 1540
Cullowhee, NC 28723

kevin@americanwhitewater.org <<mailto:kevin@americanwhitewater.org>>

As always, RHC is interested in being part of this dialogue and exploration. Thank you again for this opportunity to submit comments relating to the WCA Master Plan Update. On behalf of RHC, we look forward to working together with the Corps to improve and enhance the shared resources within the project area.

Scott Martin, Executive Director

River Heritage Conservancy, Inc.

319 East Court Avenue

PO Box 486

Jeffersonville, IN 47131

812-786-3420

smartin@riverheritageconservancy.org <<mailto:smartin@riverheritageconservancy.org>>

Blockedwww.riverheritageconservancy.org <Blocked<http://www.riverheritageconservancy.org/>>

October 26, 2017

Nathan A. Moulder
Community Planner
USACE-Louisville District

Subject: Comment on the Falls of the Ohio National Wildlife Refuge Plan.

Dear Mr. Moulder,

We are writing to support and to acknowledge the work of the Army Corps of Engineers in its management of the Falls of the Ohio National Wildlife Refuge.

We write about updating the management plan of the Falls of the Ohio National Wildlife Refuge. River City Paddle Sports is a not for profit organization who manages a component of the Community Boat House on Louisville's Waterfront. River City Paddlesport's mission is to expand community access to all paddle sports in the Greater Louisville area through education, outreach, and competition. In addition to providing membership services for kayakers and canonists who store their boats at the boathouse, we offer environmental education program and paddle sports instruction on the Ohio, Beargrass Creek, and other area tributary streams. River City Paddle Sports also works to partner with Metro Louisville water-related organizations to promote safety, additional access and paddlesport infrastructure in our community and finally we actively advocate for clean streams, rivers, and healthy watersheds.

In the study area of the Falls of the Ohio, River City Paddle Sports assists the Metro Louisville Mayor's office with the Mayor's Hike Bike and Paddle. On Labor Day each year, we bring up to 1,000 paddlers through the locks, the event sponsored by the Metro Louisville Health Department celebrates active lifestyles, outdoor education and nature exploration. We sponsor an annual race called the Louisville 50. An adventure program that goes 50 miles from Westport to West Point. The Falls of the Ohio is at the halfway mark. We have led canoe trips – using 30-foot voyager canoes, leaving from the two boat ramps in southern Indiana with a purpose of exploring the outer banks of the Falls of the Ohio.

Personally, I have been involved with Ohio River educational and experiential education programs for over 40 years as I was director of environmental education at the Jefferson County Public Schools.

We enjoyed participating in the public meeting at the Portland Museum. We wanted to share with several ideas that we are requesting that you consider them in your planning.

1. Increase paddling access and information. It would be beneficial if there could be an easier way to find out the water levels that flow through the wildlife refuge. There are three parts to this idea:
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- d. The immediate health of the refuge is directly related to the health of Silver Creek. It would be great if the Corps could acquire the natural areas that are left.

From: [Scott Martin](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Cc: [Kevin Colburn](#)
Subject: [EXTERNAL] Falls of the Ohio Master Plan - Paddle Sports Working Group
Date: Friday, November 03, 2017 3:23:10 PM

Army Corps of Engineers Louisville District

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P.O. Box 59

Louisville, KY 40201

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Jeff Gardner – gardnerjff@yahoo.com <<mailto:gardnerjff@yahoo.com>>

Daniel Spitler – Daniel.spitler@gmail.com <<mailto:Daniel.spitler@gmail.com>>

Jim Gunn – gunn0515@bellsouth.net <<mailto:gunn0515@bellsouth.net>>

James Schmuckie – jwschmuc@gmail.com <<mailto:jwschmuc@gmail.com>>

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Scott Martin, Executive Director

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From: [Paul O.](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [EXTERNAL] Falls aerial pics and random thoughts/suggestion for WCA Master Plan...
Date: Tuesday, October 24, 2017 9:19:20 PM

Hi Nate,

Yes, I have your email re: aerial pics of Falls. I'll contact you as soon as I am able to do this.

I think most or all of things were mentioned tonight, but here are some:

- an observation area and/or walking path on the L&I Bridge and K&I Bridge;
- address erosion at George Rogers Clark Cabin site;
- open parts of Shippingport Island to hiking/walking/visiting/picnicing/viewing the area;
- divert flow from lower site away from Clarksville shoreline;

--there are 4 gems in the Falls WCA area.

Three are inside the WCA: FOTO State (Indiana) Park, McAlpine Locks, and LG&Es Ohio Falls Station (hydro); and the Portland Museum is just outside the WCA.

The public are aware of them poorly or not at all.

Access to each is also often unknown and a visitor must work at wanting to visit them.

So better signage would be a big enhancement and a good start.

The FOTO Park has some signage, but McAlpine Locks has very little and the hydro not at all.

(I think when hydro has #8 turbine up and all are running smoothly, they may be fixing up the plant and allowing tours. This is my understanding.)

I hope these are helpful, Nate.

Paul O.

FALLS OF THE OHIO NATIONAL WILDLIFE CONSERVATION AREA 2017 MASTER PLAN UPDATE

Open House

August 22, 2018

5:00 – 7:00 P.M.

"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."

Falls of the Ohio National Wildlife Conservation Area Master Plan Update



JULY 2018



**US Army Corps
of Engineers**



AGENDA

- Introductions
- Master Plan Purpose & Process
- Existing Conditions
- Resource Objectives
- Open House / Map Review
- Adjourn

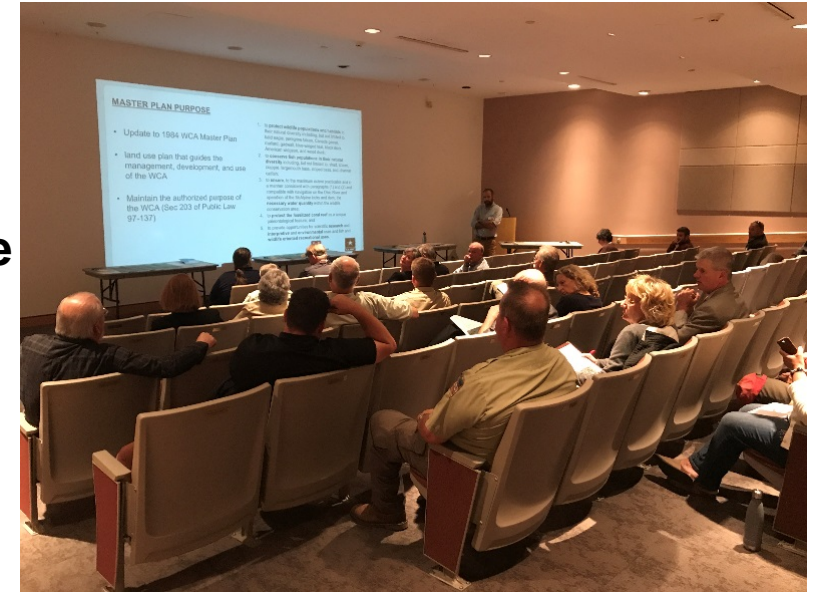
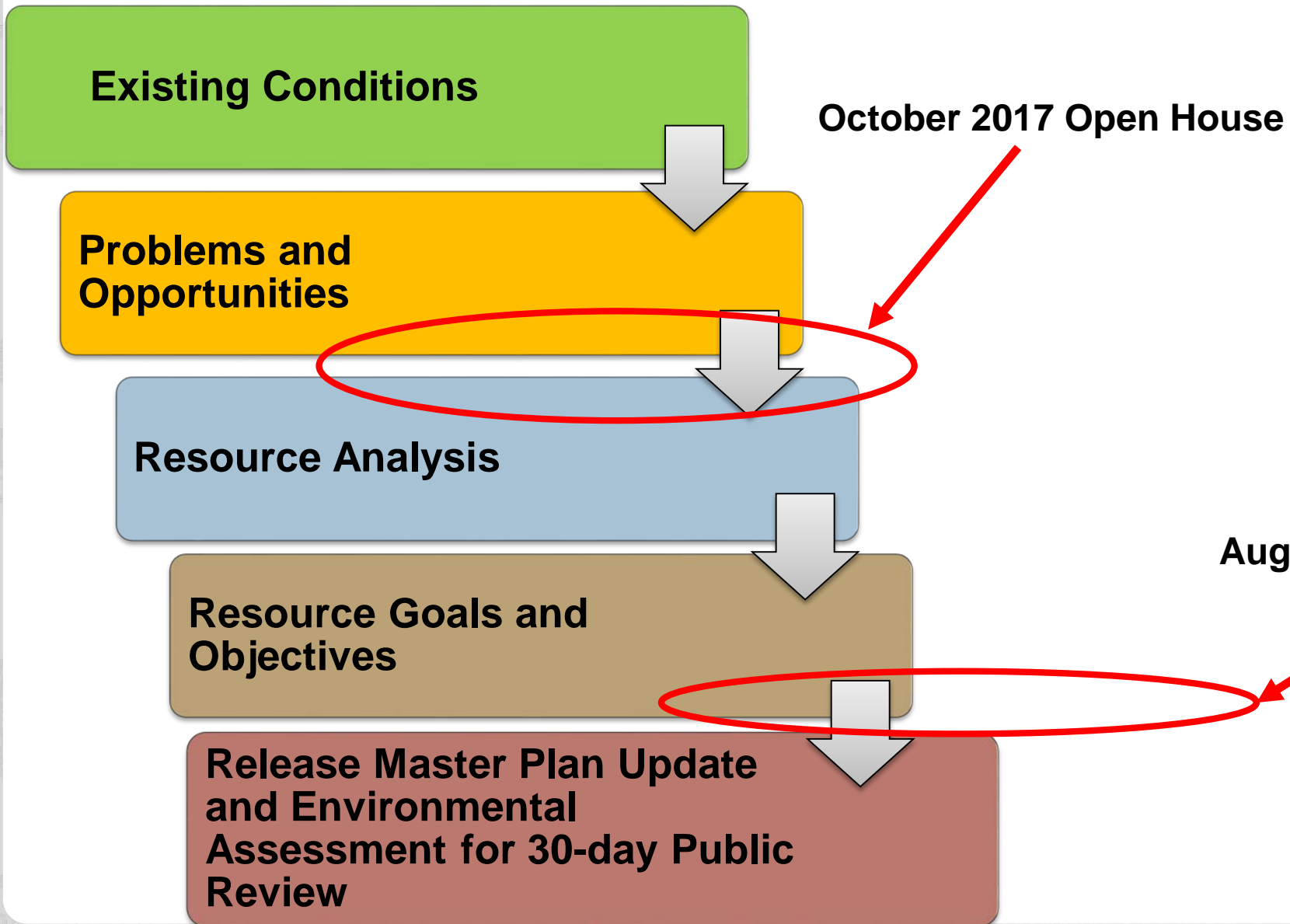




MASTER PLAN PURPOSE

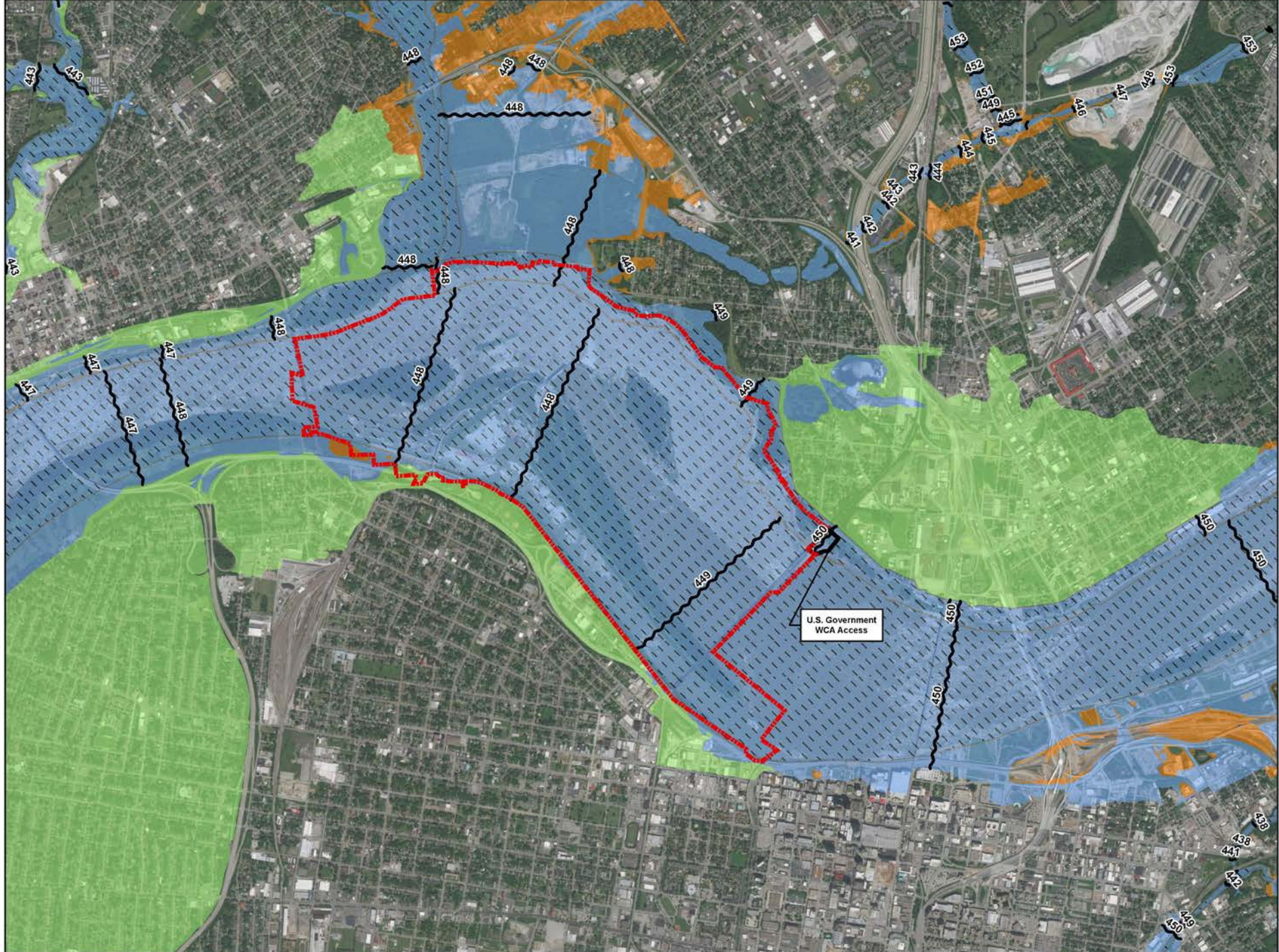
- Update to 1984 WCA Master Plan
 - land use plan that guides the management, development, and use of the WCA
 - Maintain the authorized purpose of the WCA (Sec 203 of Public Law 97-137)
1. to **protect wildlife populations and habitats** in their natural diversity including, but not limited to, bald eagle, peregrine falcon, Canada geese, mallard, gadwall, blue-winged teal, black duck, American widgeon, and wood duck;
 2. to **conserve fish populations in their natural diversity** including, but not limited to, shad, shiner, crappie, largemouth bass, striped bass, and channel catfish;
 3. to **ensure**, to the maximum extent practicable and in a manner consistent with paragraphs (1) and (2) and compatible with navigation on the Ohio River and operation of the McAlpine locks and dam, the **necessary water quantity** within the wildlife conservation area;
 4. to **protect the fossilized coral reef** as a unique paleontological feature; and
 5. to provide opportunities for scientific **research** and **interpretive** and **environmental** uses and fish and **wildlife oriented recreational uses**.

MASTER PLAN UPDATE PROCESS



US Army Corps
of Engineers





Legend

-  Base Flood Elevation
-  Floodway
-  100yr Flood Event
-  500yr Flood Event
-  Floodplain Behind Levee
-  WCA Boundary



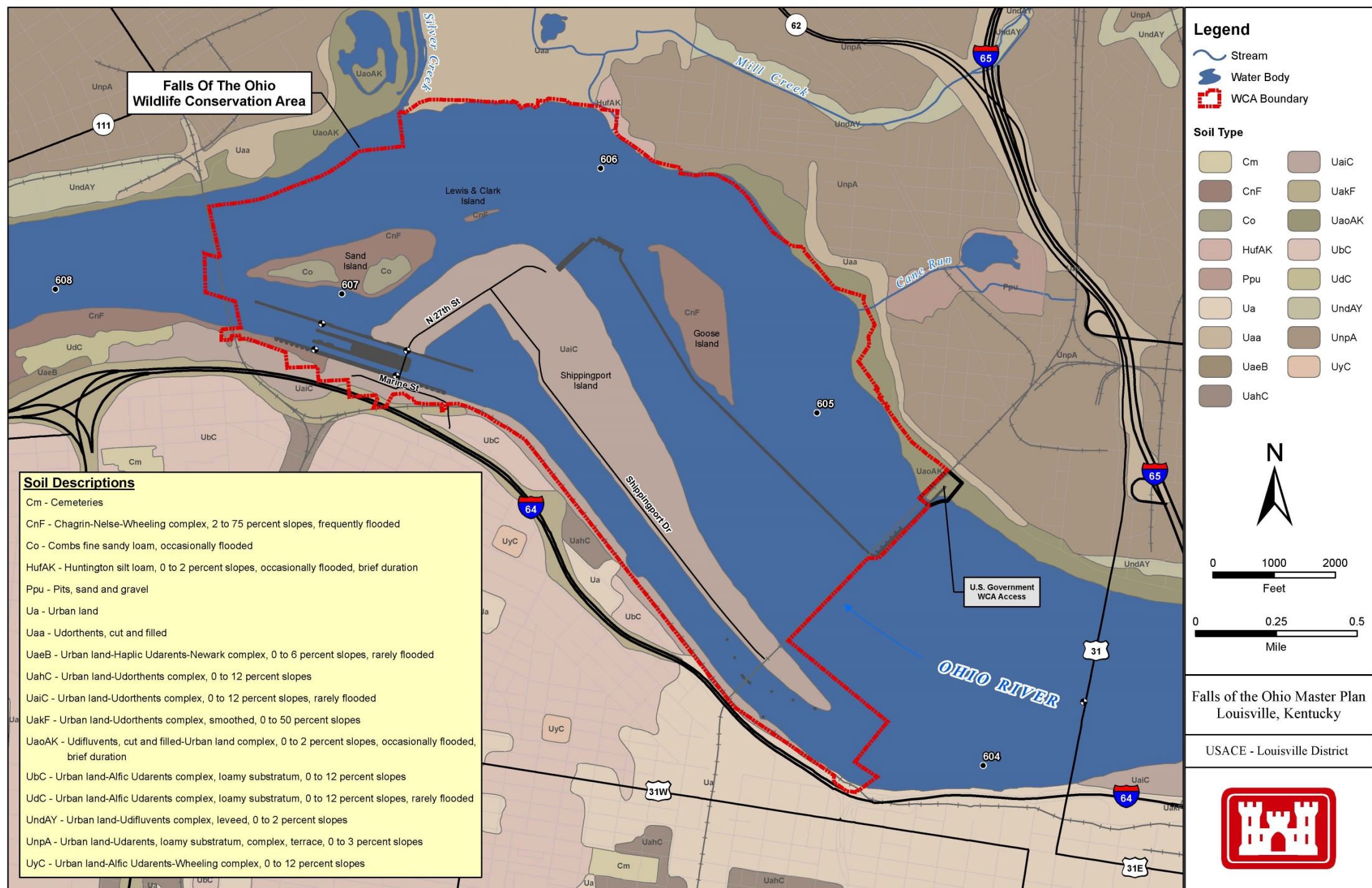
0 1000 2000
Feet

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Mile

Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District







Legend

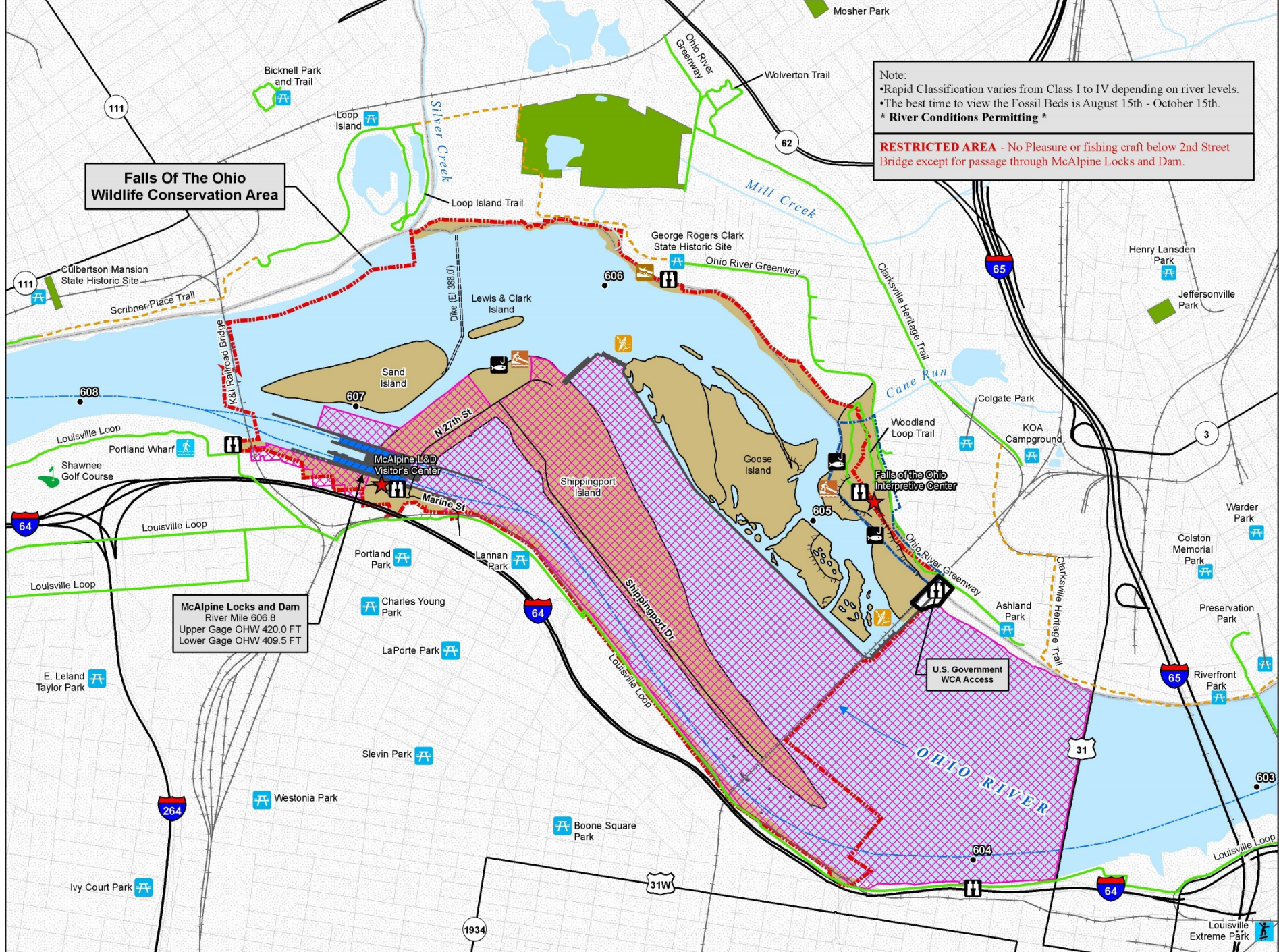
- Stream
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- USGovAccess
- WCA Boundary

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Feet

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Mile

Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District



Legend

- ★ Visitor Center
- 🏠 Observation Points
- 🌊 Whitewater Rapids
- 🎣 Fishing Access Point
- 🚣 Kayak and Canoe Ramp
- 🚤 Boat Ramp
- 🌳 Park
- 🚶 Greenway/Trail
- 🛹 Skate Park
- 🏌 Golf Course
- 🟢 Existing Trail
- 🟡 Trail Planned or Under Development
- 🪨 Fossil Cliff
- ===== Dike
- 🌊 Sailing Line
- 🗺 Falls of the Ohio State Park Boundary
- 🚫 Restricted Area
- 🟢 INDR Land
- 🔴 WCA Boundary

N

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Feet

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Mile

**Falls of the Ohio Master Plan
Louisville, Kentucky**

USACE - Louisville District



RESOURCE OBJECTIVES

1. Protect the fossilized coral reef as a unique paleontological feature
2. Protect and enhance the ecosystem function of the NWCA
3. Enhance and maintain visitor experience at the NWCA
4. Increase opportunities for scientific research, interpretive and environmental uses



OBJECTIVE 1: PROTECT THE FOSSILIZED CORAL REEF AS A UNIQUE PALEONTOLOGICAL FEATURE

12

- Monitor impacts to fossil beds from flows at McAlpine Dam and identify corrective actions to mitigate effects.
- Maintain limited access to outer fossil beds.
- Continue coordination with state and local law agencies to enforce laws pertaining to fossil collection and vandalism.



