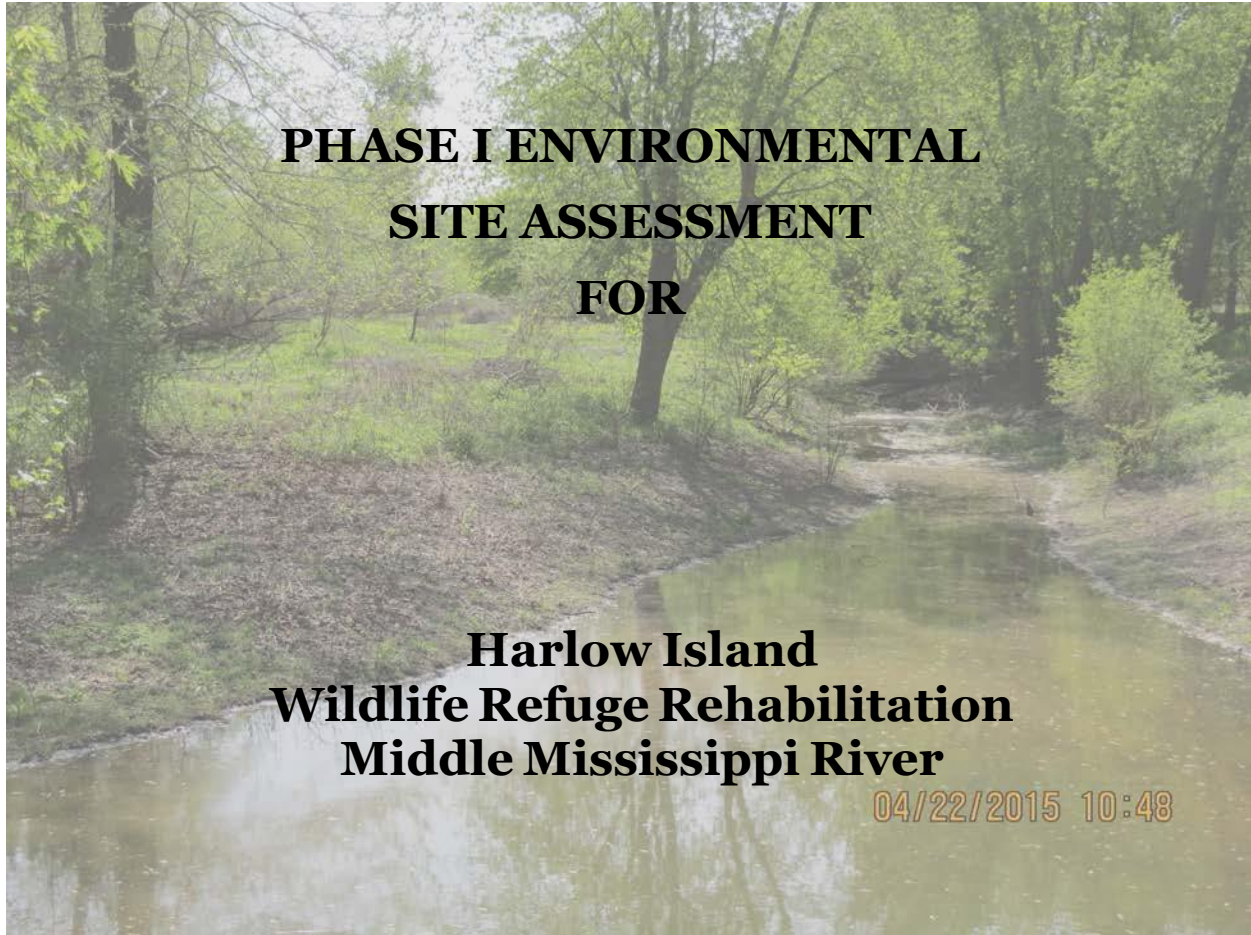


Appendix C

Hazardous Toxic & Radioactive Waste



**PHASE I ENVIRONMENTAL
SITE ASSESSMENT
FOR**

**Harlow Island
Wildlife Refuge Rehabilitation
Middle Mississippi River**

04/22/2015 10:48

July 30, 2015

**Prepared by
U.S. Army Corps of Engineers
Saint Louis District**



Phase I – Environmental Site Assessment

Harlow Island Wildlife Refuge Rehabilitation

Prepared for:
U.S. Army Corps of Engineers
Saint Louis District
1222 Spruce Street
Saint Louis, Missouri 63103

The following is a summarized Phase I Environmental Assessment for the Harlow Island Wildlife Refuge Rehabilitation. The Harlow Island Phase I was amended on June 18, 2018. A completed version of the original Harlow Island Phase I and supplementary materials are available upon request. An updated Phase I will be completed prior to construction.