OBJECTIVE 2: PROTECT AND ENHANCE THE ECOSYSTEM FUNCTION OF THE NWCA

Terrestrial Ecosystem Function

- Conduct baseline assessment
- Develop a Natural Resource Management Plan.
- Remove/control invasive species and develop a monitoring/management plan.
- Maintain and expand existing pollinator areas
- Delineate existing wetlands and identify opportunities for enhancement/creation of additional wetlands.
- Reduce sedimentation / loss of riparian corridor and near-shore habitat.
- Remove metal scrap and debris deposits
- Work with LG&E to actively manage vegetation for conservation
- Actively maintain the proper NWCA boundary line on the Indiana shore.

Aquatic Ecosystem Function

- Review operation of upper gate to maximize water quality and quantity parameters for aquatic species.
- Maintain continued fish monitoring with ORSANCO.
- Continue to clear debris from lower castellations adjacent to the Middle Chute.
- Identify opportunities for improved floodplain connections to the Loop Island wetlands and floodplain forest.
- Identify opportunities for improved fish habitat in the NWCA
- Engage adjacent resource managers to develop and fund a comprehensive strategy to manage woody debris and trash that is deposited in the NWCA from Ohio River flows.



US Army Corps
of Engineers



OBJECTIVE 3: ENHANCE AND MAINTAIN VISITOR EXPERIENCE

Land-Based

- Provide additional wayfinding
- Install bike racks at the Fisherman's Trail parking area and George Rogers Clark boat ramp.
- Provide full-time staff to manage visitation to the NWCA
- Identify and communicate public high hazard areas
- Improve safety on Shippingport Island
- Maintain visitation hours and gate closure policies.
- Actively engage in the planning and implementation of Phase IV of Waterfront Park (Waterfront Park West) and the Clarksville West master plan.
- Continue lease with IDNR for the Falls of the Ohio State Park and Interpretative Center.
- Actively track visitation to the NWCA via vehicle, boat ramp foot and bicycle

Water-Based

- Develop communication materials for the WCA that describe ideal/dangerous paddling conditions relative to skill level.
- Develop interpretive materials that highlight key features (natural, historic and contemporary) of the WCA that can be explored via canoe or kayak.
- Develop a blueways plan that describes how the WCA functions as a whitewater and flatwater destination with paddling connections to Silver Creek, New Albany, Shawnee Park (forthcoming), Greenwood, West point and Otter Creek.
- Explore opportunities with the Falls of the Ohio State Park / River Heritage Conservancy to enhance water-based recreation in the NWCA.

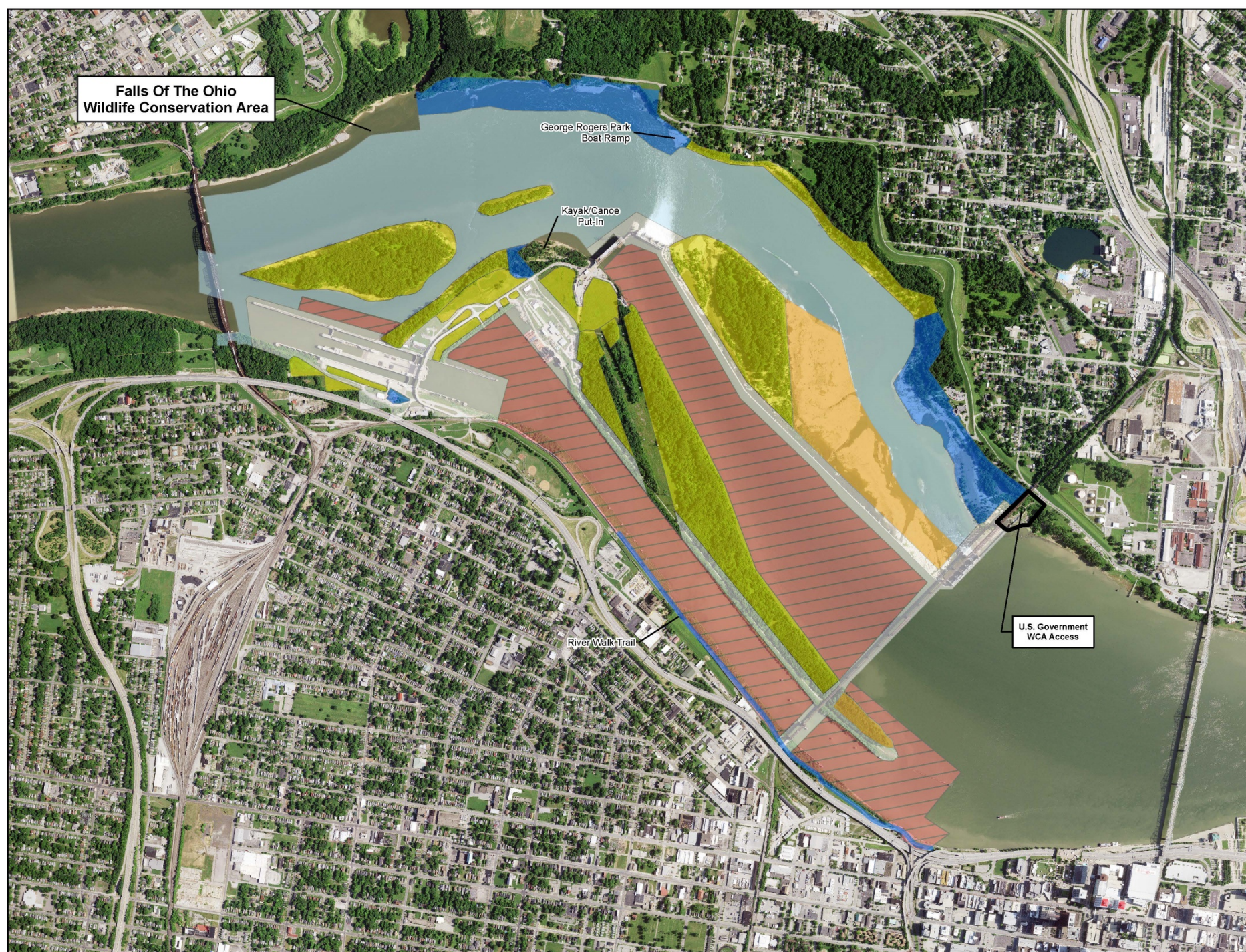


OBJECTIVE 4: INCREASE OPPORTUNITIES FOR SCIENTIFIC RESEARCH, INTERPRETIVE AND ENVIRONMENTAL USES

15

- Facilitate connections with local universities and school systems.
- Provide opportunities for facilitated educational tours of the WCA targeting environmental, historic and prehistoric interests. (i.e. West Louisville Outdoor Recreation Initiative – based in Shawnee Park).
- Expand interpretative materials at the McAlpine Visitor Area and other NWCA gateways to include historic, prehistoric and wildlife information.
- Engage Portland and other adjacent neighborhoods to provide opportunities for volunteer labor to assist with invasive species control and eradication.
- Identify an education/research manager who can coordinate and promote community /university research, education and information.





**Falls Of The Ohio
Wildlife Conservation Area**

George Rogers Park
Boat Ramp

Kayak/Canoe
Put-In

River Walk Trail

U.S. Government
WCA Access

Legend

Land Classifications

-  Project Operations
-  Open Recreation Surface Water
-  Low Density Recreation
-  Environmentally Sensitive
-  Vegetative Management
-  Restricted Surface Water



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Mile

Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District



QUESTIONS?

COMMENT CARDS ARE AVAILABLE AT EACH MAP LOCATION



US Army Corps
of Engineers





From: [Kenny](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#); [Hatcher, Michael D CIV USARMY CELRL \(US\)](#); [Freeman, Lisa A CIV USARMY CELRL \(US\)](#); [Charles Parrish](#); brainard@mindspring.com; [lucas_green](#); [Dani Cummins](#); [Bill Reedy](#); [Mark Young](#); [Jill Young](#); [Paul O.](#); [David Wicks](#)
Subject: [Non-DoD Source] Falls Master Plan review meeting
Date: Friday, August 24, 2018 1:15:39 PM
Attachments: [20180611_104418.jpg](#)
[20180611_111713.jpg](#)
[20171002_155651.jpg](#)
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[20150616_120903.jpg](#)
[20150616_115429.jpg](#)
[20150607_084806-1.jpg](#)
[20161022_085855.jpg](#)

Nathan, Michael, Lisa, and the rest of the staff

Thanks for hosting the review of the Falls of the Ohio NWCA Master Plan Update meeting.

Even though I have not yet read ALL of the more than 100 pages, examined all the maps, photos, bibliography, I am quite impressed with the overall plan.

Comments:

1. I am most appreciative of all the positive comments in the master plan update and in our discussion session regarding how special and unique the FALLS NWCA area is and the expressed desire to protect, preserve, manage and interpret the area. Those of us who have worked at the Falls of the Ohio State Park for decades, have taught classes, led tours, hosted special public events there, have long appreciated the unique qualities of the area. I, in particular, since I have written a guidebook to the Falls area, am very pleased that the area is received more deserved recognition in the plan
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significantly with classes, tours and educational programs. They really are exceptionally informative, professional, and quite dazzling. I personally look forward to using them

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Thanks again for hosting the session and listening to everyone

Kenny Karem

Falls of the Ohio Foundation

Falls guidebook author, tour guide and teacher

Falls Boating and Adventure Committee Meeting Minutes
January 23, 2009 at the Falls Center

In attendance: Steve Knowles, Bett Etenohan (Falls State Park), Kenny Kareem, Paul Olliges, Dani Cummins (Falls Foundation), David Wicks (Jeff. Co. Public Schools), Shawn Nevins (Louisville Metro Parks) Keith Richardson, Chuck Parrish (ret.) (Army Corps of Engineers), Cynthia Torp, Jonathan Noffke (Solid Light, Inc.) Kelly Gream (Belle of Louisville, Waterfront Park) Gus Rice (JCPS Center for Env. Ed)

Thanks to Steve and Bett of the Falls State Park for hosting the meeting, listening to new ideas while in the midst of dealing with budget cuts, a busy agenda and pressing issues. Thanks to all those who attended, willingly giving up their time and their interest in helping out the Falls of the Ohio Foundation and State Park.

1. For a possibility of establishing a boating link to the outer fossil beds, the best and easiest option was deemed to be a concessionaire running a rubber raft from below the Falls Center to perhaps a couple of stopping spots in the outer beds—Whiskey Chute Creek and the Natural Arch areas. The trip would be led by a guide who would keep the group together in a specified program and designated time period. This would be a fee based program and would include an interpretive tour during a set season (May-October –November ??). This program would not require DNR staffing and would have to survive on its own merits. Days of service, time periods, regulations, storage of rafts would have to be determined. The ideas of seasonal floating pontoon docks, regular canoe & kayak rentals was considered to be impractical, cumbersome, difficult to manage and a visual distraction. Still, I am passing along for your information Shawn's discovery on a website of a inflatable plastic floating dock which can be taken down daily.

<http://www.boaterhouse.com/AirDock-p/1-930000.htm>

2. Further discussion of the issues will be combined with the next meeting of a committee at the Falls State Park that is being set up to discuss safety, conduct, regulations and liability issues connected with the adventurous guided outer beds fossil hikes. It was noted that it is difficult and challenging to guide a group across the creek by the spillway, negotiate the deteriorating concrete steps and cross the spillway—in addition to the problems of keeping a group together and people leaving the tour early.
3. Having a raft to transport visitors to the outer fossil beds would provide easier and safer opportunities to visit and explore the best parts of the parks. It would also provide a way to structure and control the visit to protect the area and educate the visitors to proper respect for a wilderness area. This possibly could provide revenue if there is sufficient public interest in paying for guided tours. Visitors now may go anywhere in the park—fishing, boating, birding, walking—unsupervised, without permission and without a fee. Bett leads several canoe & kayak outings in the late summer and fall in which visitors can rent boats from Canoe Kentucky or bring their own boats. There is no program fee.

4. There was also a discussion of linking area groups, marketing and tourism possibilities (package deals, linking in promotion of area attractions around the river). Kelly will have more discussions about that with Dani, Bett and other agencies. An old idea was revived of a tourist taxi launch (maybe for transportation too) to aid tourism to various waterfront sites. Several years ago, a private group explored this possibility for a couple of years, but eventually withdrew their proposal. With the advent of expansion of waterfront areas providing more tourist sites (the various museums, waterfront parks under construction, the Big Four Bridge walkway, the future construction of the walkway on the Indiana side), the idea might be more feasible
5. There was a discussion of the possibility of the Army Corps of Engineers providing some information, technical assistance and sponsorship for the new exhibit designs relating to engineering aspects of the Portland Canal & Locks, the McAlpine Dam, the Conrail RR Bridge (with its lift section over the canal) and navigational history of the rapids themselves. The Corps supervises the Falls of the Ohio National Wildlife Conservation Area, a federally-designated entity, which contains these elements. Their new lock chamber is scheduled to be dedicated in May, of 2009, with operational services beginning soon after. Their viewing area for tourists will contain interpretation plaques and other features, but no working model of a lock system. There was discussion of somehow incorporating these elements in the new Falls exhibits, perhaps a working or simulated model of the locks, canal, dam etc. The simulation or working model of the rapids themselves could be an outside feature at the Falls Park. It was decided to make contacts with certain Corps officials to explore their possible interest in the creation of the new exhibits and possibly developing a partnership. If so, then there will be an attempt to set up a meeting . (contacts at Corps: Ron Elliott, Corps Public Affairs, 315-6770; George Flickner, Corps exhibit interpretation) Keith will make the contacts and advise Dani.
6. It was also discussed to invite the new head of the Louisville District Corps operations, Col Keith Landry, and other Corps staff to visit the Falls Center and learn about the new exhibits goals. This might help spark interest in a possible partnership with the Corps in helping with interpretation of the area it administers.
7. The committee will be sent an e-mail with follow up information concerning all of the above information.

I do realize the complexities and difficulties of setting up any type of rafting /boating program at the Falls, considering DNR staff limits, budget cuts, higher priorities and other numerous tasks. But over the years, I have heard so many individuals and user groups express a wish for a transport raft to the outer fossil beds (...as was done in years past before there was a park) that I felt we should at least explore the issue and the possibilities. In that way, maybe some day in the future it could become a reality.

Thanks to all.

Kenny Karem
Falls of the Ohio Foundation

Falls Trail Committee Update from Kenny Karem 5/23/13

NOTE: I chaired the Falls Trail Committee and we agreed on these proposals: 1. Fix the concrete steps leading up to the McAlpine Dam spillway so people could cross to the outer fossil beds. This is an ongoing project with the Corps 2. Make it easier for visitors to cross the flowing stream that precedes those steps. Steve suggested to the committee after sight inspection that some limestone slabs from that area could be placed in the creek as stepping stones. Note: Prior to the Corps creating niches in the dam wall to facilitate a stronger flow of water through the area, it was relatively simple for anyone to cross over that area to the spillway. Corps officials came to the area with Steve to inspect the route. I do not know the end of those discussion and plans, but it would certainly be a good idea to allow more accessibility and a safer route for all the guided hikes and visitors that travel that route. It is extremely difficult to traverse that flowing stream and is an obvious safety (liability??) issue.

3. Just before Steve left, he had agreed that a linking loop path to the Greenway that would travel through the Falls Park would provide varied hiking experiences for park visitors and also bring more people into the park from the Greenway Path. It was agreed that an easy dirt trail to clear and construct could run from the Falls Visitor Center along the old road then along the river bank all the way to the George Rogers Clark Cabin site. He stressed that the most feasible and practical trail would be a cleared, level dirt path. This was also something that the Corps would approve as it would not involve construction, asphalt and concrete materials etc. as it would its way through the national wildlife conservation area.

The following letter was composed by Steve and I, and, I believe, sent to the Corps by Steve. I was told by one Corps staff person that it was a very simple proposal that would be approved. Obviously with the coming opening of the Big Four Bridge Pathway, this would be an even more attractive idea to attract trail users and visitors.

To: US Army Corps of Engineers
Louisville District

From: Falls of the Ohio State Park (Indiana Department of Natural Resources)
Falls of the Ohio Foundation

Date: December 10, 2009

Subject: Falls of the Ohio State Park Path Proposal for the Falls of the Ohio National Wildlife Conservation Area

Dear Colonel,

The Falls of the Ohio State Park staff requests permission from the Army Corps of Engineers permission to clear a path along the Indiana shoreline within the Falls of the Ohio National Wildlife Conservation Area administered by the Corps, extending from the Falls State Park to the George Rogers Clark cabin site. This would be a simple path to

make it easier to maintain a cleaner area within the Falls area. As you know, there is a lot of river-born trash that accumulates along the shoreline.

This path would allow better cleanup access for the annual Ohio River Cleanup Day (in June) and for the Indiana Civilian Conservation Youth workers assigned to the park next year. Using the youth CCC and the organized volunteers of the park to do the work, this project would involve some limb cutting, debris removal, and some minimum leveling of the path. The path could be flagged initially with surveyor's tape and then Corps official could inspect the route, making sure it is properly located and within the Falls of the Ohio NWCA.

Since fisherman, birders and walkers utilize this area already, it is probable that this path would provide easier access for them. It would also allow the Falls Park staff to monitor this area more easily. (To date, the Corps staff does not monitor this shoreline area nor clean it up)

We would be happy to meet with you to discuss in greater detail this path proposal. We appreciate your help and interest in this project.

Sincerely,

Steve Knowles, DNR
Kenny Karem, Falls Foundation

From: [Paul O.](#)
To: [Hatcher, Michael D CIV USARMY CELRL \(US\)](#); [Moulder, Nathan A CIV USARMY CELRL \(US\)](#); [Takacy, Theodore D CIV USARMY CEHQ \(US\)](#)
Cc: Lgreen@dnr.in.gov; candcparrish@hotmail.com; kennytikals@gmail.com
Subject: [Non-DoD Source] info about the Falls area and the WCA via a hikes at the Falls
Date: Friday, August 24, 2018 12:09:37 PM

Hi Michael,

Good to meet you Thursday at the Falls Master Plan meeting.

I mentioned the outer-bed hike to you for this Sat., Aug 25; the river is too high currently to allow safe passage across a water crossing which leads to the upper gates and the path to the outer-beds; so that hike for this Sat. has been canceled.

In lieu of that hike, we will lead a ~2 hr hike on the Indiana side, starting up at the rr bridge and upper gates site and going downstream to near the end of the Falls Park.

The other scheduled outer-bed public hikes are:
Saturdays, 9:30am- ~1pm, Sept 8, 22, and Oct 6.

Here's a link to info on the outer-bed hikes:

Blocked<https://www.fallsoftheohio.org/event/outer-fossil-bed-hike/>

On these hikes, outer-beds or Indiana shore hikes, I talk about the Falls and WCA geography, history, locks and dam, geology, fossils, river dynamics, wildlife, etc, and mention many antidotes and stories I've heard over the years.

If these scheduled public outer-bed hikes don't work for you and the new Director of Operations, Tom, let me know and I'd be pleased to lead a hike to the outer-beds on another day/time, between now and Oct 15,

OR

lead a hike along the Indiana shore. The duration can be of your choosing. (we do hikes on the Indiana side almost year-round, river level permitting; ie. they are not limited to mid-Aug to mid-Oct as the outer-bed hikes are)

This would be a good intro to the Falls area and WCA, and is the info we give to visitors to the Falls Park on these hikes.

If I can help further, call me anytime,

Paul Olliges
24-year Falls Park Volunteer
home 502-473-1977

cell 502-939-6274
polliges44@aol.com

From: brainard@mindspring.com
To: [Kenny](#); [Moulder, Nathan A CIV USARMY CELRL \(US\)](#); [Hatcher, Michael D CIV USARMY CELRL \(US\)](#); [Freeman, Lisa A CIV USARMY CELRL \(US\)](#); [Charles Parrish](#); [lucas.green](#); [Dani Cummins](#); [Bill Reedy](#); [Mark Young](#); [Jill Young](#); [Paul O.](#); [David Wicks](#)
Subject: [Non-DoD Source] Re: Falls Master Plan review meeting
Date: Monday, August 27, 2018 8:34:12 AM

Thanks to Kenny for copying me on this correspondence. I could not make the meeting last week (or week before).

I wanted to make sure Kenny's reference to Beckham Bird Club activities was correctly interpreted by all. Beckham used to do a couple of walking hikes out onto the OUTER FOSSIL BEDS, but not Shippingport Island. Shippingport proper offers little in diversity of birds that cannot be found elsewhere in the Louisville area. I believe it is good that access is restricted and that it should remain so. The heronry, in particular, is a very sensitive site. I have visited the site once per summer with Evan McKinney of the USACE to inventory the nesting waterbirds there. We are very cautious to enter the area without undue disturbance to the nesting birds. A larger group or less careful approach and study method could easily cause harm to the birds, so I fully support continuation of the current restrictions on access to the main island. Same would go for the Bald Eagle nest. These unique wildlife resources should never become a 'visitor destination.'

I will review the master plan, but I would like to reiterate that the USACE needs to decide what to do about the failure of the castellations on the upstream weir to spread water out onto the Indiana side fossil beds. Some or all of these castellations needs to be "plugged" in some temporary or permanent manner to allow outer fossil bed access and end the pulling of high water debris over next to the upstream fixed weir. This project has *NEVER* functioned as envisioned, and a solution needs to happen.

Very glad to hear of the proposal for a full-time ranger at the Falls. That would be wonderful.

Brainard Palmer-Ball, Jr.

-----Original Message-----

From: Kenny
Sent: Aug 24, 2018 1:13 PM
To: "Moulder, Nathan A CIV USARMY CELRL (US)", michael.d.hatcher@usace.army.mil, lisa.a.freeman@usace.army.mil, Charles Parrish, brainard@mindspring.com, [lucas.green](#), Dani Cummins, Bill Reedy, Mark Young, Jill Young, "Paul O.", David Wicks
Subject: Re: Falls Master Plan review meeting

see attachments

On Fri, Aug 24, 2018 at 1:05 PM, Kenny <kennytikals@gmail.com <<mailto:kennytikals@gmail.com>> > wrote:

Nathan, Michael, Lisa, and the rest of the staff

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Even though I have not yet read ALL of the more than 100 pages, examined all the maps, photos, bibliography, I am quite impressed with the overall plan.

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I was very happy to learn that nesting herons and egrets are returning to the island

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Thanks again for hosting the session and listening to everyone

Kenny Karem

Falls of the Ohio Foundation

Falls guidebook author, tour guide and teacher

From: [Mark Young](#)
Cc: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#); [Hatcher, Michael D CIV USARMY CELRL \(US\)](#); [Freeman, Lisa A CIV USARMY CELRL \(US\)](#); candcparrish@hotmail.com; brainard@mindspring.com; [Lucas Green](#); [Dani Cummins](#); [Bill Reedy](#); [Jill Young](#); [Paul Olliges](#); [David Wicks](#)
Subject: [Non-DoD Source] Re: Falls Master Plan review meeting
Date: Monday, August 27, 2018 8:01:20 AM

Kenny,

Great summary and insightful comments on the NWCA master plan. It is important that we continue our discussions with the U.S. Army Corps of Engineers Louisville District and stakeholders to ensure protection of the ancient fossil beds and wildlife as well as provide outdoor recreation/environmental education opportunities safely and within the Corps' mission.

Thanks,

Mark Young

Mark A. Young

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On Fri, Aug 24, 2018 at 1:05 PM Kenny <kennytikals@gmail.com <<mailto:kennytikals@gmail.com>> > wrote:

Nathan, Michael, Lisa, and the rest of the staff

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Thanks again for hosting the session and listening to everyone

Kenny Karem

Falls of the Ohio Foundation

Falls guidebook author, tour guide and teacher

From: [Derek Mart](#)
To: [Moulder, Nathan A CIV USARMY CELRL \(US\)](#)
Subject: [Non-DoD Source] Re: Falls of the Ohio National Wildlife Conservation Area Master Plan Update - Public Open House August 22nd
Date: Thursday, August 09, 2018 12:57:50 PM

Hi, Nathan. Portland was left out of the draft master plan on page 9 paragraph 2 where Jeffersonville, Clarksville, and Louisville are mentioned as results of the area being a stopping point during portage operations. If the plan is to represent the area with a certain degree of historical accuracy, I think it would be good to include Portland as it was a prominent town, being the other half of the portage route, during the steamboat era.

I've included Teresa Lee because I know she can provide better details if needed.

Derek Mart <Blocked<http://www.linkedin.com/in/demart>>

"An investment in knowledge always pays the best interest."
- Benjamin Franklin (1706-1790)

On Wed, Aug 8, 2018 at 12:33 PM Moulder, Nathan A CIV USARMY CELRL (US)
<Nathan.A.Moulder@usace.army.mil <<mailto:Nathan.A.Moulder@usace.army.mil>> > wrote:

You are invited to a public open house on August 22nd from 5:00 pm to 7:00 pm at the McAlpine Visitors Area (see attached map). During the open house we will review the contents of the Draft Falls of the Ohio National Wildlife Conservation Area Master Plan Update, as well as receive comments and questions.

Prior to the meeting please take a few minutes to review the Draft Master Plan, which is available for download here:

Blocked<https://go.usa.gov/xUwYY>

If you are unable to attend, but would like to offer comments or have questions please contact:

Nathan.A.Moulder@usace.army.mil <<mailto:Nathan.A.Moulder@usace.army.mil>>

DIRECTIONS:

The McAlpine Locks and Dam Visitor Area is located at 805 North 27th Street, Louisville, KY 40212. From I-64 West, take the 22nd Street Exit. At the bottom of the ramp, turn right onto Northwestern Parkway. Head straight and turn right onto 27th Street.

There is a small metal sign "McAlpine Locks and Dam" at 27th Street. Follow the road to the right and go through the levee and across the railroad tracks. Please watch for pedestrian and bike traffic along the Riverwalk. Follow the signs to the visitor area. The Visitor area is also accessible via the Louisville Riverwalk and bicycle racks are available.

Please feel free to forward to others that may be interested in attending.

-Nate

Nathan A. Moulder
Community Planner
USACE-Louisville District
P: 502.315.6776
C: 502.689.8404
F: 502.315.6864

From: [Charles Parrish](#)
To: [Hatcher, Michael D CIV USARMY CELRL \(US\)](#); [Kenny](#); [Moulder, Nathan A CIV USARMY CELRL \(US\)](#); [Freeman, Lisa A CIV USARMY CELRL \(US\)](#); brainard@mindspring.com; [lucas green](#); [Dani Cummins](#); [Bill Reedy](#); [Mark Young](#); [Jill Young](#); [Paul O.](#); [David Wicks](#)
Subject: Re: [Non-DoD Source] Re: Falls Master Plan review meeting
Date: Monday, August 27, 2018 5:18:02 PM

Michael - Thanks to the Corps for providing this forum to discuss issues that have been of concern for many years.

We look forward to working together and finding solutions in this "new day"

Chuck Parrish

From: Hatcher, Michael D CIV USARMY CELRL (US) <Michael.D.Hatcher@usace.army.mil>
Sent: Monday, August 27, 2018 9:44 AM
To: Kenny; Moulder, Nathan A CIV USARMY CELRL (US); Freeman, Lisa A CIV USARMY CELRL (US); Charles Parrish; brainard@mindspring.com; lucas green; Dani Cummins; Bill Reedy; Mark Young; Jill Young; Paul O.; David Wicks
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Office Phone: 502-315-6726

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Cc: [Hatcher, Michael D CIV USARMY CELRL \(US\)](#); [Kenny](#); [Moulder, Nathan A CIV USARMY CELRL \(US\)](#); [Freeman, Lisa A CIV USARMY CELRL \(US\)](#); brainard@mindspring.com; [lucas.green](#); [Dani Cummins](#); [Bill Reedy](#); [Mark Young](#); [Jill Young](#); [Paul O.](#)
Subject: Re: [Non-DoD Source] Re: Falls Master Plan review meeting
Date: Monday, August 27, 2018 9:00:14 PM

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- * A final thought - The US Fish and Wildlife manage the Ohio River Islands National Wildlife Refuge https://www.fws.gov/refuge/ohio_river_islands/ . Maybe there could be a River wide research agenda and public awareness program for the River. It would be neat to involve Louisville in this work.

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502-671-3595 (cell)
Blocked<http://www.beargrassdocumentary.org/>

Blockedwww.rivercitypaddlesports.org <Blockedhttp://www.rivercitypaddlesports.org>

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Subject: Re: [Non-DoD Source] Re: Falls Master Plan review meeting
Date: Wednesday, August 29, 2018 1:54:31 PM

to all:

Regarding the last hike we did on Shippingport Island, it was a natural history and cultural history hike of about 20-20 people, guided in part by the Corps, including historian Chuck Parrish, all under their guidance.

We met on Shippingport Island, walked entirely on the road to the eastern tip of the island to the Falls Bridge, then returned the same way. We did not leave the road, so we did not bother any nesting birds.

re: my previous report on the previous trail report we had submitted to the Corps which straddled the Indiana shoreline thru the NWCA, from the area of the Falls Visitor Center to the GR Clark site area, designed to form a loop with the Greenway, we are proposing only a cleared dirt path with some type of blazed markings. We did not figure out the entire route path, particularly around the boat ramp area. That is a more complex area, needs to be studied. Any such path in the NWCA would need some help of the Corps for original building, clearing and maintenance, to be determined in partnership with DNR and Falls park

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<<mailto:Nathan.A.Moulder@usace.army.mil>> >; Hatcher, Michael D CIV USARMY CELRL (US)
<Michael.D.Hatcher@usace.army.mil <<mailto:Michael.D.Hatcher@usace.army.mil>> >; Freeman, Lisa A CIV
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<dwicks1@gmail.com <<mailto:dwicks1@gmail.com>> >
Subject: [Non-DoD Source] Re: Falls Master Plan review meeting

see attachments

On Fri, Aug 24, 2018 at 1:05 PM, Kenny <kennytikals@gmail.com <<mailto:kennytikals@gmail.com>>

<<mailto:kennytikals@gmail.com>> > wrote:

Nathan, Michael, Lisa, and the rest of the staff

Thanks for hosting the review of the Falls of the Ohio NWCA Master Plan Update meeting.

Even though I have not yet read ALL of the more than 100 pages, examined all the maps, photos, bibliography, I am quite impressed with the overall plan.

Comments:

1. I am most appreciative of all the positive comments in the master plan update and in our discussion session regarding how special and unique the FALLS NWCA area is and the expressed desire to protect, preserve, manage and interpret the area. Those of us who have worked at the Falls of the Ohio State Park for decades, have taught classes, led tours, hosted special public events there, have long appreciated the unique qualities of the area. I, in particular, since I have written a guidebook to the Falls area, am very pleased that the area is received more deserved recognition in the plan

2. We certainly applaud the idea of assigning a full -time Corps of Engineers "ranger" to the Louisville area to help achieve the objectives stated in the plan and those I list here in item #1. The Falls Center relies a lot on volunteers to supplement DNR staff efforts as more help is always welcome and needed

3. All of us appreciated the lively discussion, open comments and positive suggestions. I think the Corps should move ahead in allowing and helping to plan some guided natural history and/or bird hike tours of the restricted area of the east end of Shippingport Island, a nature preserved of the Falls NWCA. As I noted at the meeting, we organized one of these tours several years ago with the help of the Corps and it was very successful. I am copying this e mail to Brainard Palmer-Ball of the Beckham Bird Club, who wrote the bird study of Shippingport Island. As I noted, the Beckham Bird Club formerly led 1-2 annual birding hikes to the island. I would be happy to help coordinate such hikes with you all again, (and recruit Corps historian, Chuck Parrish again) and can help with the bird club.

I was very happy to learn that nesting herons and egrets are returning to the island

4. As promised, I am attaching here some documents regarding the Falls NWCA hiking path that we proposed several years ago on the Indiana shore line within the NWCA district and access to the outer fossil beds. The letter to the Corps colonel about the walking path project was a rough draft. I am not sure what Falls State Park property manager, Steve Knowles, actually sent to the Corps years ago. In any case, I resubmit the idea again here as no action was ever taken. It is even more relevant today as the Greenway is being extended all the way to New Albany, now under construction and the newly formed Ohio River Heritage Conservancy (which is working with the Falls Center and Falls Foundation) is buying up land along the corridor, has developed land use plans for preservation and recreation accordingly.

The other document regarding access to the fossil beds is also attached here. I tried to find a concessionaire to do guided prime season tours by raft to the outer beds, and toured several boat concessionaire reps on the route and program we could conduct safely and what educational programs we could offer. It would be a fee-based program with trained guides. However, I never could get a concessionaire to agree to run a pilot program. I still think it is a good idea, and a program that would at least fund itself. However, I have no leads now for securing a concessionaire.

Also, as stated in the documents, many of us still feel that there is a way to traverse the hazardous creek crossing before the spillway to access the outer fossil beds. I still think Steve Knowles' idea of putting limestone slabs in the creek is a feasible one that one improve the situation, or my idea of pour concrete slabs as stepping stones across the creek would also improve the crossing situation, despite the Corps noting that driftwood would collect there. It could be cleared now and then. It certainly would be better than what exists now

5. Thanks for passing on to me a set of your master plan maps to take to the Falls Center. They will help significantly with classes, tours and educational programs. They really are exceptionally informative, professional, and quite dazzling. I personally look forward to using them

6. I will check in to see if DNR can provide the Corps with a DVD copy of the new Falls visitor center film to help with the Corps own information, training of staff, promotion of the NWCA to others, such as congressional representatives, and to use in its own programs. You are welcome to come to the film premiere events, September 13 and 14th at the Falls Visitor Center. Contact Falls Center for details

7. Regarding the tiny white Corps sign on Northwest Parkway which indicates where to turn to reach the McAlpine Locks and Dam and overlook area, I think it is proper time to put up a new "brown tourist" sign that details what can be seen in the area and a directional arrow. I would also note the LG & E Hydroelectric Power Plant as they now offer excellent tours and have a visitor film. I take my students there and they love the program

Thanks again for hosting the session and listening to everyone
Kenny Karem
Falls of the Ohio Foundation
Falls guidebook author, tour guide and teacher

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River City Paddle Sports
The Community Boat House
1325 River Road
Louisville, KY 40202
www.rivercitypaddlesports.org

August 9, 2018

Nathan A. Moulder
Community Planner
USACE-Louisville District

Dear Mr. Moulder,

I am writing about the update of the Falls of the Ohio Wildlife Management plan on behalf of the River City Paddle Sports. We are in great support of your work in developing a long-range plan to manage the ecology, water quality and public outreach. Overall, we would like to see a focus of tying in the NWCA area into an overall restoration and recreation plan for the Ohio River. There is some discussion about a blue way to the salt river and otter creek park but consider the upper pool as well. For paddle sports we hope you can manage the water flow for white water but also for slack or calm water. If the water levels can be predicible, it would be ideal for families as well as white water enthusiasts. There area many more families paddling than class 4 white water folks. We also hope that the public fishing beach stays open to the public. Additionally, it would be a great benefit to the paddling community if primitive camping would be allowed on Sand Island. Finally, it would be a good thing to coordinate with the [Ohio River Islands National Wildlife Refuge - US Fish and Wildlife](#). It would be a good thing to have a common research agenda and public information campaign for the entire River that scientists, university researchers and high school science fair projects could focus on.

Below are several specific comments on the plan.

Page 34: Kentucky Organizations: - Consider reaching out to Riverfields and to the Kentucky Waterways Alliance

Page 64: Sand Island/Goose Island /Lewis & Clark Island. I am not sure if there is 'heavily use the sandy beach areas.'" It would be great if wilderness camping would be allowed on Sand Island. There are quite a number of paddlers doing multi day canoe trips on the Ohio River and there are limited camping areas in the Metro Louisville Area.

Page 65: River City Paddle sports have hosted voyageur canoe trips in the area. We would be interested in expanding our programs in the area.

Page 66: We are in total support of managing the flow of the Ohio River at the falls of the Ohio to have a regular white water stretch. Just as important though, is time of quiet water that families could launch a canoe or kayak at one of the three boat launch sites and be able to paddle to the state park and to explore the natural area.

Page 68: In proposing rafts to explore the outer banks of the fossil beds with rafts is a great idea. But at the same time, there needs to be predictable slack or calm water to allow for a safe boating adventure.

p. 80 - Recreation Areas within Primary Area of Influence - You have listed most of the facilities but left off the Ohio river. There is significant recreational usage of the Ohio river.

p. 86. As mentioned above in addition to managing the flow for white water, there should be times of calm water.

p. 91 Objective 3: Enhance and maintain visitor experience at the NWCA - "A unique attribute of the Falls of the Ohio is its service as a destination for non-motorized boating activities such as canoeing, kayaking, whitewater boating, and stand-up paddle boarding." The NWCA could form not only a destination for paddle sport for the area, but for the Ohio River. The plan should accommodate through paddlers, or act as the southern terminus of the proposed Ohio River National Water Trail from Cincinnati to Louisville.

P. 91. The fisherman trail needs to be rebuilt. We have heard that the area might be declared as off limits to the public, We hope this does not happen, it is a beautiful area. - If anything, toilets need to be provided.

p.92 - Bicycling infrastructure. If the K and I bridge had a bike path connecting the bike trails on the Kentucky and Indiana shores it would be significant. This would also allow for observation of the NWCA from the bridge looking up stream.

p. 92: "Develop a blueways plan that describes how the WCA functions as a whitewater and flatwater destination with paddling connections to Silver Creek, New Albany, Shawnee Park (forthcoming), Greenwood, West point and Otter Creek." This plan should include the upper pool as well, tie into the proposed Cincinnati to Louisville blue way plan.

It would be great to have a blue way between the two army corps facilities, the NWCA and Taylorsville Lake. The blue way could go down the salt river, through Fort Knox then back up to the Falls of the Ohio State Park. This would be significant.

p. 92. 5.4.1 Objective 4 Supporting Measures: below are some suggested programs and initiatives that would increase the outreach of the NWCA.

- expand your target audience for research to high school students for science fair projects. If the Corps could provide mentors. The salt river watershed watch has such a program, read about the [2018 conference here](#): Three area high schools presented their ecological research.
- [Portland Elementary | JCPS](#) The closest Kentucky school to NWCA has an environmental theme to its entire school. The NWCA staff could reach out to the school

and have a series of field trips to the lock, Dam and the wildlife conservation area. Not only could this be an environmental outreach, but it would be a way of the Army Corps working with the community and involving all of the parents in the local neighborhoods.

- Work with waterfront park to expand the [Beargrass and Waterfront Naturalist program](#) to provide naturalists and environmental programming for the NWCA.
- The Jefferson County Public Schools 8th grade curriculum has 2 months on watershed and biodiversity as a focus of their science curriculum. The NWCA could play a critical role of having all 8,000 8th graders in Metro Louisville understand the value of watersheds and an overview of the Ohio River and its biodiversity. There could be a curriculum developed and field trips explored.
- The Mayor's Hike Bike and Paddle brings about 1,000 canoes down the Portland canal and through the locks each Labor Day. It would be great to have more involvement with the NWCA in this event. Ideas include,
 - having a landing on shipping port, sand or other islands for participants to get out of their boats and explore for a bit.
 - Develop an on line app that is a paddlers guide to the area that would emphasize the goals of the NWCA as well as boating safety. Check out cincinnati's digital paddle guide <https://gis.oki.org/paddlefest/> or their story map <https://oki.maps.arcgis.com/apps/MapJournal/index.html?appid=bcddf0a84a0a448db8a80d1234b980c0>
 - Have a booth at the Mayor's hike bike and paddle.
 - Work with the mayor's office to have the bike to go to the lock and dam on their way to Shawnee park.
- Coordinate research on the Ohio River through the [Ohio River Islands National Wildlife Refuge - US Fish and Wildlife](#) and the Annual Scientific Symposium of the Ohio River Basin Consortium for Research & Education (ORBCRE) and the Ohio River Basin Alliance (ORBA) http://www.thomasmore.edu/river_conference/. There was little mention in the study about the importance or the interconnectedness of the NWCA to the rest Ohio river watershed.

Kind Regards,
David Wicks
502-671-3595
Dwicks1@gmail.com

Falls of the Ohio National Wildlife Conservation Area Master Plan Update



**US Army Corps
of Engineers®**
Louisville District

Appendix D Reference Documents

Falls of the Ohio National Wildlife Conservation Area Master Plan Update



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Applicable Public Laws and Executive Orders

Fish and Wildlife Resources

A number of PLs address protection and maintenance of fish and wildlife resources. The following are pertinent to USACE project lands in Indiana and Kentucky:

- Title 16, United States Code (USC) §§ 703-712, *Migratory Bird Treaty Act of 1918*, makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter; or offer for sale, purchase, or barter; any migratory bird (or the parts, nests, or eggs of such a bird), except under the terms of a valid permit issued pursuant to federal regulations.
- Title 16, USC §§ 668-668d, *Golden and Bald Eagle Protection Act of 1940*, prohibits anyone (without a permit issued by the Secretary of the Interior) from taking bald eagles, including their parts, nests, or eggs.
- PL 79-732, *Fish and Wildlife Coordination Act* (10 March 1934), provides authority for making project lands available for management by interested state agencies for wildlife purposes.
- Title 16, USC 668-668d, 54 Statute 250, *Bald and Golden Eagle Protection Act of 1940* (8 June 1940) as amended, prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their nests or eggs.
- PL 85-624, *Fish and Wildlife Coordination Act* (12 August 1958), states that fish and wildlife conservation will receive equal consideration with other project purposes and be coordinated with other features of water resources development programs.
- PL 91-190, *National Environmental Policy Act of 1969* (NEPA) (1 January 1970), establishes a broad federal policy on environmental quality, stating that the federal government will "...assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings...preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety..."
- PL 93-205, *Conservation, Protection, and Propagation of Endangered Species* (28 December 1973), requires that federal agencies will, in consultation with the United States Fish and Wildlife Service (USFWS), further the conservation of endangered and threatened species and ensure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.
- PL 95-632, *Endangered Species Act Amendments of 1978* (10 November 1978), specifies a consultation process between federal agencies and the Secretaries of the Interior, Commerce or Agriculture for carrying out programs for the conservation of endangered and threatened species.
- PL 101-233, *North American Wetland Conservation Act* (13 December 1989), directs the conservation of North America wetland ecosystems and requires agencies to manage their lands for wetland/waterfowl purposes to the extent consistent with missions.
- PL 106-147, *Neo-tropical Migratory Bird Conservation Act* (20 July 2000), promotes the conservation of habitat for neo-tropical migratory birds.

Water Resource Protection

A number of PLs address water resources protection associated with USACE projects. The following are pertinent to USACE project lands in Indiana and Kentucky:

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- PL 74-738, Flood Control Act of 1936 (22 Jun 1936), established the Federal Interest in flood control on a nationwide basis and assigned jurisdictional responsibility for this activity to the Department of the Army/Corps of Engineers. This law has been amended many times by subsequent acts of Congress, but it remains as the basis for the Corps of Engineers' national role in dealing with flooding in the USA.
 - PL 79-526 Flood Control Act of 1946 (24 July 1946), among other items this Act authorized the Corps of Engineers to repair highways, railroads, or utilities damaged by the operation of a dam or reservoir.
 - PL 87-88, *Federal Water Pollution Control Act Amendments of 1961* (20 July 1961), requires federal agencies to address the potential for pollution of interstate or navigable waters when planning a reservoir project.
 - PL 89-80, *Water Resources Planning Act of 1965* (22 July 1965), provides for the optimum development of the nation's natural resources through coordinated planning of water and related land resources.
 - PL 95-217, *Clean Water Act of 1977* (15 December 1977), amends PL 87-88 and requires the United States Environmental Protection Agency (USEPA) to enter into written agreements with the Secretaries of Agriculture, the Army, and the Interior to provide maximum utilization of the laws and programs to maintain water quality.
 - PL 99-662, *Water Resource Development Act of 1986* (17 November 1986), establishes cost-sharing formulas for the construction of harbors, inland waterway transportation and flood risk management projects.
 - PL 93-523, *Safe Drinking Water Act of 1974* (16 December 1974), amended in 1986 and 1996, regulates quality of municipal potable water, with jurisdiction given to municipal treatment.
 - IC 15-25-2, *Minimum Stream Flow and Water Sale Contracts*, describes procedures for provisions of minimum stream flows, sales of water, and rates of compensation.
 - 4 Stat. 22-23 General Survey Act (30 April 1824) and 4 Stat. 32 Appropriations Act for Improving Navigation on the Ohio and Mississippi Rivers (24 May 1824), established Corps of Engineers responsibility for maintaining navigation on inland waterways (and Civil Works in general).
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Leases Easements and Rights-of-Way

A number of PLs, USCs and regulations govern the granting of leases, easements and rights-of-way on federal lands. Various Title 10, 16, 30, 32 and 43 USCs address easements and licenses for project lands. The following are pertinent to USACE project lands in Indiana:

- Title 10, USC § 2667, *Leases: Non-excess Properties of Military Departments and Defense Agencies*, authorizes the lease of land at water resource projects for any commercial or private purpose not inconsistent with other authorized project purposes.
- Title 10, USC § 2668, *Easements for Rights-of-way*, authorizes easements for utilities.

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- Title 16, USC § 460d, *Construction and Operation of Public Parks and Recreational Facilities in Water Resource Development Projects [...]*, authorizes use of public lands for any public purpose, including fish and wildlife, if it is in the public interest.
 - Title 16, USC § 470h-3, *National Historic Preservation Act*, establishes a program for the preservation of historic property.
 - Title 16, USC § 2601-13, *Findings*, supports project partnership agreements or other cost-share agreements.
 - Title 16, USC §§ 181-263, *Mineral Leasing Act of 1920* (25 February 1920), promotes the mining of coal, oil and gas on the public domain and specifies conditions of leasing agreements.
 - Title 16, USC § 663, *Impoundment or Diversion of Waters* (10 March 1934), establishes a program for wildlife resources management in accordance with the approved general plan.
 - Title 16, USC § 351-359, *Mineral Leasing Act for Acquired Lands* (7 August 1947), provides that minerals subject to the *Mineral Leasing Act of 1920* that are located on acquired federal lands are subject to the federal mineral leasing system.
 - PL 91-646, *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (2 January 1971), establishes a uniform policy for fair and equitable treatment of persons displaced as a result of federal or federally assisted programs.
 - PL 91-631, *Mining and Minerals Policy Act* (28 April 1971), specifies the federal policy for economically sound development of domestic mining.
 - PL 94-579, *Federal Land Policy and Management Act of 1976* (21 October 1976) establishes a policy that the federal government receives fair market value for the use of the public lands and its resources unless otherwise provided for by statute. It provides for the inventory of public land and land use planning and establishes the extent to which the executive branch may withdraw lands without legislative action.
 - PL 95-87, *Surface Mining Control and Reclamation Act* (3 August 1977), regulates surface mining and requires permits and inspections.