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Executive Summary

A Phase I Environmental Site Assessment was conducted for the Harlow Island Project. This area is part of the Middle Mississippi River National Wildlife Refuge (MMRNWR). Harlow Island is located approximately 5 miles south of Crystal City, in Jefferson County, Missouri on the right descending bank of the Mississippi River between river miles 140.5 and 144. This project is designed to restore approximately 4 miles of side channel island habitat, and improve the quality of existing secondary channel habitat. The U.S. Fish and Wildlife Service (USFWS) manages the island as part of the Middle Mississippi River National Wildlife Refuge (MMRNWR). This due diligence effort is intended to provide the minimum information required to assess potential environmental liabilities associated with these sites.

The objective of the Phase I is to identify, to the extent feasible pursuant to the process described herein, recognized environmental conditions (RECs) in connection with a given property(s). This assessment revealed no RECs in connection with this project.

I. Introduction

1.1 Purpose

The U.S. Army Corps of Engineers (USACE) regulations (ER 1165-2-132 and ER 200-2-3), and District policy requires procedures be established to facilitate early identification and appropriate consideration of potential hazardous, toxic, or radioactive waste (HTRW) in reconnaissance, feasibility, preconstruction engineering and design, land acquisition, construction, operations and maintenance, repairs, replacement, and rehabilitation phases of water resources studies or projects by conducting HTRW Initial Hazard Assessments (IHA). USACE specifies that these assessments follow the process/standard practices for conducting Phase I Environmental Site Assessments (ESA) published by the American Society for Testing and Materials (ASTM).

This assessment was prepared using the following ASTM standards:

- E1527-13: Standard Practice for Environmental Site Assessments Phase I Environmental Site Assessment process
- E1528-06: Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (interview questionnaires)
- E2247-08 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property

The purpose of a Phase I ESA (IHA) is to identify, to the extent feasible in the absence of sampling and analysis, the range of contaminants (i.e. RECs) within the scope of the U.S. Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products.

The scope of this Phase I consist of the following four components:

- Records review
- Site reconnaissance
- Interviews
- Report

II. Project/Site Description

2.1 Location Description

The Middle Mississippi River National Wildlife Refuge (MMRNWR) is located in southeast Missouri and southwest Illinois on the un-pooled section of the Mississippi River and encompasses approximately 7,000 acres of riverine, floodplain forest, and wetland ecosystems. The MMRNWR extends 195 river miles from the confluence of the Missouri River at St. Louis south to the confluence of the Ohio River at Cairo, Illinois.

The refuge is located in the first section of the Mississippi River downstream of the lock and dam system in the area known as the Middle Mississippi River Regional Corridor. Harlow Island is located approximately 5 miles south of Crystal City, in Jefferson County, Missouri on the right descending bank of the Mississippi River between river miles 140.5 and 144. The U.S. Fish and Wildlife Service (USFWS) manages Harlow Island as part of the MMRNWR. See figure 1 for site location.

2.2 Site/Vicinity Characteristics

The USFWS acquired Harlow Island in 1996. The island has been impacted by major flood events and have been farmed at different times over the years. Levee breaks after the 1993 flood have exposed the island to high water events which have deposited coarse sediment loads. Farming has since been eliminated and the former cropland has been allowed to re-vegetate into invasive and non-native plant species and a less desirable forest due to its low diversity. The remainder of the island consists of bottomland forest and floodplain forest. The purposed project for Harlow Island includes excavation and reconnection of 2 miles of side channel, construction of 2.5 miles of sediment deflection berms, degrading 3 miles of existing levees, and reforestation of 150 acres. The following figure indicates the property boundaries and adjacent properties.