Cultural Resources

A number of PLs mandate the protection of cultural resources on public lands. The following are pertinent to USACE project lands in Indiana and Kentucky:

- PL 59-209, *Antiquities Act of 1906* (8 June 1906), applies to the appropriation or destruction of antiquities on federally-owned or -controlled lands and has served as the precedent for subsequent legislation.
- PL 74-292, *Historic Sites Act of 1935* (21 August 1935), declares that it is a national policy to preserve for-public-use historic sites, buildings and objects of national significance for the inspiration and benefit of the people of the United States.
- PL 86-523, *Reservoir Salvage Act of 1960* (27 June 1960), provides for the preservation of historical and archaeological data which might otherwise be lost as the result of the construction of a dam and attendant facilities and activities.

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- PL 89-665, *National Historic Preservation Act of 1966* (NHPA) (15 October 1966), establishes a national policy of preserving, restoring and maintaining cultural resources. It requires federal agencies to take into account the effect an action may have on sites that may be eligible for inclusion on the National Register of Historic Places.
 - PL 93-291, *Archaeological and Historic Preservation Act of 1974* (24 May 1974), amends PL 86-523 and provides for the Secretary of Interior to coordinate all federal survey and recovery activities authorized under this expansion of the *Reservoir Salvage Act of 1960*. The federal construction agency may expend up to one percent of project funds on cultural resource surveys.
 - PL 96-95, *Archaeological Resources Protection Act of 1979* (31 October 1979), updates PL 59-209 and protects archaeological resources and sites on public lands and fosters increased cooperation and exchange of information among governmental authorities, the professional archaeological community and private individuals.
 - PL 101-601, *Native American Graves Protection and Repatriation Act* (16 November 1990), requires federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.

Recreation

Each PL and policy discussed below addresses development and management of recreation facilities on public lands and is pertinent to USACE project lands in Indiana and Kentucky:

- PL-78-53, *Flood Control Act of 1936* (22 June 1936), authorizes the construction of civil engineering projects such as dams, levees, dikes and other flood risk management measures through the USACE.
- PL 78-534, *Flood Control Act of 1944* (22 December 1944), authorizes the Chief of Engineers to provide facilities in reservoir areas for public use, including recreation and conservation of fish and wildlife.
- PL 79-526, *Flood Control Act of 1946* (24 July 1946), amends PL 78-534 to include authority to grant leases to non-profit organizations at recreation facilities in reservoir areas at reduced or nominal charges.
- PL 83-780, *Flood Control Act of 1954* (3 September 1954), further amends PL 78-534 and authorizes the Secretary of the Army to grant leases to federal, state or other government agencies, regardless of monetary considerations for use and occupation of land and water areas that are under the jurisdiction of the Department of the Army for park and recreation purposes, when in the public interest.
- *Joint Land Acquisition Policy for Reservoir Projects* (Federal Register, [Volume 27, 22 February 1962]), allows the Department of the Army to acquire additional lands necessary for the realization of potential outdoor recreational resources of a reservoir.
- PL 88-578, *Land and Water Conservation Fund Act of 1965* (1 September 1964), prescribes conditions under which the USACE may charge for admission and use of its recreation areas.
- PL 89-72, *Federal Water Project Recreation Act* (9 July 1965), requires sharing of financial responsibilities in joint federal/non-federal recreation and fish and wildlife resources with no more than half of the first cost being borne by the federal government.

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- PL 90-480, *Architectural Barriers Act of 1968* (12 August 1968), requires access for persons with disabilities to facilities designed, built, altered or leased with federal funds.
 - PL 101-336, *Americans with Disabilities Act (ADA)* (26 July 1990) as amended by the *ADA Amendments Act of 2008* (PL 110-325), prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires “reasonable accommodation” to persons with disabilities.
 - PL 102-580, *Water Resources Development Act of 1992* (31 October 1992), authorizes the USACE to accept contributions of funds, materials and services from non-federal public and private entities to be used in managing recreation facilities and natural resources.
 - PL 103-66, *Omnibus Budget Reconciliation Act–Day Use Fees* (10 August 1993), contains provisions by which USACE may collect fees for the use of developed recreation sites and facilities, including campsites, swimming beaches and boat launching ramps.
 - PL 104-333, *Omnibus Parks and Public Lands Management Act of 1996* (12 November 96), creates a nine-member advisory commission to review the current and anticipated demand for recreational opportunities at lakes and reservoirs managed by the federal government, and to develop alternatives to enhance the opportunities for such use by the public.

Executive Orders

Executive Orders (EOs) are issued by the president of the United States and do not require congressional approval. The following are pertinent to USACE project lands in Indiana:

- EO 11514, *Protection and Enhancement of Environmental Quality* (5 March 1970), outlines the responsibilities of federal agencies in consonance with NEPA. EO 11514 was amended by EO 11991 in 1977.
- EO 11593, *Protection and Enhancement of the Cultural Environment* (13 May 1971), outlines the responsibilities of federal agencies in consonance with the National Historic Preservation Act (NHPA), NEPA, the Historic Sites Act and the Antiquities Act.
- EO 11644, *Use of Off-Road Vehicles on Public Lands* (8 February 1972), establishes a uniform federal policy regarding the use of vehicles such as trail bikes, snowmobiles, dune buggies and others on public lands.
- EO 11988, *Flood Plain Management* (24 May 1977), requires federal agencies to take actions to reduce the risk of flood loss and to restore and preserve the natural and beneficial functions of floodplains.
- EO 11989, *Off-Road Vehicles on Public Lands* (24 May 1977), amends EO 11644 and authorizes federal agencies to close areas or trails to off-road vehicles that cause adverse effects to soil, vegetation, wildlife, wildlife habitat, and cultural or historical resources.
- EO 11990, *Protection of Wetlands* (24 May 1977), restricts federal agencies from taking actions that would destroy or modify wetlands when there is a practicable alternative.
- EO 11991, *Relating to Protection and Enhancement of Environmental Quality* (24 May 1977), amends EO 11514 by directing the Council of Environmental Quality to issue guidance to federal agencies for implementing procedural provisions of NEPA.

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- EO 12088, *Federal Compliance with Pollution Control Standards* (12 Oct 1978), requires all federal agencies to be in compliance with environmental laws and fully cooperate with USEPA, state, interstate and local agencies to prevent, control and abate environmental pollution. EO 12088 was amended by EO 12580 in 1987. EO 12088 was amended by EO 12777 in 1991, EO 13016 in 1996, and EOs 13286 and 13308 in 2003.
 - EO 12962, *Recreational Fisheries* (7 June 1995), directs federal agencies to improve the quantity, function, sustainable productivity and distribution of United States aquatic resources for increased recreational fishing opportunities. EO 12962 was amended by EO 13373 in 2008 and EO 13474 in 2008.
 - EO 13112, *Invasive Species* (3 February 1999), directs each federal agency to prevent the introduction of invasive species, to detect, respond rapidly to and control populations of invasive species in a cost-effective and environmentally sound manner, to monitor invasive species populations accurately and reliably, and to provide for the restoration of native species and habitat conditions in ecosystems that have been invaded.
 - EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (10 January 2001), directs federal agencies, pursuant to its Memorandum of Understanding with the USFWS, to support the conservation intent of migratory bird conventions by integrating bird conservation principles, measures and practices into agency activities and by avoiding or minimizing, to the greatest extent practicable, adverse impacts on migratory bird resources.
 - EO 13327, *Federal Real Property Asset Management* (4 February 2004), promotes the efficient and economical use of federal real property resources in accordance with their value as national assets and in the best interest of the nation. EO 13327 was amended by EO 13423 in 2007.
 - EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (24 January 2007), instructs federal agencies to conduct their environmental, transportation and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient and sustainable manner.
 - EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (5 October 2009), expands on the energy reduction and environmental performance requirements for federal agencies identified in EO 13423 and requires federal agencies to make reductions in greenhouse gas emissions (GHG).

Forest Resources

The following PL pertains to forested lands and is pertinent to USACE project lands in Indiana:

- PL 86-717, *Protection and Improvement of Natural Resources* (6 September 1960), provides for the protection of forest cover in reservoir areas and specifies that reservoir areas of projects developed for flood risk management or other purposes that are owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers will be developed and maintained so as to encourage, promote and ensure fully adequate and dependable future resources of readily available timber. Timber production can be implemented through sustained yield programs, reforestation and accepted conservation practices, provided that such development and management shall be accomplished to the extent practicable and compatible with other uses of the project (PL 86-717 Sec 1.)

Code of Federal Regulations

Title 36 - Parks, Forests, and Public Property

Volume: 3

Date: 2011-07-01

Original Date: 2011-07-01

Title: PART 331 - REGULATIONS GOVERNING THE PROTECTION, USE AND MANAGEMENT OF THE FALLS OF THE OHIO NATIONAL WILDLIFE CONSERVATION AREA, KENTUCKY AND INDIANA

Context: Title 36 - Parks, Forests, and Public Property. CHAPTER III - CORPS OF ENGINEERS, DEPARTMENT OF THE ARMY.

Pt. 331

PART 331—REGULATIONS GOVERNING THE PROTECTION, USE AND MANAGEMENT OF THE FALLS OF THE OHIO NATIONAL WILDLIFE CONSERVATION AREA, KENTUCKY AND INDIANA

Sec.

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- 331.2** Policy.
- 331.3** Hunting and trapping.
- 331.4** Fishing.
- 331.5** Explosives and fireworks.
- 331.6** Public property.
- 331.7** Sanitation.
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- 331.10** Swimming.
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- 331.15** Fires.
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- 331.17** Minerals.
- 331.18** Restrictions.
- 331.19** Commercial activities.
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- 331.21** Unauthorized structures.
- 331.22** Abandonment of personal property.
- 331.23** Control of animals.
- 331.24** Permits.
- 331.25** Violation of regulations.

Authority Pub. L. 97-137.

Source: 48 FR 40720, Sept. 9, 1983, unless otherwise noted.

§ 331.1 Applicability and scope.

(a) The regulations contained in this part apply to those lands and waters within the established boundary of the Falls of the Ohio National Wildlife Conservation Area (WCA). Included in this boundary, which was published in the **Federal Register** of August 12, 1982, are publicly and privately owned lands, waters and improvements. The Federal Government, acting through the

Corps of Engineers, will acquire such rights to privately-owned properties in the WCA as are necessary to carry out the purposes of title II, Pub. L. 97-137. The regulations prescribed herein are for the use, management and protection of the resources of the WCA and all persons entering, using or visiting within the boundaries of the WCA are subject to these regulations. All other applicable Federal, State and local laws and regulations remain in full force and effect. The District Engineer, US Army Corps of Engineers, exercises non-exclusive jurisdiction over the lands and waters of the WCA and enforces these regulations.

(b) The WCA boundary encompasses an existing hydroelectric generating station and the McAlpine Locks and Dam, operating navigation structures which are part of the authorized Ohio River Navigation System. The continued operation and maintenance of this system take precedence over the purposes of the WCA, except that such operation and maintenance will be consistent with the basic purpose of the WCA as regards prohibition of hunting, vandalism, and dumping of refuse. Management of the WCA to achieve its intended purposes will, to the extent practicable, be accomplished in a manner consistent and compatible with continued generation of electricity and navigation on the Ohio River, including operation and maintenance of the McAlpine Locks and Dam and the Louisville Repair Station and material storage areas located on Shippingport Island.

§ 331.2 Policy.

(a) It is the policy of the Secretary of the Army, acting through the Chief of Engineers, to manage the natural and cultural resources of the WCA in the public interest, providing the public with safe and healthful recreational opportunities while protecting and enhancing these resources.

(b) Unless otherwise indicated herein, the term *District Engineer* shall include the authorized representatives of the District Engineer.

(c) The WCA shall be available to the public without regard to sex, race, color, creed or national origin. No lessee, licensee or concessionaire providing a service to the public shall discriminate against any person because of sex, race, creed, color, or national origin in the conduct of the operations under the lease, license, or concession contract.

§ 331.3 Hunting and trapping.

Unless authorized in writing by the District Engineer:

(a) The hunting, trapping, catching, molesting, killing, or having in possession any wild animal or bird, or taking the eggs of any such bird, is prohibited.

(b) Possession of equipment (including, but not limited to, firearms, ammunition, traps, projectile firing devices including bow and arrow) which could be used for hunting, trapping, or the taking of wildlife, is prohibited.

§ 331.4 Fishing.

Unless otherwise authorized in writing by the District Engineer:

(a) Fishing is only permitted in accordance with the laws and regulations of the State within whose exterior boundaries that portion of the WCA is located, and such laws and regulations which are now or may hereafter be in effect are hereby adopted as part of these regulations.

(b) Fishing by means of the use of drugs, poisons, explosives, bow and arrow or electricity is prohibited.

(c) Commercial fishing and fishing with gill nets, trammel nets, hoop nets, bow and arrow or trot lines is prohibited.

§ 331.5 Explosives and fireworks.

Unless otherwise authorized in writing by the District Engineer.

(a) The possession or use of fireworks is prohibited.

(b) The possession or use of explosives is prohibited.

§ 331.6 Public property.

Unless otherwise authorized in writing by the District Engineer, the destruction, injury, defacement, removal, or any alteration of public property including, but not limited to natural formations, paleontological features, historical and archaeological features and vegetative growth is prohibited. Any such destruction, removal, or alteration of public property shall be in accordance with the conditions of any permission granted.

§ 331.7 Sanitation.

(a) Garbage, trash, rubbish, litter, or any other waste material or waste liquid generated on the WCA shall be removed from the area or deposited in receptacles provided for that purpose. The improper disposal of such wastes within the boundaries of the WCA is prohibited.

(b) The use of refuse containers for the disposal of refuse not generated on the WCA is prohibited.

(c) It is a violation to bring any material onto the WCA for the purpose of disposal.

(d) The discharge or placing of sewage, galley waste, garbage, refuse or pollutants into the WCA waters from any vessel or watercraft is prohibited.

§ 331.8 Picnicking.

(a) Picnicking is permitted only in designated areas.

(b) Picnickers shall remove all personal equipment and clean their sites upon departure.

§ 331.9 Camping.

Camping is not permitted within the WCA.

§ 331.10 Swimming.

Swimming is prohibited unless authorized in writing by the District Engineer.

§ 331.11 Special events.

(a) Special events including, but not limited to, water carnivals, boat regattas, music festivals, dramatic presentations, or other special recreation programs are prohibited unless written permission has been granted by the District Engineer.

(b) The public shall not be charged any fee by the sponsor of such permitted event unless the District Engineer has approved in writing the proposed schedule of fees. The District Engineer shall have authority to revoke permission and require removal of any equipment upon failure of the sponsor to comply with terms and conditions of the permit/permission. Any violation shall constitute a separate violation for each calendar day in which it occurs.

§ 331.12 Vehicles.

(a) The use of a vehicle off roadways is prohibited except as may be authorized by the District Engineer.

(b) Vehicles shall not be parked in violation of any posted restriction, or in such a manner as to endanger any Federal property to include natural features. The owner of any vehicle parked in violation of this section shall be presumed to have parked it, and unless rebutted such presumption will be sufficient to sustain a conviction as provided for in § 331.25.

(c) Vehicles shall be operated in accordance with all posted regulations.

(d) Driving or operating any vehicle in a careless, negligent, or reckless manner, heedlessly or in willful disregard for the safety of other persons, or in such manner as to endanger any property or environmental feature, or without due care or at a speed greater than is reasonable and prudent under prevailing conditions with regard to traffic, weather, road, light and surface conditions, is prohibited.

(e) This section pertains to all vehicles, including, but not limited to, automobiles, trucks, motorcycles, minibikes, trail bikes, snowmobiles, dune buggies, all terrain vehicles, bicycles, trailers, campers, or any other such equipment.

(f) Except as authorized by the District Engineer, no person shall operate any motorized vehicle without a proper and effective exhaust muffler, or with an exhaust muffler cutout open, or in any other manner which renders the exhaust muffler ineffective in muffling the sound of engine exhaust.

§ 331.13 Vessels.

(a) Vessels or other watercraft may be operated in the WCA waters except in prohibited or restricted areas in accordance with posted regulations and applicable Federal, State and local laws.

(b) All vessels when not in actual use shall be removed from the WCA unless securely moored at mooring facilities approved by the District Engineer. The placing of floating or stationary mooring facilities to, or interfering with, a buoy, channel marker, or other navigational aid is prohibited.

(c) The operation of vessels or other watercraft in a careless, negligent, or reckless manner so as to endanger any property (including the operator and/or user(s) of the vessel or watercraft) is prohibited.

§ 331.14 Aircraft.

(a) The operation of aircraft on WCA lands and waters is prohibited, unless authorized in writing by the District Engineer.

(b) Except in extreme emergencies threatening human life or serious property loss, the air delivery of any person or thing by parachute, helicopter, or other means onto project lands or waters without written permission of the District Engineer is prohibited.

(c) The provisions of this section shall not be applicable to aircraft engaged on official business of the Federal Government or used in emergency rescue in accordance with the directions of the District Engineer.

§ 331.15 Fires.

Open fires are prohibited unless confined to fireplaces, grills, or other facilities designed for this purpose as designated by the District Engineer. Fires shall not be left unattended and must be completely extinguished prior to departure.

§ 331.16 Interference with government employees.

Interference with any Government employee in the conduct of his or her official duties pertaining to the administration of these regulations is prohibited. It is a violation to fail to comply with a lawful order directed by any Government employee or to knowingly give any false, fictitious, or fraudulent report or other information to any government employee in the performance of his or her official duties pertaining to the administration of these regulations.

§ 331.17 Minerals.

All activities in connection with prospecting, exploration, development, mining or other removal or the processing of mineral resources and all uses reasonably incident thereto are prohibited.

§ 331.18 Restrictions.

The District Engineer may establish and post a schedule of visiting hours and/or restrictions on the public use of a portion or portions of the WCA. The District Engineer may close or restrict the use of the WCA or portion of the WCA when necessitated by reason of public health, public safety, security, maintenance, or other reasons in the public interest. Entering or using the project in a manner which is contrary to the schedule of visiting hours, closure or restrictions is prohibited.

§ 331.19 Commercial activities.

Unless otherwise authorized in writing by the District Engineer, the engaging in or solicitation of business or money is prohibited.

§ 331.20 Advertisement.

Unless otherwise authorized in writing by the District Engineer, advertising by the use of billboards, signs, markers, audio devices, or any other means whatsoever including handbills, circulars, and posters is prohibited. Vessels or vehicles with semipermanent or permanently installed signs are exempt if being used for authorized recreational activities or special events and in compliance with all other rules and regulations pertaining to vessels and vehicles.

§ 331.21 Unauthorized structures.

The construction, placing, or continued existence of any structure of any kind under, upon, in, or over WCA lands or waters is prohibited unless a permit, lease, license, or other appropriate written agreement therefor has been issued by the District Engineer. Structures not so authorized are subject to summary removal or impoundment by the District Engineer. The design, construction, placing, existence, or use of structures in violation of the terms of the permit, lease, license, or other written agreement therefor is prohibited.

§ 331.22 Abandonment of personal property.

(a) Personal property of any kind left unattended upon WCA lands or waters for a period of 24 hours shall be considered abandoned and may be impounded and stored at a storage point designated by the District Engineer who may assess a reasonable impoundment fee. Such fee shall be paid before the impounded property is returned to its owner.

(b) If abandoned property is not claimed by its owner within 3 months after the date it is received at the storage point designated by the District Engineer, it may be disposed of by public or private sale or by other means determined by the District Engineer. Any net proceeds from the sale of property shall be conveyed unto the Treasury of the United States as miscellaneous receipts.

§ 331.23 Control of animals.

(a) No person shall bring or allow horses, cattle, or other livestock in the WCA.

(b) No person shall bring dogs, cats, or other pets into the WCA unless penned, caged, or on a leash under 6 feet in length, or otherwise under physical restraint at all times. Unclaimed or unattended animals are subject to immediate impoundment and removal in accordance with State and local laws.

§ 331.24 Permits.

It shall be a violation of these regulations to refuse to or fail to comply with the terms or conditions of any permit issued by the District Engineer.

§ 331.25 Violation of regulations.

Anyone violating the provisions of this regulation shall be subject to a fine of not more than \$500 or imprisonment for not more than 6 months, or both. All persons designated by the Chief of Engineers, U.S. Army Corps of Engineers, for that purpose shall have the authority to issue a citation for the violation of these regulations, requiring the appearance of any person charged with violation to appear before the U.S. Magistrate within whose jurisdiction the violation occurred.

Public Law 97-137
97th Congress

An Act

To provide for the establishment of the Bandon Marsh National Wildlife Refuge,
Coos County, State of Oregon, and for other purposes.

Dec. 29, 1981
[H.R. 2241]

*Be it enacted by the Senate and House of Representatives of the
United States of America in Congress assembled,*

TITLE I—BANDON MARSH NATIONAL WILDLIFE REFUGE

Bandon Marsh
National
Wildlife
Refuge
Establishment

PURPOSES OF REFUGE

SEC. 101. For the preservation and enhancement of the highly significant wildlife habitat of the area known as Bandon Marsh, in the estuary of the Coquille River in the State of Oregon, for the protection of migratory waterfowl, numerous species of shorebirds and fish, including Chinook and silver salmon, and to provide opportunity for wildlife-oriented recreation and nature study on the marsh, the Secretary of the Interior (hereinafter in this title referred to as the "Secretary") shall establish as part of the national wildlife refuge system a national wildlife refuge to be known as the Bandon Marsh National Wildlife Refuge (hereinafter in this title referred to as the "refuge").

16 USC 668dd
note.

BOUNDARIES OF THE REFUGE

SEC. 102. There shall be included within the boundaries of the refuge those lands and waters generally depicted on the map entitled "Bandon Marsh National Wildlife Refuge", dated September 1980, comprising approximately three hundred acres. The map shall be on file and available for public inspection in the office of the United States Fish and Wildlife Service, Department of the Interior.

ACQUISITION

SEC. 103. The Secretary may acquire lands or waters, or interests therein, within the boundaries of the refuge by donation, purchase with donated or appropriated funds, or exchange. Any lands, waters, or interests therein owned by the State of Oregon or by any political subdivision thereof may be acquired only with the consent of the owner thereof.

ESTABLISHMENT

SEC. 104. The Secretary shall establish the refuge by publication of a notice to that effect in the Federal Register at such time as he determines that lands, waters, and interests therein sufficient to constitute an efficiently administrable refuge have been acquired.

Publication in
Federal
Register.

ADMINISTRATION

Sec. 105. The Secretary shall administer the lands, waters, and interests therein acquired for the refuge in accordance with the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd and 668ee). The Secretary may utilize, to the extent he deems appropriate to carry out the purposes of this title, such additional statutory authority as may be available to him for (1) the development of outdoor recreation opportunities compatible with the wildlife resources of the refuge, and (2) interpretive education.

AUTHORIZATION OF APPROPRIATIONS

Sec. 106. Beginning October 1, 1982, there are authorized to be appropriated \$270,000 for the acquisition of lands, waters, or interests therein, for the refuge.

TITLE II—FALLS OF THE OHIO NATIONAL WILDLIFE
CONSERVATION AREA

CONGRESSIONAL FINDINGS

16 USC 668dd
note.

Sec. 201. The Congress finds that—

- (1) the area along the Ohio River near the city of Louisville, Kentucky, contains highly significant and varied wildlife and supports important aquatic nurseries;
- (2) the area includes a unique and world-renowned three-hundred-million-year-old fossilized coral reef which is the only place where the Ohio River flows over bedrock;
- (3) the wetlands of this area represent one of the most valuable and unique wildlife habitat types in the United States and have extremely high value for fishermen, birdwatchers, nature photographers, paleontologists, and others; and
- (4) this area should be preserved to ensure the well-being of these species, to provide wildlife-oriented recreation for the public and encourage the study of fossils.

DEFINITIONS

Sec. 202. For purposes of this title:

- (1) The term "Secretary" means the Secretary of the Interior.
- (2) The term "selection area" means those lands and waters near the McAlpine Dam in the Ohio River located in Jefferson County, Kentucky, and Clark and Floy Counties, Indiana, depicted on the map entitled "Falls of the Ohio National Wildlife Conservation Selection Area", dated December, 1981, and on file at the United States Fish and Wildlife Service.
- (3) The term "wildlife conservation area" means the Falls of the Ohio National Wildlife Conservation Area.

PURPOSES OF WILDLIFE CONSERVATION AREA

Sec. 203. The purposes for which the Falls of the Ohio National Wildlife Conservation Area is established are—

- (1) to protect wildlife populations and habitats in their natural diversity including, but not limited to, bald eagle, peregrine falcon, Canada geese, mallard, gadwall, blue-winged teal, black duck, American widgeon, and wood duck;

(2) to conserve fish populations in their natural diversity including, but not limited to, shad, shiner, crappie, largemouth bass, striped bass, and channel catfish;

(3) to ensure, to the maximum extent practicable and in a manner consistent with paragraphs (1) and (2) and compatible with navigation on the Ohio River and operation of the McAlpine locks and dam, the necessary water quantity within the wildlife conservation area;

(4) to protect the fossilized coral reef as a unique paleontological feature; and

(5) to provide opportunities for scientific research and interpretive and environmental uses and fish and wildlife oriented recreational uses.

SELECTION AND ESTABLISHMENT OF WILDLIFE CONSERVATION AREA

SEC. 204. (a) **SELECTION.**—(1) Within one year after the date of the enactment of this title the Secretary shall, in consultation with the Secretary of the Army acting through the Chief of Engineers—

(A) designate approximately one thousand acres of land and water within the selection area as land which the Secretary considers appropriate for the wildlife conservation area; and

(B) publish in the Federal Register a detailed map depicting the boundaries of the land designated under subparagraph (A), which map shall be on file and available for public inspection at offices of the United States Fish and Wildlife Service and the Corps of Engineers.

Publication in
Federal
Register.

(2) The Secretary may make such minor revisions in the boundaries designated under paragraph 1(B) as may be appropriate to carry out the purposes of, or to facilitate the acquisition of property (and interests therein) within, the wildlife conservation area.

(b) **ESTABLISHMENT.**—The Secretary shall, in consultation with the Secretary of the Army acting through the Chief of Engineers, establish the Falls of the Ohio National Wildlife Conservation Area, by publication of a notice to that effect in the Federal Register, within one year after the date of the enactment of this title.

Publication in
Federal
Register

ADMINISTRATION

SEC. 205. The Secretary of the Army, acting through the Chief of Engineers, shall administer all lands, waters, and interests therein within the wildlife conservation area to assure that the wildlife conservation area is managed to carry out the purposes for which it was established, and to that end shall consult with, and utilize the services of, the Secretary. In order to effectively manage the wildlife conservation area, the Secretary of the Army shall acquire by donation, purchase with donated or appropriated funds, or exchange lands, waters or interests therein within the boundaries of such area. The Secretary of the Army and the Secretary may utilize such additional statutory authority as may be available to them to carry out this title.

REGULATIONS

SEC. 206. The Secretary of the Army shall promulgate regulations, within one year after date of the enactment of this title, to carry out this title. Such regulations shall include, but not be limited to, a

prohibition on all hunting, as well as prohibitions on vandalism (including the removal of fossils) and the dumping of refuse, within the boundaries of the wildlife conservation area.

AUTHORIZATION OF APPROPRIATIONS

Sec. 207. Beginning October 1, 1982, there are authorized to be appropriated to the Secretary of the Army not to exceed \$300,000 to carry out this title; and such sums shall remain available until expended.

Approved December 29, 1981.

LEGISLATIVE HISTORY—H.R. 2241:

HOUSE REPORT: No. 97-376 (Comm. on Merchant Marine and Fisheries).
CONGRESSIONAL RECORD, Vol. 127 (1981):

Dec. 15, considered and passed House.
Dec. 16, considered and passed Senate.

December 29, 1961. The boundary for the WCA was established during the above consultation process.

SUPPLEMENTARY INFORMATION:

General Location

The WCA is located in the "heart" of metropolitan Louisville and includes waters of the Ohio River and adjacent lands in Jefferson County, Kentucky and Clark and Floyd Counties, Indiana.

Purposes

The primary purposes for establishing the WCA are to:

- (1) Protect the unique and world-renowned 300 million year old fossilized coral reef which is the only place where the Ohio River flows over exposed bedrock;
- (2) Protect important wildlife populations and habitats in their natural diversity including, but not limited to, bald eagle, peregrine falcon, Canada geese, mallard, gadwall, blue-winged teal, black duck, American widgeon, and wood duck;
- (3) Maintain high water quality and conserve fish populations in their natural diversity including, but not limited to, largemouth bass, striped bass, channel catfish, crappie, shad, and shiner; and
- (4) Provide opportunities for scientific research, environmental education, and fish and wildlife oriented recreation.

Boundary

The boundary of the WCA is depicted on the map shown at the end of the text entitled "Falls of the Ohio National Wildlife Conservation Area." The land and water areas within the boundary that will be available to public use consists of approximately 1,000 acres. A general description of the boundary delineation follows:

Beginning at a point on the southwesterly end of the Pennsylvania (Penn Central) RR bridge (Kentucky side) between the left bank of the Ohio River and the northwesterly right-of-way boundary of the Kentucky and Indiana (K & I) Terminal RR; thence northwesterly between said river bank and the K & I RR right-of-way to the 26th Street crossing; thence continuing between the riverbank and Marine Street to the end of the McAlpine Lock; thence along the landward side of the lock and guidewall to the K & I RR bridge; thence across the Ohio River

along the K & I RR bridge to the intersection of the 413' contour line (Indiana side); thence easterly and southeasterly generally following the 413' contour line on the right side of the Ohio River to the vicinity of the Penn Central RR bridge; thence across the Ohio River along the McAlpine Dam upper gates and the Penn Central RR bridge to place of beginning.

Acquisition

Minor revisions in the designated boundary will be made as needed during the acquisition phase which will be carried out by the U.S. Army Corps of Engineers (COE) personnel assigned to the Louisville District. Lands and waters may be acquired by donation, exchange, fee simple or easement purchase with donated or appropriated funds, or any combination of acquisition methods. The COE may also utilize additional statutory authorities available to the Secretary of the Army in acquiring the needed lands and/or waters.

Administration

The Secretary of the Army, acting through the Chief of Engineers, is responsible for administering all lands, waters, and interests therein within the WCA to assure that the purposes for which the WCA is established are carried out. Actual administration will be by the COE's Louisville District personnel. The U.S. Fish and Wildlife Service will provide the COE with biological information pertaining to fish and wild life species as needed. Prior to December 29, 1982 and after consultation with the Secretary of Interior, specific regulations controlling the use, operation, and administration of these land and water areas will be promulgated by the Secretary of the Army, acting through the Chief of Engineers. These regulations will include, but not be limited to, a prohibition on all hunting, vandalism (including the removal of fossils), and dumping of refuse within the boundaries of the WCA.

Date: August 9, 1982.

G. Ray Arnett,
Assistant Secretary for Fish and Wildlife and
Parks, U.S. Department of the Interior.

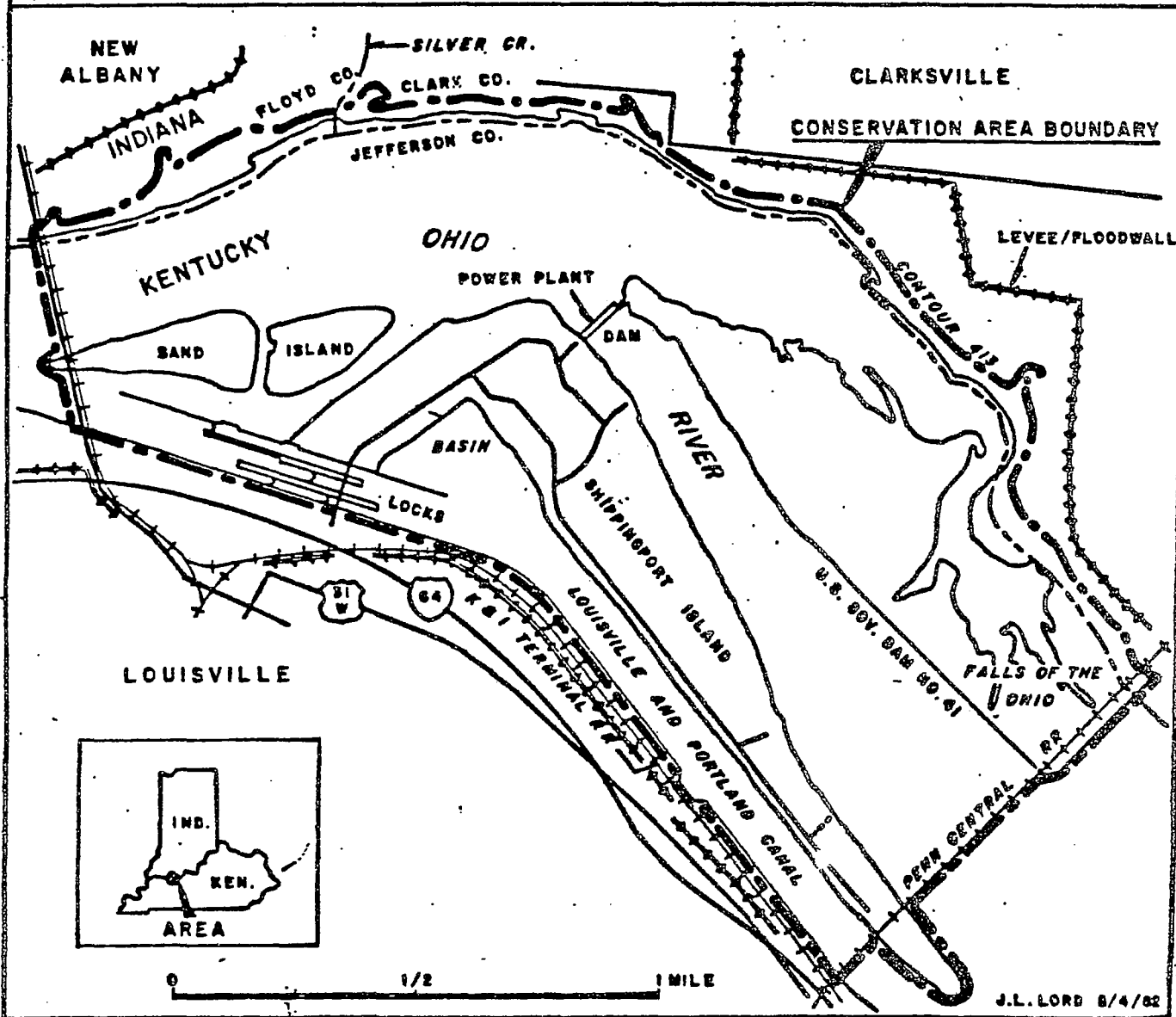
BILLING CODE 4310-55-02

Falls of the Ohio National Wildlife Conservation Area Established and Boundary Delineated

AGENCY: Office of the Secretary, Interior.
ACTION: Notice.

SUMMARY: This Notice advises the public that the Assistant Secretary for Fish and Wildlife and Parks, acting for the Secretary, U.S. Department of the Interior, in consultation with the Secretary of the Army, acting through the Chief of Engineers, has established the Falls of the Ohio National Wildlife Conservation Area hereinafter referred to as WCA. This is in accordance with provisions of Pub. L. 97-137 approved

FALLS OF THE OHIO NATIONAL WILDLIFE CONSERVATION AREA



DEPARTMENT OF DEFENSE

**Department of the Army, Corps of
Engineers**

36 CFR Part 331

**Navigational Regulations; Falls, Ohio
River, Kentucky and Indiana;
Protection, Use, and Management of
Conservation Area**

AGENCY: Department of the Army, Corps
of Engineers, DOD.

ACTION: Final rule.

SUMMARY: The U.S. Army Corps of
Engineers is publishing final rules and
regulations for the protection, use and
management of the national wildlife
conservation area located at the Falls of
the Ohio River in Kentucky and Indiana.
The Federal law which established the
conservation area directs publication of
these regulations and that they include a
complete prohibition on hunting,
vandalism (including the removal of
fossils), and the dumping of refuse
within the boundaries of the
conservation area.

EFFECTIVE DATE: September 12, 1983.

FOR FURTHER INFORMATION CONTACT:
Richard Leverty, 202-272-0130.

SUPPLEMENTARY INFORMATION: These regulations place certain restrictions, prohibitions and limitations on use of the lands and waters under Federal jurisdiction within the designated boundaries of the Falls of the Ohio National Wildlife Conservation Area (WCA) in order to protect, preserve and provide for the proper management of the significant physical and biological features of the WCA and to prevent interference with the generation of hydroelectric power and with commercial and recreational navigation on the Ohio River.

The WCA was authorized by Title II of Pub. L. 97-137, approved by the President on December 29, 1981. Responsibility for administration of the WCA and for promulgation of these regulations is assigned by statute to the Secretary of the Army, acting through the U.S. Army Corps of Engineers. Within the boundary of the WCA, which was designated by the Secretary of the Interior through publication of notice in the Federal Register of August 12, 1982, lands, waters and interests therein will be acquired by the Corps of Engineers as may be necessary to insure that the WCA can be effectively managed for the conservation, research, interpretive, environmental and recreational purposes for which it was established.

An Interim Rule to govern the protection, use and management of the WCA was published in the Federal Register of December 28, 1982, with a period for comment until February 28, 1983. A total of twenty-four comments were received from private organizations, government agencies and individuals. As a result, § 331.3, Hunting and Trapping, has been amended to include the lead phrase "Unless authorized in writing by the District Engineer." Omission of that phrase in the Interim Rule was an administrative oversight; it has been included in the Final Rule in order to provide for properly permitted scientific research in keeping with the purposes for which the WCA was established. Other comments concerned present management practices or were more pertinent to future planning and management of the WCA and its resources and did not result in substantive changes or amendments in this Final Rule.

"Regulation Changes:" This Rule amends Title 36 of the Code of Federal Regulations by adding a new Part 331 which governs the protection, use and management of the Falls of the Ohio

National Wildlife Conservation Area, Kentucky and Indiana.

Impact Analysis

The Department of the Army has determined that this is not a "major rule" requiring preparation of a regulatory impact analysis under Executive Order 12291. The Department of the Army has also determined that this Rule will not have a significant economic impact on a substantial number of small entities and, therefore, does not require a small entity regulatory flexibility analysis under provisions of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.). The Department of the Army has further determined that these regulations do not necessitate any new "collection of information" as defined in the Paperwork Reduction Act (44 U.S.C. 4501 et seq.); therefore the requirements of that Act do not apply to this action. These regulations were reviewed by the Office of Management and Budget and on July 13, 1983, were approved for publication in the Federal Register as a Final Rule.

List of Subjects in 36 CFR Part 331

Recreation areas, Waterways, Hunting and fishing, Administrative practice and procedure, Public lands.

John O. Roach II,

Army Liaison Officer with the Federal Register.

Accordingly, 36 CFR is amended by adding a new Part 331 to read as set forth below.

PART 331—REGULATIONS GOVERNING THE PROTECTION, USE AND MANAGEMENT OF THE FALLS OF THE OHIO NATIONAL WILDLIFE CONSERVATION AREA, KENTUCKY AND INDIANA

Sec.

- 331.1 Applicability and scope.
- 331.2 Policy.
- 331.3 Hunting and trapping.
- 331.4 Fishing.
- 331.5 Explosives and fireworks.
- 331.6 Public property.
- 331.7 Sanitation.
- 331.8 Picnicking.
- 331.9 Camping.
- 331.10 Swimming.
- 331.11 Special events.
- 331.12 Vehicles.
- 331.13 Vessels.
- 331.14 Aircraft.
- 331.15 Fires.
- 331.16 Interference with government employees.
- 331.17 Minerals.
- 331.18 Restrictions.
- 331.19 Commercial activities.
- 331.20 Advertisement.
- 331.21 Unauthorized structures.

- 331.22 Abandonment of personal property
- 331.23 Control of animals.
- 331.24 Permits.
- 331.25 Violation of regulations.

Authority: Pub. L. 97-137.

§ 331.1 Applicability and scope.

(a) The regulations contained in this part apply to those lands and waters within the established boundary of the Falls of the Ohio National Wildlife Conservation Area (WCA). Included in this boundary, which was published in the Federal Register of August 12, 1982, are publicly and privately owned lands, waters and improvements. The Federal Government, acting through the Corps of Engineers, will acquire such rights to privately-owned properties in the WCA as are necessary to carry out the purposes of Title II, Pub. L. 97-137. The regulations prescribed herein are for the use, management and protection of the resources of the WCA and all persons entering, using or visiting within the boundaries of the WCA are subject to these regulations. All other applicable Federal, State and local laws and regulations remain in full force and effect. The District Engineer, US Army Corps of Engineers, exercises non-exclusive jurisdiction over the lands and waters of the WCA and enforces these regulations.

(b) The WCA boundary encompasses an existing hydroelectric generating station and the McAlpine Locks and Dam, operating navigation structures which are part of the authorized Ohio River Navigation System. The continued operation and maintenance of this system take precedence over the purposes of the WCA, except that such operation and maintenance will be consistent with the basic purpose of the WCA as regards prohibition of hunting, vandalism, and dumping of refuse. Management of the WCA to achieve its intended purposes will, to the extent practicable, be accomplished in a manner consistent and compatible with continued generation of electricity and navigation on the Ohio River, including operation and maintenance of the McAlpine Locks and Dam and the Louisville Repair Station and material storage areas located on Shippingport Island.

§ 331.2 Policy

(a) It is the policy of the Secretary of the Army, acting through the Chief of Engineers, to manage the natural and cultural resources of the WCA in the public interest, providing the public safe and healthful recreational opportunities while protecting and enhancing these resources.

(b) Unless otherwise indicated herein, a term "District Engineer" shall include the authorized representatives of the District Engineer.

(c) The WCA shall be available to the public without regard to sex, race, color, creed or national origin. No lessee, licensee or concessionaire providing a service to the public shall discriminate against any person because of sex, race, creed, color, or national origin in the conduct of the operations under the lease, license, or concession contract.

§ 331.3 Hunting and trapping.

Unless authorized in writing by the District Engineer:

(a) The hunting, trapping, catching, molesting, killing, or having in possession any wild animal or bird, or taking the eggs of any such bird, is prohibited.

(b) Possession of equipment (including, but not limited to, firearms, ammunition, traps, projectile firing devices including bow and arrow) which could be used for hunting, trapping, or the taking of wildlife, is prohibited.

§ 331.4 Fishing.

Unless otherwise authorized in writing by the District Engineer:

(a) Fishing is only permitted in accordance with the laws and regulations of the State within whose exterior boundaries that portion of the WCA is located, and such laws and regulations which are now or may hereafter be in effect are hereby adopted as part of these regulations.

(b) Fishing by means of the use of drugs, poisons, explosives, bow and arrow or electricity is prohibited.

(c) Commercial fishing and fishing with gill nets, trammel nets, hoop nets, bow and arrow or trot lines is prohibited.

§ 331.5 Explosives and fireworks.

Unless otherwise authorized in writing by the District Engineer:

(a) The possession or use of fireworks is prohibited.

(b) The possession or use of explosives is prohibited.

§ 331.6 Public property.

Unless otherwise authorized in writing by the District Engineer, the destruction, injury, defacement, removal, or any alteration of public property including, but not limited to natural formations, paleontological features, historical and archaeological features and vegetative growth is prohibited. Any such destruction, removal, or alteration of public property shall be in accordance with the conditions of any permission granted.

§ 331.7 Sanitation.

(a) Garbage, trash, rubbish, litter, or any other waste material or waste liquid generated on the WCA shall be removed from the area or deposited in receptacles provided for that purpose. The improper disposal of such wastes within the boundaries of the WCA is prohibited.

(b) The use of refuse containers for the disposal of refuse not generated on the WCA is prohibited.

(c) It is a violation to bring any material onto the WCA for the purpose of disposal.

(d) The discharge or placing of sewage, galley waste, garbage, refuse or pollutants into the WCA waters from any vessel or watercraft is prohibited.

§ 331.8 Picnicking.

(a) Picnicking is permitted only in designated areas.

(b) Picnickers shall remove all personal equipment and clean their sites upon departure.

§ 331.9 Camping.

Camping is not permitted within the WCA.

§ 331.10 Swimming.

Swimming is prohibited unless authorized in writing by the District Engineer.

§ 331.11 Special events.

(a) Special events including, but not limited to, water carnivals, boat regattas, music festivals, dramatic presentations, or other special recreation programs are prohibited unless written permission has been granted by the District Engineer.

(b) The public shall not be charged any fee by the sponsor of such permitted event unless the District Engineer has approved in writing the proposed schedule of fees. The District Engineer shall have authority to revoke permission and require removal of any equipment upon failure of the sponsor to comply with terms and conditions of the permit/permission. Any violation shall constitute a separate violation for each calendar day in which it occurs.

§ 331.12 Vehicles.

(a) The use of a vehicle off roadways is prohibited except as may be authorized by the District Engineer.

(b) Vehicles shall not be parked in violation of any posted restriction, or in such a manner as to endanger any Federal property to include natural features. The owner of any vehicle parked in violation of this section shall be presumed to have parked it, and unless rebutted such presumption will

be sufficient to sustain a conviction as provided for in § 331.25.

(c) Vehicles shall be operated in accordance with all posted regulations.

(d) Driving or operating any vehicle in a careless, negligent, or reckless manner, heedlessly or in willful disregard for the safety of other persons, or in such manner as to endanger any property or environmental feature, or without due care or at a speed greater than is reasonable and prudent under prevailing conditions with regard to traffic, weather, road, light and surface conditions, is prohibited.

(e) This section pertains to all vehicles, including, but not limited to, automobiles, trucks, motorcycles, minibikes, trail bikes, snowmobiles, dune buggies, all terrain vehicles, bicycles, trailers, campers, or any other such equipment.

(f) Except as authorized by the District Engineer, no person shall operate any motorized vehicle without a proper and effective exhaust muffler, or with an exhaust muffler cutout open, or in any other manner which renders the exhaust muffler ineffective in muffling the sound of engine exhaust.

§ 331.13 Vessels.

(a) Vessels or other watercraft may be operated in the WCA waters except in prohibited or restricted areas in accordance with posted regulations and applicable Federal, State and local laws.

(b) All vessels when not in actual use shall be removed from the WCA unless securely moored at mooring facilities approved by the District Engineer. The placing of floating or stationary mooring facilities to, or interfering with, a buoy, channel marker, or other navigational aid is prohibited.

(c) The operation of vessels or other watercraft in a careless, negligent, or reckless manner so as to endanger any property (including the operator and/or user(s) of the vessel or watercraft) is prohibited.

§ 331.14 Aircraft.

(a) The operation of aircraft on WCA lands and waters is prohibited, unless authorized in writing by the District Engineer.

(b) Except in extreme emergencies threatening human life or serious property loss, the air delivery of any person or thing by parachute, helicopter, or other means onto project lands or waters without written permission of the District Engineer is prohibited.

(c) The provisions of this section shall not be applicable to aircraft engaged on official business of the Federal Government or used in emergency

rescue in accordance with the directions of the District Engineer.

§ 331.15 Fires.

Open fires are prohibited unless confined to fireplaces, grills, or other facilities designed for this purpose as designated by the District Engineer. Fires shall not be left unattended and must be completely extinguished prior to departure.

§ 331.16 Interference with government employees.

Interference with any Government employee in the conduct of his or her official duties pertaining to the administration of these regulations is prohibited. It is a violation to fail to comply with a lawful order directed by any Government employee or to knowingly give any false, fictitious, or fraudulent report or other information to any government employee in the performance of his or her official duties pertaining to the administration of these regulations.

§ 331.17 Minerals.

All activities in connection with prospecting, exploration, development, mining or other removal or the processing of mineral resources and all uses reasonably incident thereto are prohibited.

§ 331.18 Restrictions.

The District Engineer may establish and post a schedule of visiting hours and/or restrictions on the public use of a portion or portions of the WCA. The District Engineer may close or restrict the use of the WCA or portion of the WCA when necessitated by reason of public health, public safety, security, maintenance, or other reasons in the public interest. Entering or using the project in a manner which is contrary to the schedule of visiting hours, closure or restrictions is prohibited.

§ 331.19 Commercial activities.

Unless otherwise authorized in writing by the District Engineer, the engaging in or solicitation of business or money is prohibited.

§ 331.20 Advertisement.

Unless otherwise authorized in writing by the District Engineer, advertising by the use of billboards, signs, markers, audio devices, or any other means whatsoever including handbills, circulars, and posters is prohibited. Vessels or vehicles with semipermanent or permanently installed signs are exempt if being used for authorized recreational activities or special events and in compliance with

all other rules and regulations pertaining to vessels and vehicles.

§ 331.21 Unauthorized structures.

The construction, placing, or continued existence of any structure of any kind under, upon, in, or over WCA lands or waters is prohibited unless a permit, lease, license, or other appropriate written agreement therefor has been issued by the District Engineer. Structures not so authorized are subject to summary removal or impoundment by the District Engineer. The design, construction, placing, existence, or use of structures in violation of the terms of the permit, lease, license, or other written agreement therefor is prohibited.

§ 331.22 Abandonment of personal property.

(a) Personal property of any kind left unattended upon WCA lands or waters for a period of 24 hours shall be considered abandoned and may be impounded and stored at a storage point designated by the District Engineer who may assess a reasonable impoundment fee. Such fee shall be paid before the impounded property is returned to its owner.

(b) If abandoned property is not claimed by its owner within 3 months after the date it is received at the storage point designated by the District Engineer, it may be disposed of by public or private sale or by other means determined by the District Engineer. Any net proceeds from the sale of property shall be conveyed unto the Treasury of the United States as miscellaneous receipts.

§ 331.23 Control of animals.

(a) No person shall bring or allow horses, cattle, or other livestock in the WCA.

(b) No person shall bring dogs, cats, or other pets into the WCA unless penned, caged, or on a leash under 6 feet in length, or otherwise under physical restraint at all times. Unclaimed or unattended animals are subject to immediate impoundment and removal in accordance with State and local laws.

§ 331.24 Permits.

It shall be a violation of these regulations to refuse to or fail to comply with the terms or conditions of any permit issued by the District Engineer.

§ 331.25 Violation of regulations.

Anyone violating the provisions of this regulation shall be subject to a fine of not more than \$500 or imprisonment for not more than 6 months, or both. All persons designated by the Chief of Engineers, U.S. Army Corps of Engineers, for that purpose shall have

the authority to issue a citation for the violation of these regulations, requiring the appearance of any person charged with violation to appear before the U.S. Magistrate within whose jurisdiction the violation occurred.

Authority: Section 206, Pub. L. 97-137, 85 Stat. 1710 (16 U.S.C. 668dd note))

[FR Doc. 83-24621 Filed 9-8-83; 8:45 am]

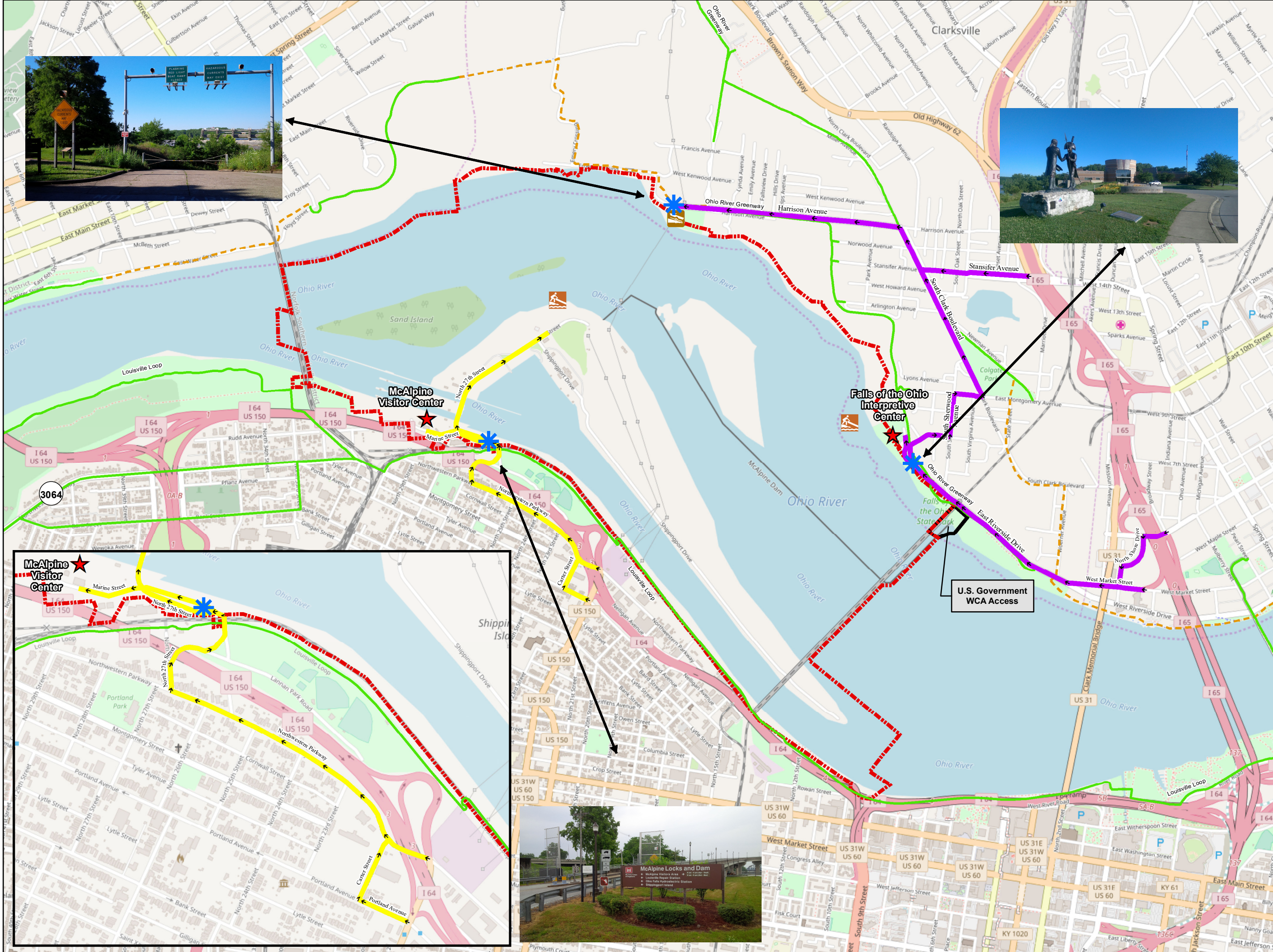
BILLING CODE 3710-92-M

Falls of the Ohio National Wildlife Conservation Area Master Plan Update



**US Army Corps
of Engineers®**
Louisville District

Appendix E Report Graphics



Legend

- ★ Vistor Center
- ✳ Gateway
- 🚣 Kayak and Canoe Ramp
- 🚤 Boat Ramp
- 🟢 Existing Trail (Bike Accessible)
- 🟠 Trail Planned or Under Development (Bike Accessible)
- 🟡 Falls of the Ohio Access Roads
- 🟠 McAlpine Lock and Dam Access Roads
- 🔴 WCA Boundary

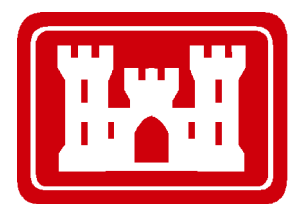


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Feet

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Mile

Falls of the Ohio Master Plan
Louisville, Kentucky

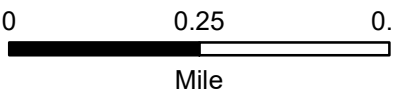
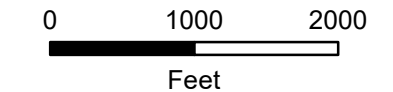
USACE - Louisville District





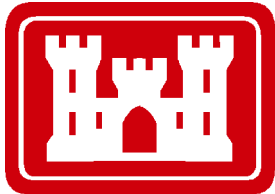
Legend

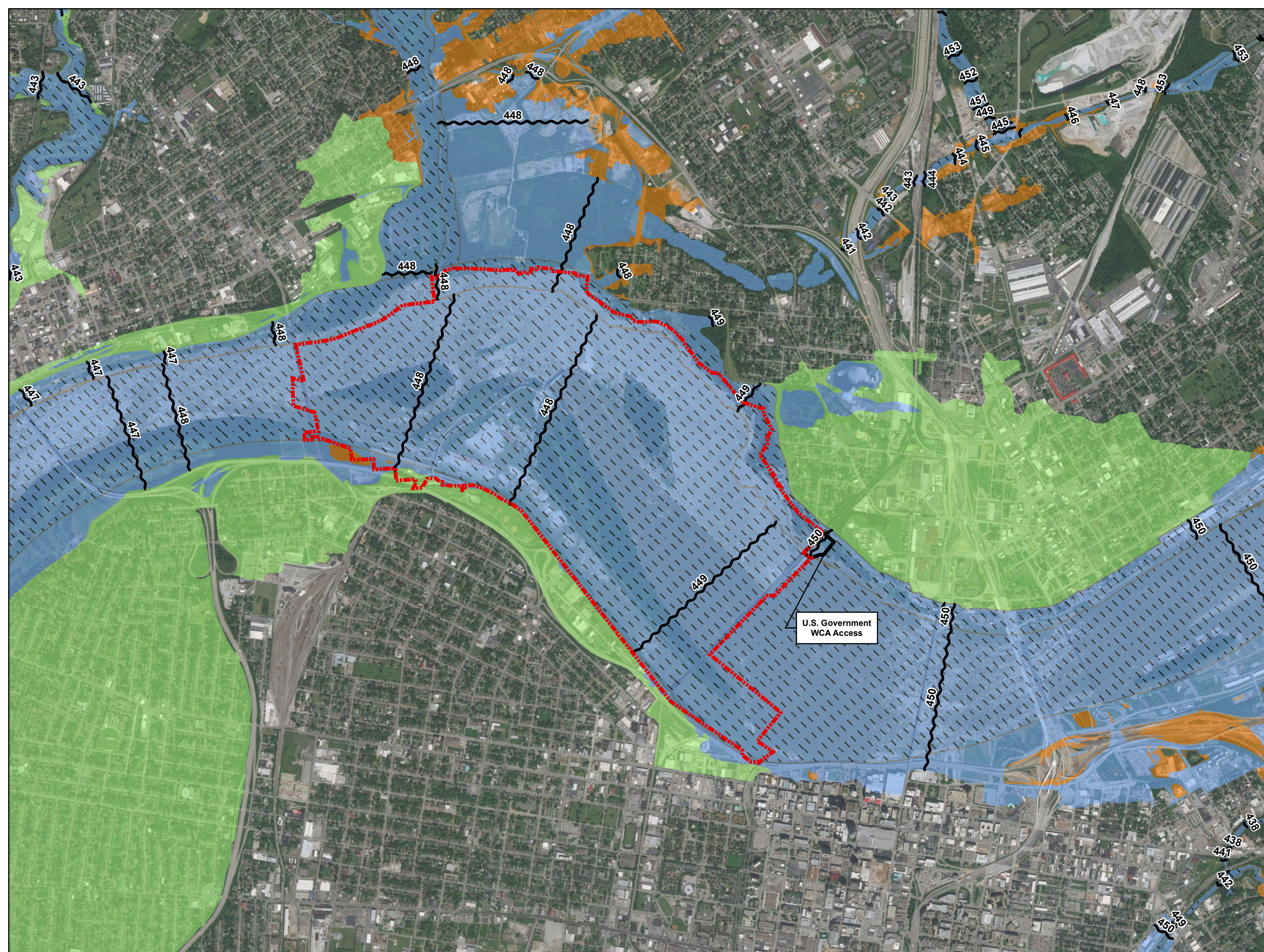
- River Mile
- ===== Dike
- ~~~~~ Stream
- USACE Owned Parcel
- LGE Owned Parcel
- LGE Owned, Restrictive Easement in favor of USACE
- Outgrant Area
- Disposed Property
- WCA Boundary



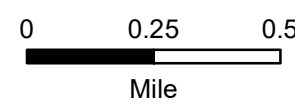
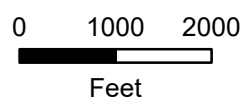
Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District



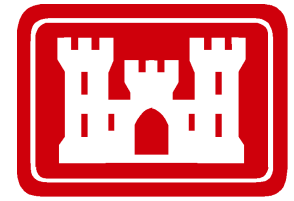


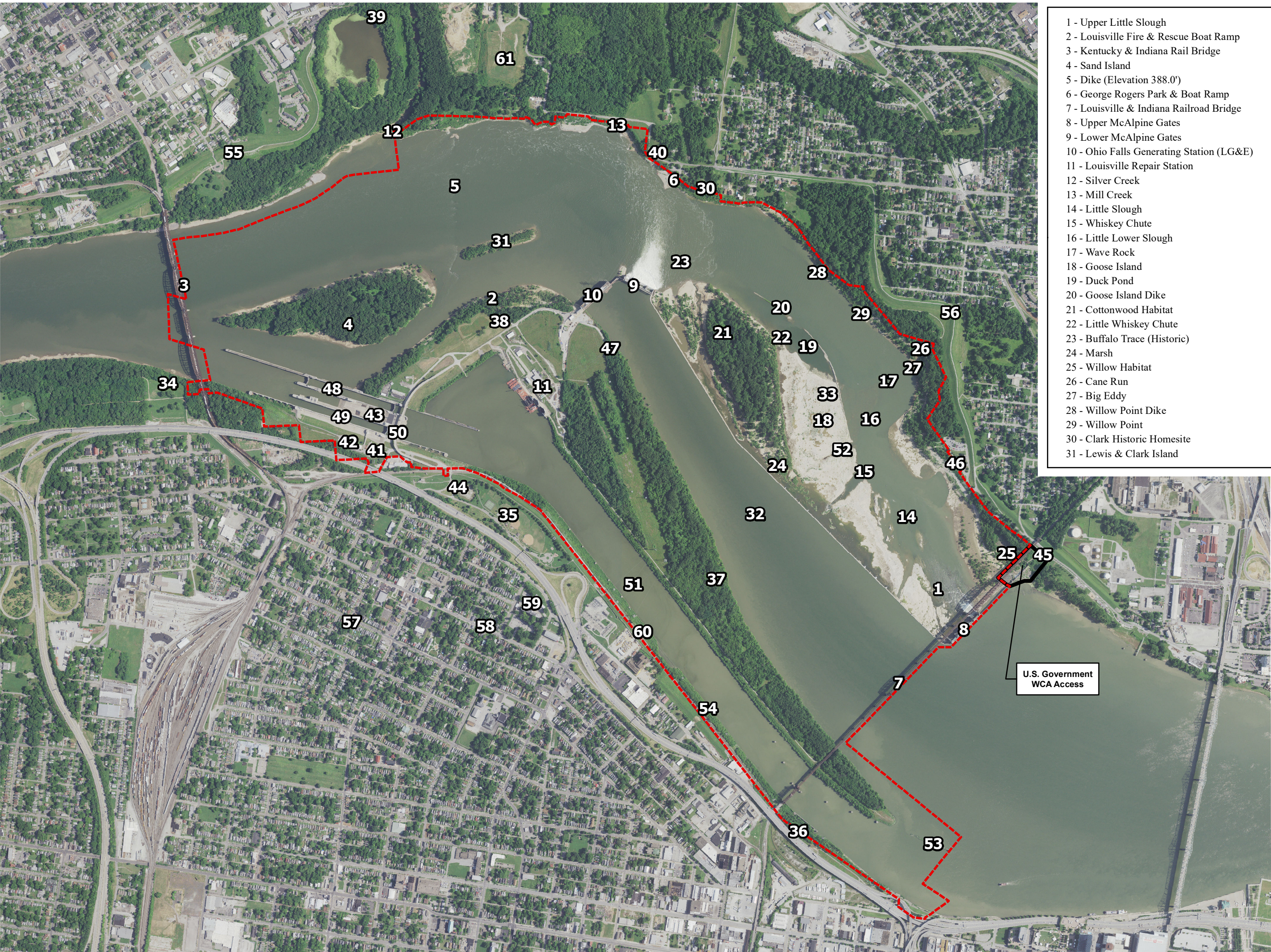
- Legend**
- Base Flood Elevation
 - Floodway
 - 100yr Flood Event
 - 500yr Flood Event
 - Floodplain Behind Levee
 - WCA Boundary



Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District





- | | |
|---|---|
| 1 - Upper Little Slough | 32 - Middle Chute |
| 2 - Louisville Fire & Rescue Boat Ramp | 33 - Prairie Grass Habitat |
| 3 - Kentucky & Indiana Rail Bridge | 34 - Portland Wharf |
| 4 - Sand Island | 35 - Lannan Memorial Park |
| 5 - Dike (Elevation 388.0') | 36 - Waterfront Park Phase IV |
| 6 - George Rogers Park & Boat Ramp | 37 - Shippingport Island Rookery |
| 7 - Louisville & Indiana Railroad Bridge | 38 - Fishermans Trailhead |
| 8 - Upper McAlpine Gates | 39 - Loop Island |
| 9 - Lower McAlpine Gates | 40 - Lewis & Clark Bicentennial Park |
| 10 - Ohio Falls Generating Station (LG&E) | 41 - McAlpine L&D Visitors Area |
| 11 - Louisville Repair Station | 42 - McAlpines L&D Resident's Office |
| 12 - Silver Creek | 43 - McAlpine Locks |
| 13 - Mill Creek | 44 - MSD Portland Storage Basin |
| 14 - Little Slough | 45 - Overlook |
| 15 - Whiskey Chute | 46 - Falls of the Ohio State Park Visitors Center |
| 16 - Little Lower Slough | 47 - Tarascon Mill Site (Historic) |
| 17 - Wave Rock | 48 - 1,200ft Lock - 1961 Chamber |
| 18 - Goose Island | 49 - 1,200ft Lock - 2009 Chamber |
| 19 - Duck Pond | 50 - Portland Shippingport Bridge |
| 20 - Goose Island Dike | 51 - Louisville & Portland Canal |
| 21 - Cottonwood Habitat | 52 - Fossil Beds |
| 22 - Little Whiskey Chute | 53 - Vane Dike |
| 23 - Buffalo Trace (Historic) | 54 - 18th Street Bridge Pier |
| 24 - Marsh | 55 - New Albany Indiana Levee |
| 25 - Willow Habitat | 56 - Clarksville Indiana Levee |
| 26 - Cane Run | 57 - Portland Neighborhood |
| 27 - Big Eddy | 58 - Portland Museum |
| 28 - Willow Point Dike | 59 - Marine Hospital |
| 29 - Willow Point | 60 - Riverwalk |
| 30 - Clark Historic Homesite | 61 - Clarksville Park (Future) |
| 31 - Lewis & Clark Island | |

Legend

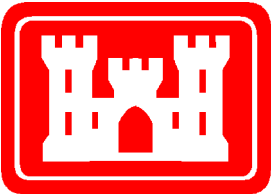
 WCA Boundary

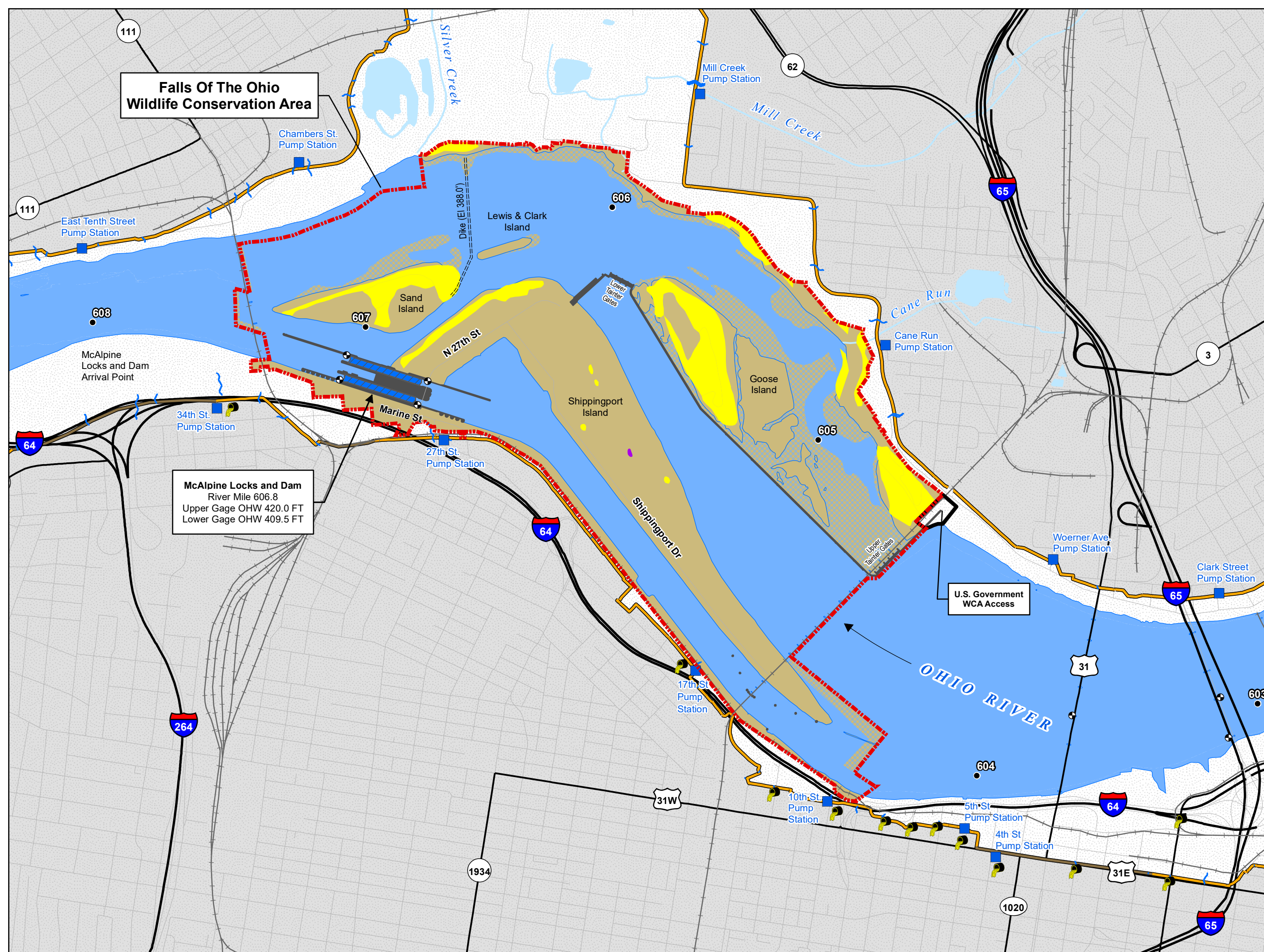


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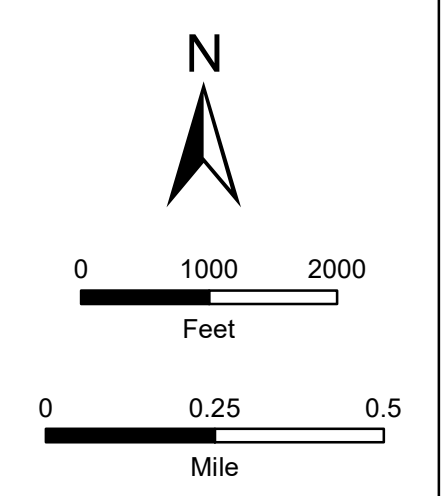
Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District



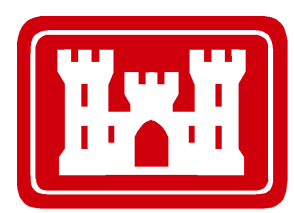


- Legend**
- River Mile
 - ⊙ Stream Gauge
 - Combined Sewer Overflow
 - Pump Station
 - Gravity Drain
 - ===== Dike
 - Stream
 - Levee / Floodwall
 - High Ground
 - Area Behind Levee
 - Water Body
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Ohio River Low Pool
 - Ohio River Normal Pool
 - WCA Boundary

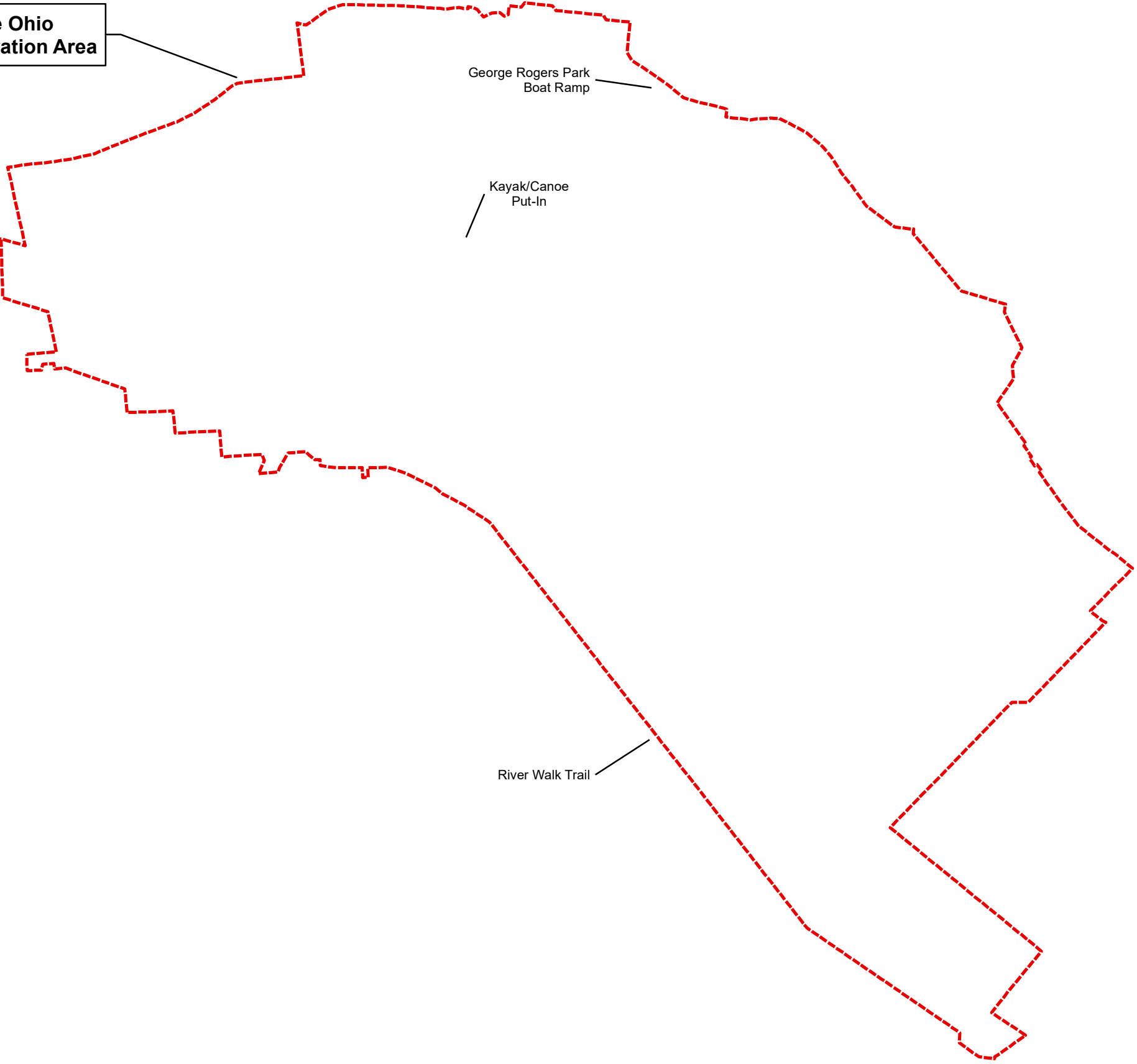


Falls of the Ohio Master Plan
Louisville, Kentucky








USACE - Louisville District

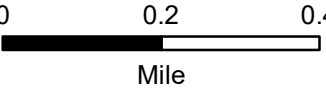
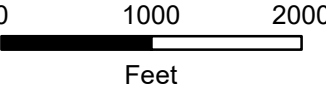


**Falls Of The Ohio
Wildlife Conservation Area**



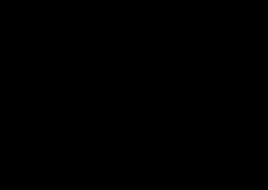
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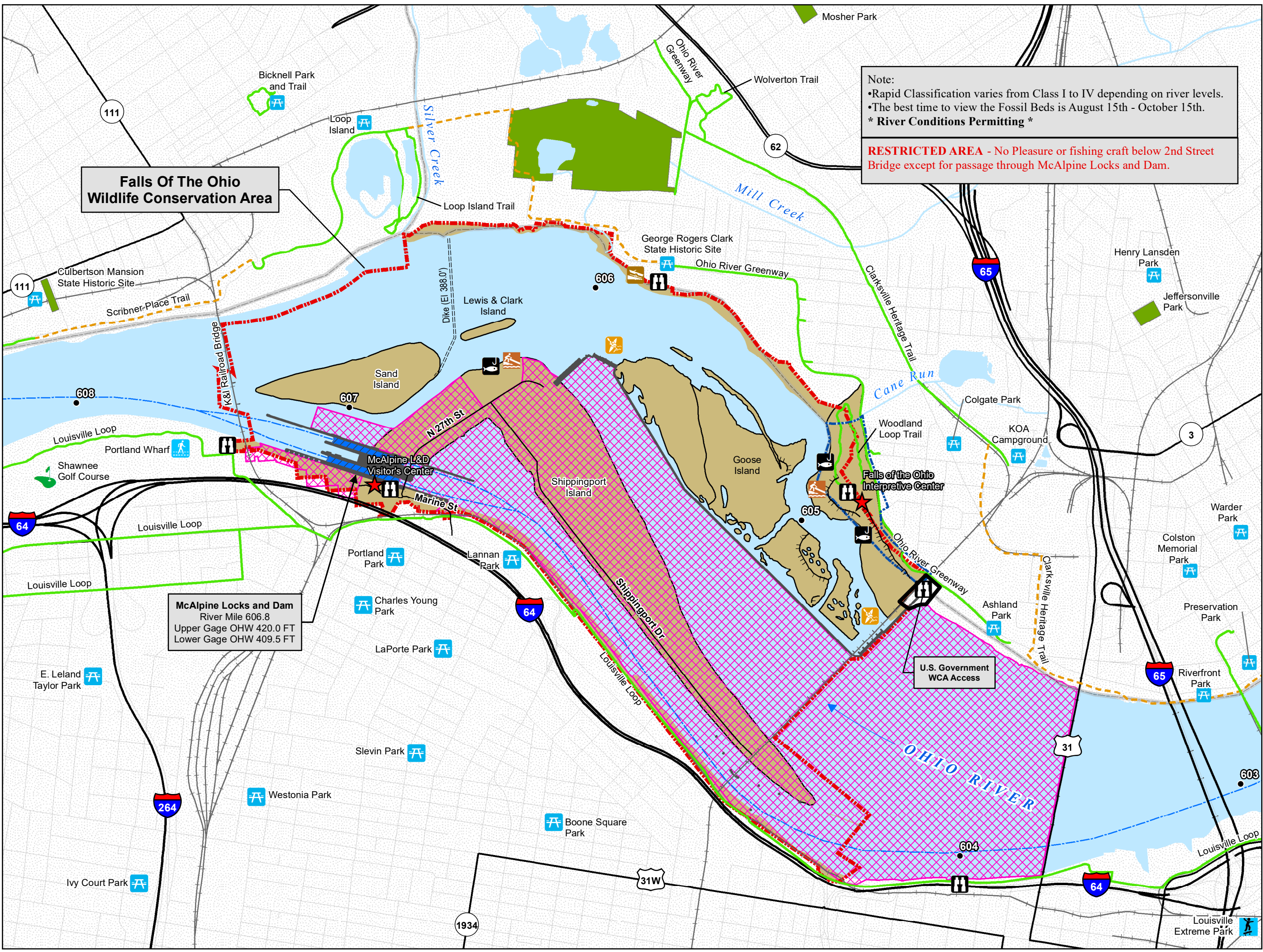
-  WCA Boundary
- Type**
-  Project Operations
-  Open Recreation
-  Low Density Recreation
-  Environmentally Sensitive Area
-  Vegetative Management
-  Restricted



Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District





Note:
•Rapid Classification varies from Class I to IV depending on river levels.
•The best time to view the Fossil Beds is August 15th - October 15th.
* River Conditions Permitting *

RESTRICTED AREA - No Pleasure or fishing craft below 2nd Street Bridge except for passage through McAlpine Locks and Dam.

Legend

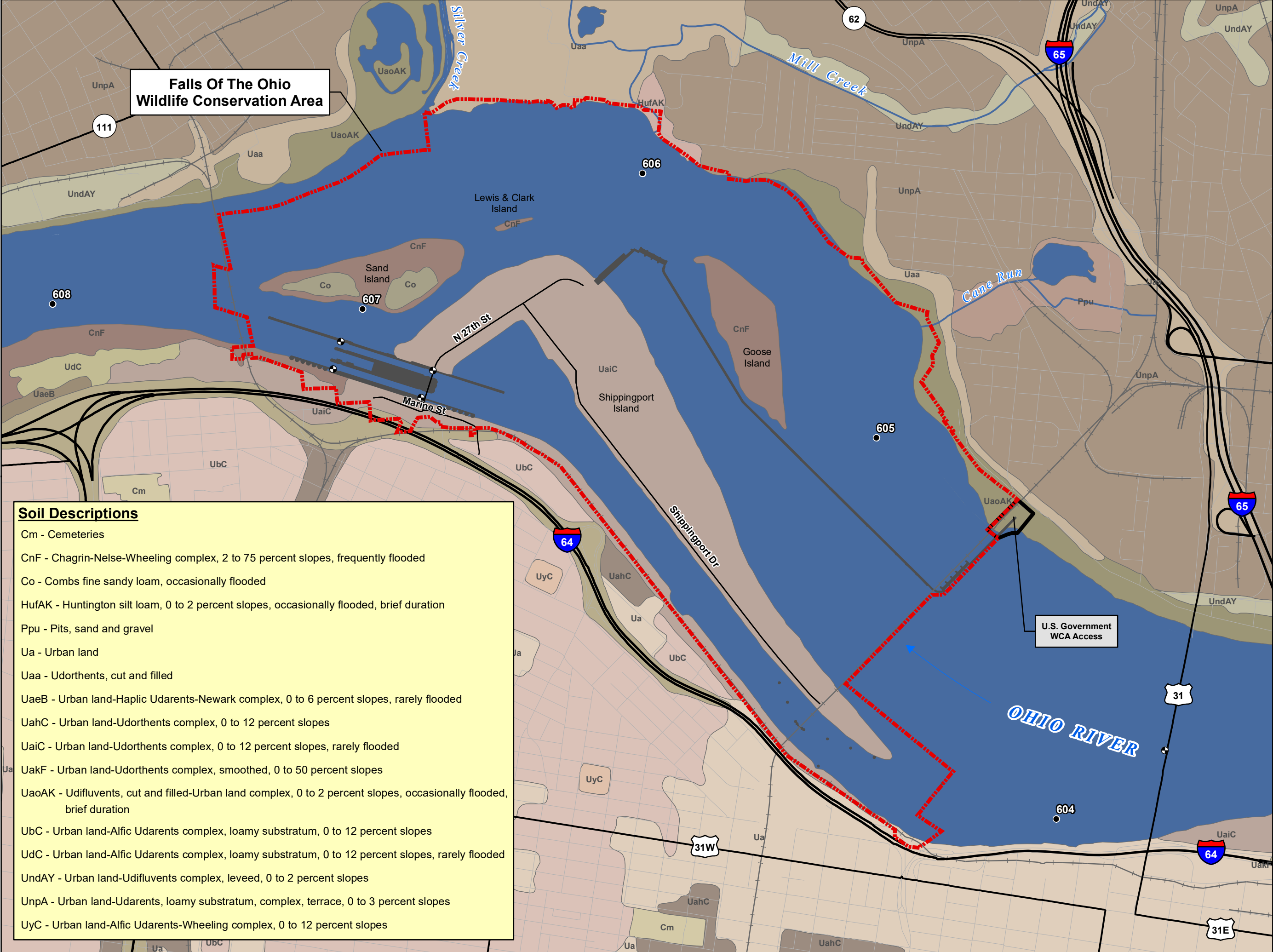
- Vistor Center
- ObservationPoints
- Whitewater Rapids
- Fishing Access Point
- Kayak and Canoe Ramp
- Boat Ramp
- Park
- Greenway/Trail
- Skate Park
- Golf Course
- Existing Trail
- Trail Planned or Under Development
- Fossil Cliff
- Dike
- Sailing Line
- Falls of the Ohio State Park Boundary
- Restricted Area
- INDR Land
- WCA Boundary

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Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District



**Falls Of The Ohio
Wildlife Conservation Area**

Soil Descriptions

Cm - Cemeteries

CnF - Chagrin-Nelse-Wheeling complex, 2 to 75 percent slopes, frequently flooded

Co - Combs fine sandy loam, occasionally flooded

HufAK - Huntington silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration

Ppu - Pits, sand and gravel

Ua - Urban land

Uaa - Udorthents, cut and filled

UaeB - Urban land-Haplic Udarents-Newark complex, 0 to 6 percent slopes, rarely flooded

UahC - Urban land-Udorthents complex, 0 to 12 percent slopes

UaiC - Urban land-Udorthents complex, 0 to 12 percent slopes, rarely flooded

UakF - Urban land-Udorthents complex, smoothed, 0 to 50 percent slopes

UaoAK - Udifluvents, cut and filled-Urban land complex, 0 to 2 percent slopes, occasionally flooded, brief duration

UbC - Urban land-Alfic Udarents complex, loamy substratum, 0 to 12 percent slopes

UdC - Urban land-Alfic Udarents complex, loamy substratum, 0 to 12 percent slopes, rarely flooded

UndAY - Urban land-Udifluvents complex, leveed, 0 to 2 percent slopes

UnpA - Urban land-Udarents, loamy substratum, complex, terrace, 0 to 3 percent slopes

UyC - Urban land-Alfic Udarents-Wheeling complex, 0 to 12 percent slopes

Legend

Stream

Water Body

WCA Boundary

Soil Type

Cm	UaiC
CnF	UakF
Co	UaoAK
HufAK	UbC
Ppu	UdC
Ua	UndAY
Uaa	UnpA
UaeB	UyC
UahC	

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Mile

Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District



Falls Of The Ohio
Wildlife Conservation Area

Lewis & Clark
Island

Sand
Island

N 27th St

Marine St

Submerged Cable

Shippingport
Island

Shippingport Dr

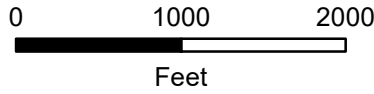
Goose
Island

U.S. Government
WCA Access

OHIO RIVER

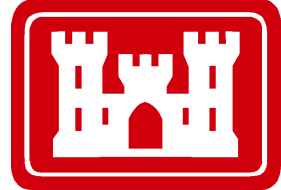
Legend

- Overhead Power Line
- Sanitary Sewer Line
- Submerged Utility
- WCA Boundary



Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District





Falls Of The Ohio
Wildlife Conservation Area

Lewis & Clark
Island

Sand
Island

Shippingport
Island

Goose
Island

Cane Run

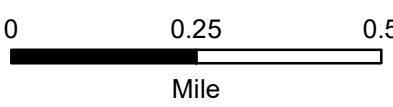
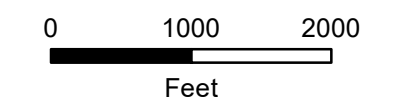
Main Creek

Silver Creek

U.S. Government
WCA Access

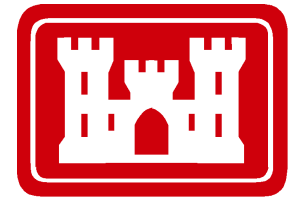
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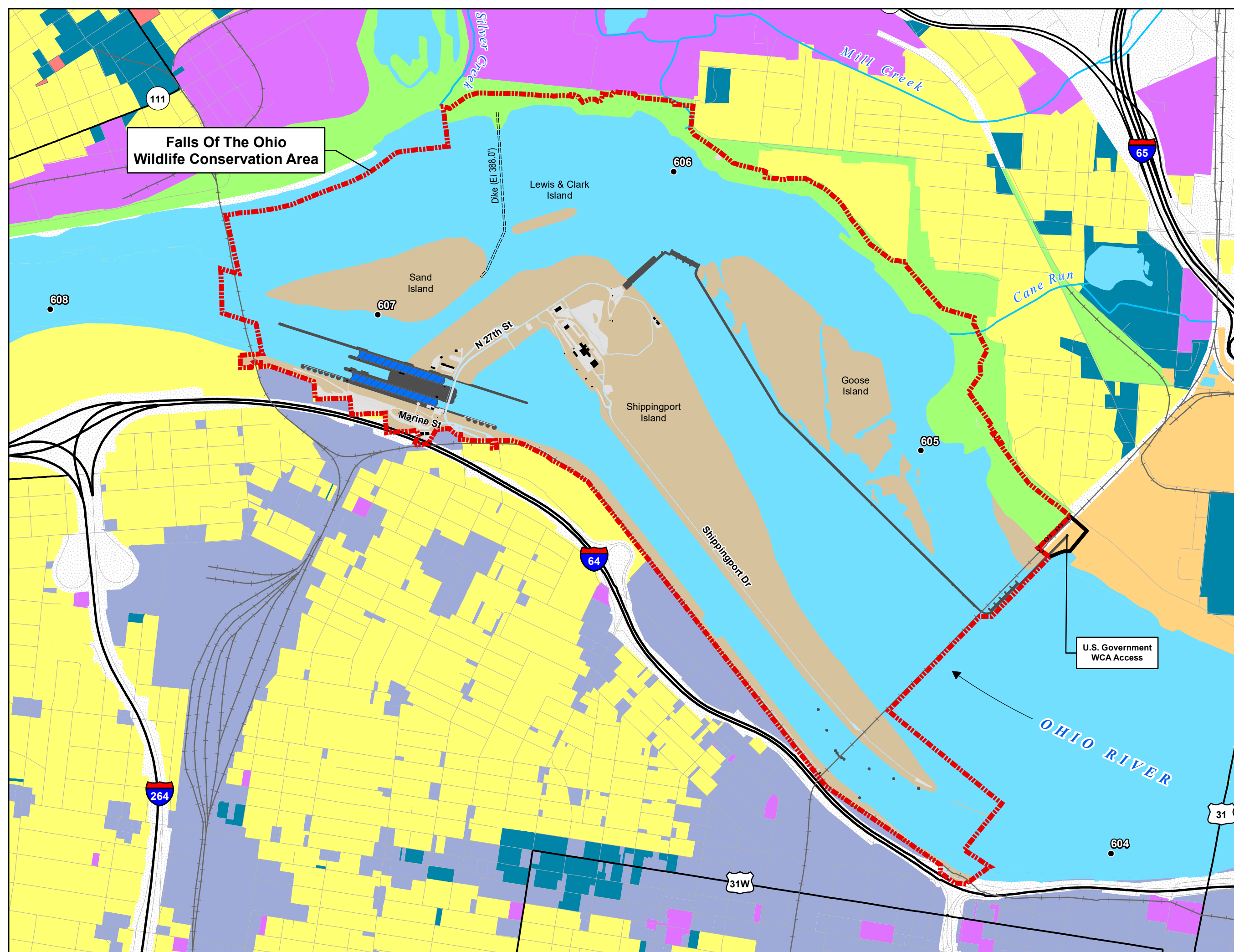
-  Stream
-  Freshwater
Emergent
Wetland
-  Freshwater
Forested/Shrub
Wetland
-  USGovAccess
-  WCA Boundary



Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District





Falls Of The Ohio
Wildlife Conservation Area

U.S. Government
WCA Access

Legend

- River Mile
- ===== Dike
- ~ Stream
- Water Body
- WCA Boundary

Zoning

- Open Space
- Residential
- Residential/ Professional Office
- Business
- Industrial
- Commercial/Industrial
- Planned Unit Development District

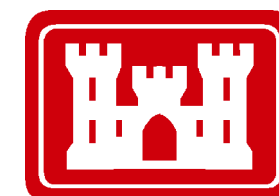


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Falls of the Ohio Master Plan
Louisville, Kentucky

USACE - Louisville District



Falls of the Ohio National Wildlife Conservation Area Master Plan Update



**US Army Corps
of Engineers®**
Louisville District

Appendix E Real Estate

Summary of Land Acquisitions, NWCA

Tract 100

178.00 acres acquired from N.S.C. Corporation f/k/a Nugent Sand Company, et al by Declaration of Taking Civil Action. No. C-90-0297-L-B on 27 April 1990, recorded 10 May 1990 in Encumbrance Book 230, page 575 in the records of Jefferson County, Kentucky. Court award \$135,000.00.

Tract 101

598.88 acres acquired from Alice H. James, et al by Declaration of Taking Civil Action. No. C-85-0847-L-A on 26 August 1985, recorded 7 October 1985 in Lis Pendens Book 110, page 412 in the records of Jefferson County, Kentucky. Court award \$120,500.00.

Tract 105

13.67 acres acquired from John A. Marrs, Benjamin B. and Debbie E. Marrs, and Raymon L. and Jane M. Senn by Warranty Deed dated 20 April 1989, recorded 20 April 1989 in Deed Drawer 21 Instrument No. 4183 in the records of Clark County, Indiana. Acquisition cost \$32,000.00.

Tract 106

1.76 acres acquired from William D. Richardson, et al by Declaration of Taking Civil Action. No. NA-90-38-C on 12 March 1990, recorded 31 August 1990 in Lis Pendens Record 3, page 183 in the records of Clark County, Indiana. Court award \$4,500.00.

Tract 107

0.48 acres acquired from John N. Brewster, et ux by Declaration of Taking Civil Action. No. NA-89-108-C on 23 June 1989, recorded 14 July 1989 in Lis Pendens Record 3, page 139 in the records of Clark County, Indiana. Court award \$5,500.00.

Tract 108

0.46 acres acquired from Ruby J. and Walter Mattern by Warranty Deed dated 30 September 1988, recorded 30 September 1988 in Deed Drawer 20 Instrument No. 10602 in the records of Clark County, Indiana. Acquisition cost \$2,300.00.

Tract 109

0.46 acres acquired from Carl and Patricia Whited by Warranty Deed dated 5 August 1988, recorded 9 August 1988 in Deed Drawer 20 Instrument No. 8413 in the records of Clark County, Indiana. Acquisition cost \$2,000.00.

Tract 110

0.46 acres acquired from Robert Eckerle, et al by Declaration of Taking Civil Action. No. NA-89-10-C on 17 January 1989, recorded 27 January 1989 in Lis Pendens Record 3, page 119 in the records of Clark County, Indiana. Court award \$5,500.00.

Tract 111

0.46 acres acquired from Evelyn Martin by Warranty Deed dated 5 August 1988, recorded 9 August 1988 in Deed Drawer 20 Instrument No. 8414 in the records of Clark County, Indiana. Acquisition cost \$2,000.00.

Tract 112

0.45 acres acquired from Robert Harrington, et ux by Declaration of Taking Civil Action. No. NA-89-12-C on 17 January 1989, recorded 27 January 1989 in Lis Pendens Record 3, page 117 in the records of Clark County, Indiana. Court award \$5,500.00.

Tract 113

0.45 acres acquired from Richard Ray Leister, Sr., et ux by Declaration of Taking Civil Action. No. NA-89-75-C on 5 May 1989, recorded 19 May 1989 in the Record of Encumbrances page 128 in the records of Clark County, Indiana. Court award \$5,500.00.

Tract 114

0.46 acres acquired from James H. Goodman, et al by Declaration of Taking Civil Action. No. NA-89-11-C on 17 January 1989, recorded 27 January 1989 in Lis Pendens Record 3, page 118 in the records of Clark County, Indiana. Court award \$5,500.00.

Tract 115

0.47 acres acquired from Cecil Sandlin, et ux by Declaration of Taking Civil Action. No. NA-89-49-C on 20 March 1989, recorded 31 March 1989 in Lis Pendens page 125 in the records of Clark County, Indiana. Court award \$5,500.00.

Tract 116

0.46 acres acquired from Robert and Virginia E. Smith by Warranty Deed dated 12 April 1989, recorded 12 April 1989 in Deed Drawer 21 Instrument No. 3825 in the records of Clark County, Indiana. Acquisition cost \$2,250.00.

Tract 117

0.46 acres acquired from Elmer Leister, et ux by Declaration of Taking Civil Action. No. NA-89-120-C on 17 July 1989, recorded 1 August 1989 in Lis Pendens Record 3, page 141 in the records of Clark County, Indiana. Court award \$5,500.00.

Tract 118

0.48 acres acquired from David L. and Wanda L. Leister and Linda K. and J. Clarence Smith by Warranty Deed dated 7 July 1989, recorded 27 July 1989 in Deed Drawer 21 Instrument No. 7813 in the records of Clark County, Indiana. Acquisition cost \$2,500.00.

Tract 119

0.47 acres acquired from Geneva E. Neal, et al by Declaration of Taking Civil Action. No. NA-89-86-C on 22 May 1989, recorded 8 June 1989 in Lis Pendens Record 3, page 132 in the records of Clark County, Indiana. Court award \$5,000.00.

Tract 120

1.36 acres acquired from Raymond J. Fabel, et ux by Declaration of Taking Civil Action. No. NA-89-87-C on 22 May 1989, recorded 8 June 1989 in Lis Pendens Record 3, page 133 in the records of Clark County, Indiana. Court award \$19,315.00.

Tract 122

1.54 acres acquired from John Brewster, et al by Declaration of Taking Civil Action. No. NA-89-109-C on 23 June 1989, recorded 14 July 1989 in Lis Pendens Record 3, page 136 in the records of Clark County, Indiana. Court award \$8,259.71.

Tract 123

0.69 acres acquired from Charles S. Smith by Warranty Deed dated 8 December 1988, recorded 8 December 1988 in Deed Drawer 20 Instrument No. 13352 in the records of Clark County, Indiana. Acquisition cost \$1,500.00.

Tract 124

1.49 acres acquired from John Brewster, et al by Declaration of Taking Civil Action. No. NA-89-111-C on 23 June 1989, recorded 14 July 1989 in Lis Pendens Record 3, page 138 in the records of Clark County, Indiana. Court award \$6,750.00.

Tract 126

0.50 acres acquired from Eleanor F. Brown by Warranty Deed dated 13 October 1988, recorded 13 October 1988 in Deed Drawer 20 Instrument No. 11199 in the records of Clark County, Indiana. Acquisition cost \$875.00.

Tract 127

0.98 acres acquired from Elmore and Rose E. Hines by Warranty Deed dated 9 May 1989, recorded 9 May 1989 in Deed Drawer 21 Instrument No. 4844 in the records of Clark County, Indiana. Acquisition cost \$4,500.00.

Tract 128

1.13 acres acquired from John and Ruth Schroeder by Warranty Deed dated 9 May 1989, recorded 9 May 1989 in Deed Drawer 21 Instrument No. 4843 in the records of Clark County, Indiana. Acquisition cost \$4,500.00.

Tract 129

9.93 acres acquired from Frank and Rosemary Meyer by Warranty Deed dated 13 January 1989, recorded 13 January 1989 in Deed Drawer 21 Instrument No. 421 in the records of Clark County, Indiana. Acquisition cost \$12,300.00.

Tract 130

8.26 acres acquired from State of Indiana by Quitclaim Deed dated 31 Jul 1989, recorded 22 February 1990 in Deed Drawer 22 Instrument No. 1947 in the records of Clark County, Indiana. Acquisition cost \$42,400.00.

Tract 131

0.38 acres acquired from Charles T. Underhill, et al by Declaration of Taking Civil Action. No. NA-89-110-C on 23 June 1989, recorded 14 July 1989 in Lis Pendens Record 3, page 137 in the records of Clark County, Indiana. Court award \$23,892.86.

Tract 132

0.64 acres acquired from Robert Lee and Norma J. Isgrigg by Warranty Deed dated 14 November 1988, recorded 14 November 1988 in Deed Drawer 20 Instrument No. 12491 in the records of Clark County, Indiana. Acquisition cost \$17,886.00.

Tract 133

0.82 acres acquired from Amy Jo Munich, et al by Declaration of Taking Civil Action. No. NA-89-121-C on 17 July 1989, recorded 1 August 1989 in Lis Pendens Record 3, page 142 in the records of Clark County, Indiana. Court award \$47,000.00.

Tract 134

0.90 acres acquired from Lonnie W. and Phyllis J. Howerton by Warranty Deed dated 1 March 1989, recorded 1 March 1989 in Deed Drawer 21 Instrument No. 2176 in the records of Clark County, Indiana. Acquisition cost \$20,000.00. Also, 0.90 acres fee simple acquired from Lucy G. Lane, George N. and Beverly M. Lane by Quitclaim Deed dated 1 March 1989, recorded 1 March 1989 in Deed Drawer 21 Instrument No. 2177 in the records of Clark County, Indiana. Acquisition cost \$1,000.00.

Tract 135

0.64 acres acquired from Melinda C. Pryor by Warranty Deed dated 21 October 1988, recorded 21 October 1988 in Deed Drawer 20 Instrument No. 11531 in the records of Clark County, Indiana. Acquisition cost \$16,000.00.

Tract 136

0.55 acres acquired from David L. and Wanda L. Leister by Warranty Deed dated 21 February 1989, recorded 22 February 1989 in Deed Drawer 21 Instrument No. 1901 in the records of Clark County, Indiana. Acquisition cost \$6,843.00.

Tract 137

1.42 acres acquired from Gregor and Mary Kaye Gertz by Warranty Deed dated 27 January 1989, recorded 27 January 1989 in Deed Drawer 21 Instrument No. 939 in the records of Clark County, Indiana. Acquisition cost \$31,250.00.

Tract 138

8.02 acres acquired from Falls Overlook, Inc., et al by Declaration of Taking Civil Action. No. NA-89-178-C on 25 September 1989, recorded 3 October 1989 in Lis Pendens Record 3, page 154 in the records of Clark County, Indiana. Court award \$54,304.20.

Tracts 139-1

5.14 acres acquired from Jeffersonville Flood Control District by Warranty Deed dated 26 January 1990, recorded 22 February 1990 in Deed Drawer 22 Instrument No. 1946 in the records of Clark County, Indiana. Acquisition cost \$10,280.00.

Tract 139-2

3.02 acres acquired from Jeffersonville-Clarksville Flood Control District by Warranty Deed dated 26 January 1990, recorded 22 February 1990 in Deed Drawer 22 Instrument No. 1946 in the records of Clark County, Indiana. Acquisition cost \$6,040.00.

Tract 140

24.85 acres acquired from Joseph H. Conner, et al by Declaration of Taking Civil Action. No. NA-89-9-C on 17 January 1989, recorded 27 January 1989 in Lis Pendens Record 3, page 120 in the records of Clark County, Indiana. Court award \$167,109.89.

Tract 141

19.80 acres acquired from Liberty National Bank and Trust Company, and Elizabeth C. Hyslop and Robin Carrier, Co-Trustees under the Last Will and Testament of Robert M. Carrier, Jr., deceased; and Liberty National Bank and Trust Company, Trustee under the Trust Agreement of Elizabeth d. Carrier, deceased, by Warranty Deed dated 21 September 1989, recorded 22 November 1989 in Deed Drawer 21 Instrument No. 12690 in the records of Clark County, Indiana. Acquisition cost \$235,000.00.

Tract 144

0.79 acres acquired from Jude Uhl, et al by Declaration of Taking Civil Action. No. NA-90-13-C on 22 January 1990, recorded 1 February 1990 in Lis Pendens Record 3, page 166 in the records of Clark County, Indiana. Court award \$5,000.00.

Tract 145-1

1.28 acres acquired from unknown owners, et al by Declaration of Taking Civil Action. No. NA-90-12-C on 22 January 1990, recorded 1 February 1990 in Lis Pendens Record 3, page 165 in the records of Clark County, Indiana. Court award \$2,800.00.

Tract 145-2

1.79 acres acquired from unknown owners, et al by Declaration of Taking Civil Action. No. NA-90-12-C on 22 January 1990, recorded 1 February 1990 in Lis Pendens Record 3, page 165 in the records of Clark County, Indiana. Court award \$2,000.00.

Tract 146

0.45 acres acquired from unknown owners, et al by Declaration of Taking Civil Action. No. NA-89-175-C on 20 September 1989, recorded 3 October 1989 in Lis Pendens Record 3, page 157 in the records of Clark County, Indiana. Court award \$1,134.14.

Tract 147

0.53 acres acquired from unknown owners, et al by Declaration of Taking Civil Action. No. NA-89-177-C on 20 September 1989, recorded 3 October 1989 in Lis Pendens Record 3, page 155 in the records of Clark County, Indiana. Court award \$1,300.00.

Tract 148

0.25 acres acquired from unknown owners, et al by Declaration of Taking Civil Action. No. NA-89-176-C on 20 September 1989, recorded 3 October 1989 in Lis Pendens Record 3, page 156 in the records of Clark County, Indiana. Court award \$625.00.

Tract 149-1

0.42 acres acquired from unknown owners, et al by Declaration of Taking Civil Action. No. NA-90-39-C on 12 March 1990, recorded 23 July 1990 in Lis Pendens Record 3, page 165 in the records of Clark County, Indiana. Court award \$485.00.

Tract 149-2

1.06 acres acquired from unknown owners, et al by Declaration of Taking Civil Action. No. NA-90-39-C on 12 March 1990, recorded 23 July 1990 in Lis Pendens Record 3, page 165 in the records of Clark County, Indiana. Court award \$1,225.00.

Tract 150

0.80 acres acquired from David L. and Wanda L. Leister by Warranty Deed dated 21 February 1989, recorded 22 February 1989 in Deed Drawer 21 Instrument No. 1902 in the records of Clark County, Indiana. Acquisition cost \$26,457.00.

Tract 151

0.52 acres acquired from Glenn B. and Vanessa Miller by Warranty Deed dated 21 February 1989, recorded 21 February 1989 in Deed Drawer 21 Instrument No. 1868 in the records of Clark County, Indiana. Acquisition cost \$16,500.00.

Tract 152

0.29 acres acquired by an Ordinance 92-54-03 vacating certain alleys and street right-of-ways in the Town of Clarksville, Indiana dated 10 August 1992, recorded 12 August 1992 in Deed Drawer 24 Instrument No. 12165 in the records of Clark County, Indiana. Acquisition at no-cost.

Tract 153E-2

0.34 acres channel improvement easement acquired from Town of Clarksville, Indiana by Warranty Deed dated 31 August 2004, recorded 28 September 2004 Instrument No. 200423540 in the records of Clark County, Indiana. Acquisition cost \$300.00.

Tract 154E-1

0.04 acres channel improvement easement acquired from Jeffersonville Flood Control District by Warranty Deed dated 27 August 2004, recorded 4 February 2005 Instrument No. 200502386 in the records of Clark County, Indiana. Acquisition cost \$100.00.

Completed Real Estate Disposal Actions

A portion of Tract 152 consisting of 0.069 of an acre was conveyed to the Town of Clarksville, Indiana for the construction of an Interpretive Center by Quitclaim Deed dated 6 October 1992, recorded 13 October 1992, Deed Drawer 24, Instrument No. 15443 in the records of Clark County, Indiana. Consideration \$75.00.

Active Outgrants

An outgrant is the written interest granted to an entity or individual that allows that entity or individual to make use of government property through lease, license, easement or permit. Outgrants typically establish a timeframe, conditions and restrictions on the use of the property. Some outgrants are issued through lease agreements, which are contracts between the USACE and another party.

The following active outgrants are located on the NWCA:

- Lease No. DACW27-1-92-012 to the State of Indiana for use of 60.14 acres of land for park, recreational and conservation purposes. Lease expires 31 December 2023.
- Easement DACW27-2-93-064 to the City of Jeffersonville to install and maintain a drainage pipeline over approximately 585 feet of government land. Easement is perpetual.
- License DACW27-3-15-233 to the Town of Clarksville to conduct soil borings and install, use, and maintain a monitoring well west of the Emery Crossing Bridge. License expires 22 June 2040.
- License DACW27-3-89-100 to Glen & Vanessa Miller and Davie & Wanda Leister to use and maintain a boat ramp. License expires 14 March 2029.
- License DACW27-3-95-315 to Amy Jo Munich to use and maintain a boat ramp and turnaround. License expires 14 August 2030.

Table 1 Active Outgrants in the NWCA Boundary

Outgrant	Grantee	Purpose	Tracts	Term
Lease DACW27-1-92-012	State of Indiana	Park and recreational lease	130, 139-1, 139-2, 140, 141, 145-1, 145-2, 147	1/1/1992-12/31/2023
Easement DACW27-2-93-064	City of Jeffersonville	Drainage pipeline	139-1, 140, 145-2	Perpetual
License DACW27-3-15-233	Town of Clarksville	Monitoring well and soil borings	149-2	6/23/2015 – 6/22/2040
License DACW27-89-100	David & Wanda Leister and Glen & Vanessa Miller	Boat ramp and turnaround	150, 151	3/15/2004 – 3/14/2029
License DACW27-3-95-315	Amy Jo Munich	Boat ramp and turnaround	133	8/15/2010 – 8/14/2030

The following active outgrants support McAlpine L&D but are within the NWCA boundary.

- Easement 052-CR-41-1 to the City of Louisville for rearrangement, installation, operation, maintenance, and removal of sewer lines in connection with the Government's construction of the Louisville and Jefferson County Flood Protection Project. Easement is perpetual.
- Easement No. DA15-029-CIVENG-60-374 to Louisville Gas and Electric Company for the construction, operation, maintenance and repair of transmission lines, including towers, poles, wires guys and other fixtures and appurtenances. Easement is perpetual.
- Easement No. DA15-029-CIVENG-60-375 to Louisville Gas and Electric Company for the construction, operation, maintenance and repair of transmission lines, including towers, poles, wires guys and other fixtures and appurtenances. Easement is perpetual.
- Easement No. DACW27-2-68-2108 to the Commonwealth of Kentucky, Department of Highways for a controlled access highway. Easement is perpetual.
- Easement No. DACW27-2-97-020 to Louisville Gas and Electric Company for utility poles with guy wires and overhead electric lines. Easement expires 14 April 2047.
- Easement No. DACW27-2-77-104 to Louisville Gas and Electric Company for the construction, operation, maintenance and repair of an electrical power transmission line, including poles, wires, guys and other appurtenances. Easement expires 28 July 2027.
- Easement DACW27-2-97-045 to Louisville Gas and Electric Company for the construction, reconstruction, operation, and maintenance of an electric line, communication system and all

equipment and facilities related to but not limited to, transformers, poles, conduits, cables and wires. Easement expires 30 June 2047.

- Easement No. DACW27-2-97-053 to BellSouth Telecommunications, Inc. for the construction, reconstruction, operation and maintenance of a communication facility and all equipment and facilities related to but not limited to, transformers, poles, conduits, cables and wires. Easement expires 29 September 2047.
- Easement No. DACW27-2-03-045 to Louisville and Jefferson County Metropolitan Sewer District for a combined sewer line. Easement is perpetual.
- License W-559-ENG-3150 to Kentucky and Indiana Bridge and Railroad Company to operate and use for the purpose of team track loading and unloading the United States switch or siding. License is perpetual.
- License DACW27-3-92-212 to the Louisville Jefferson County Metro Government, Department of Public Works for the construction, operation and maintenance of a Riverwalk. License expires 13 August 2037.
- License (unnumbered) to Louisville-Jefferson County, Department of Civil Defense for a fallout shelter. License is perpetual.
- Permit DACW27-4-06-409 to the Department of Homeland Security, United States Coast Guard for the placement, operation and maintenance of security surveillance cameras. Permit expires 30 April 2031.

Table 2 Active Outgrants that support McAlpine Lock and Dam

Outgrant	Grantee	Purpose	Tracts	Term
Easement 052-CR-41-1	City of Louisville	sewer lines in connection with the Louisville and Jefferson County Flood Protection Project	1, 12	perpetual
Easement DA15- 029-CIVENG-60-374	Louisville Gas and Electric Company	Transmission line on south side of canal, just north of substation	1(A)	perpetual
Easement DA15- 029-CIVENG-60-375	Louisville Gas and Electric Company	Utility right-of-way for the relocation of 13.8KV circuit on south side of canal and Shippingport Island	3, 13	perpetual
Easement DACW27-2-68-2108	Commonwealth of Kentucky, Department of Highways	I-64 in the area of the 9 th Street ramp and 28 th Street	3, 12	perpetual

Easement DACW27-2-97-020	Louisville Gas and Electric Company	Electric service to the Resident Office/Visitor's Center building on Marine Street	12	4/15/1997-4/14/2047
Easement DACW27-2-77-104	Louisville Gas and Electric Company	Electric tower on south side of canal near 9 th Street ramp. Tower is gone, concrete past still there	1(A)	7/29/1977-7/28/2027
Easement DACW27-2-97-045	Louisville Gas and Electric Company	Electric line on Shippingport Island between the Louisville Repair Station (LRS) and hydroplant. Line services LRS buildings	A-115	7/1/1997-6/30/2047
Easement DACW27-2-97-053	Bellsouth Telecommunications, Inc.	Telephone line to Resident Office/Visitors Center Building	3, 12	9/30/1997-9/29/2047
Easement DACW27-2-03-045	Louisville and Jefferson County Metropolitan Sewer District	Sewer line between I-64 and Resident Office/Visitors Center	12, 169	perpetual
License W-559-ENG-3150	Kentucky and Indiana Bridge and Railroad Company	Railroad spur to Southern Railway system. Extends from Kentucky and Indiana bridge to the 18 th St basin.	1	perpetual
License DACW27-3-92-212	Louisville Jefferson County Metro Government, Department of Public Works	Louisville Riverwalk	1	8/14/2012-8/13/2037
License (unnumbered)	Louisville-Jefferson County, Department of Civil Defense	Fallout Shelter	3	perpetual
Permit DACW27-4-06-409	Department of Homeland Security, United States Coast Guard	Placement, operation and maintenance of security surveillance cameras	A-115	5/1/2006-4/30/2031

Note: In addition to the above outgrants, there are additional minor consent to easements for placement of fill, dredging, boat docks, etc. issued at McAlpine L&D.

Real Property Inventory

Table 3 Structures Identified on the NWCA Real Property Inventory

Structure No.	Structure Type	Property Type
01A01	Interpretive Center	Private
01B01	Boat Ramp	Private
01P01	Parking Lot / Walkway	Government
01R01	ADA Walkway Ramp	Private
01R02	10 Trellis type benches, 10 picnic tables, 5 trash receptacles	Private
01R03	Observation Deck	Private
01R04	Iron handrails	Private
01R05	Steps (west)	Private
01R06	Walkways	Private
01U01	Lighting, 3 archtype	Private
01U02	Lighting, 1 archtype	Private
01U03	Lighting, 1 archtype	Private
01U04	Lighting, 1 archtype	Private
01Y02	Entrance Sign	Private
01Y03	Retaining Wall	Private

Real Estate Recommendations

- Amend existing Lease DACW27-1-92-012 to the State of Indiana to reduce the leased area comprising of a portion of the Ohio River Greenway Public Access.
- Revoke License DACW27-3-89-100 for a boat ramp and turnaround (facility is no longer visible or functional)
- Issue a new license to the Town of Clarksville for the use, operation and maintenance of a portion of the Ohio River Greenway Public Access.
- Acquire approximately 29 fee acres, all below the ordinary high water mark, located between McAlpine L&D's lock chambers and the K&I bridge that was not previously acquired as part of McAlpine L&D, L&D 41, or the WCA. See figure 5. Acquisition of this this area is not necessary for McAlpine L&D due to navigation servitude; however, wildlife conservation areas are required to be held in fee.

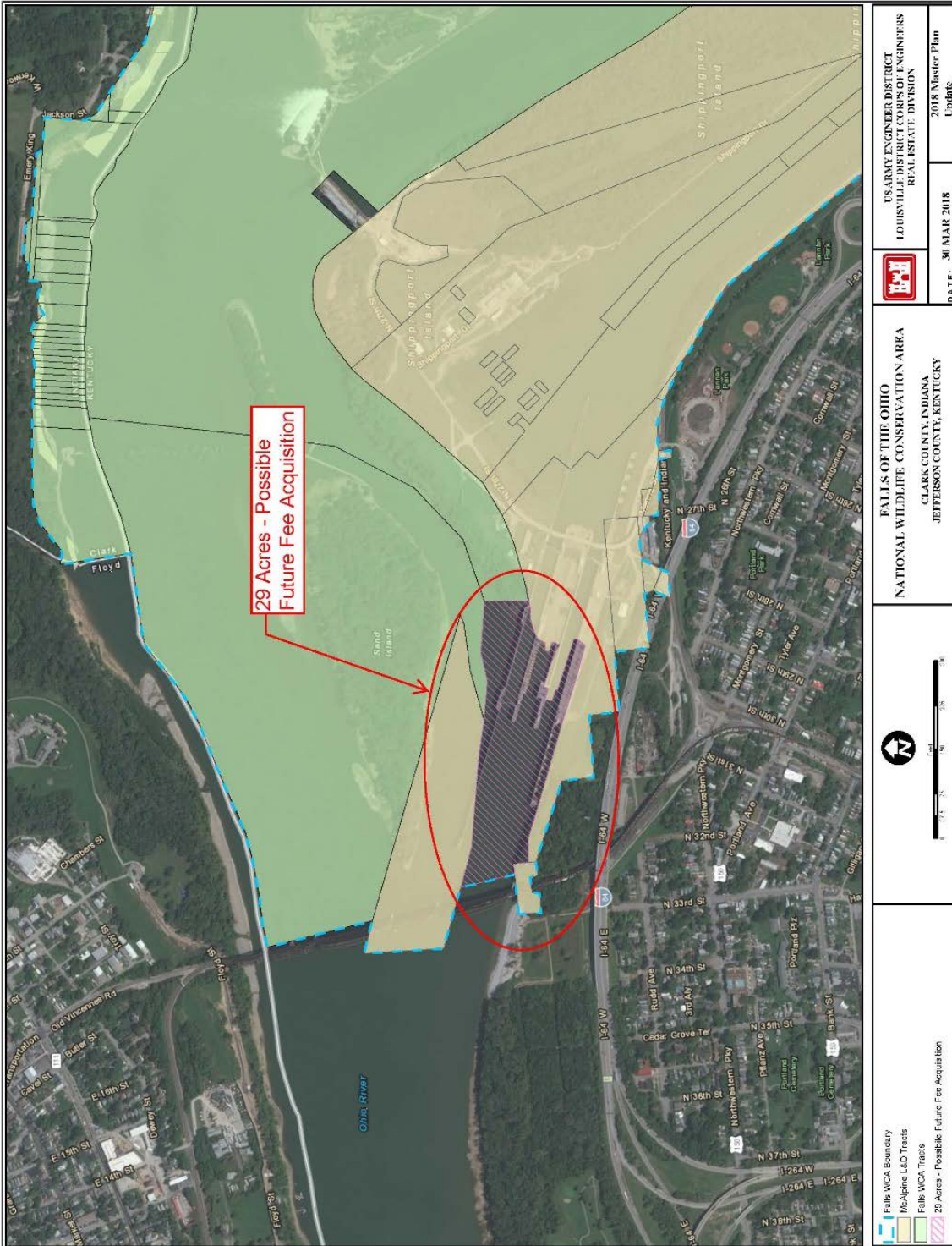


Figure 2 Possible Future Fee Acquisition