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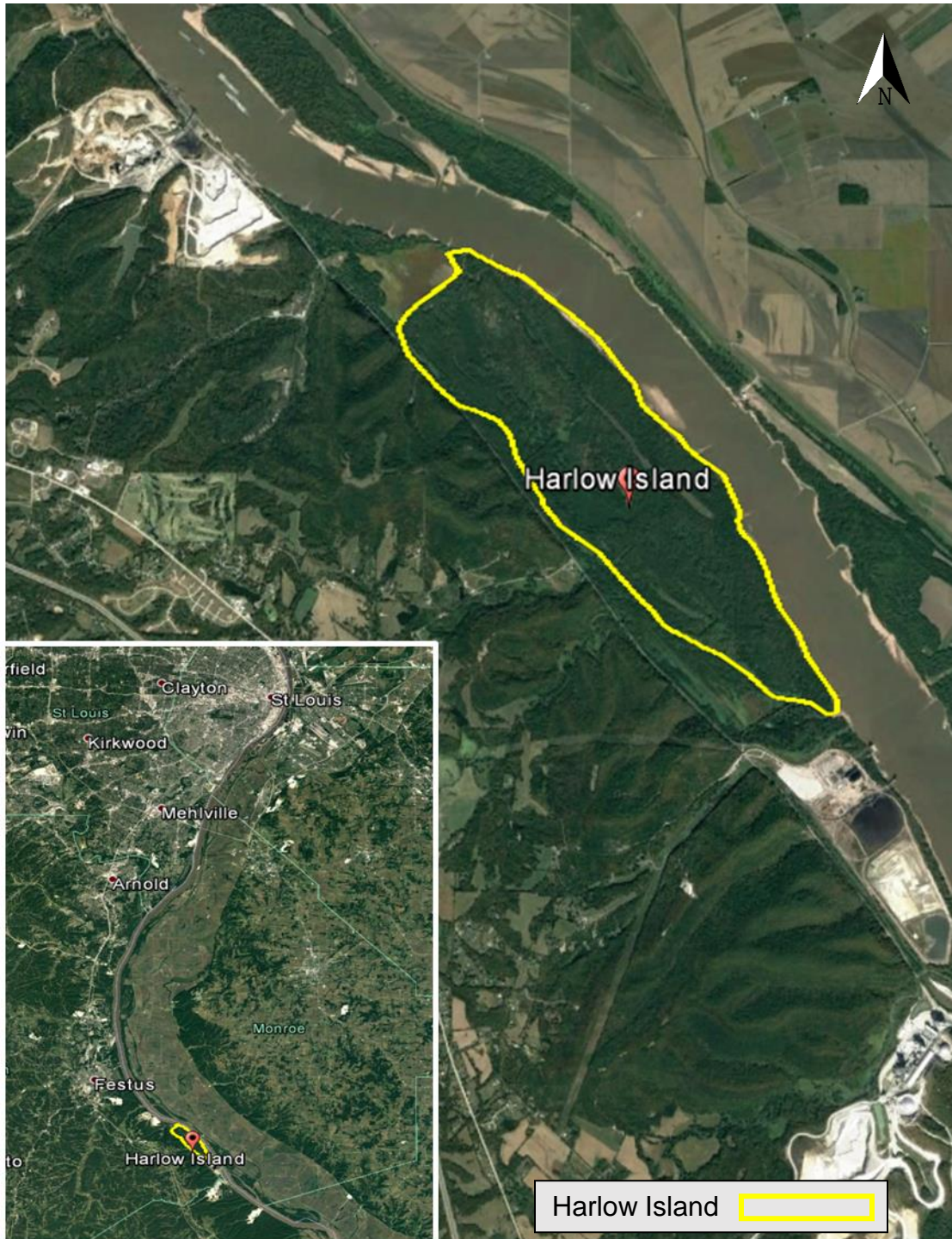


Figure 1 Locator map for Harlow Island

The Harlow Island Division is in Jefferson County, Missouri, between RM 140.5 and 144 right descending bank (RDB), 6 miles south of Crystal City. Nearly 800 acres (65%) of this 1,224-acre tract was cropland protected by a private levee that

was breached during the 1993 flood. The levee breaks have been left unrepaired, allowing the river to connect to its floodplain during high Ameren Rush Island Power Plant water periods. The Harlow Island Division has 1,468 acres within the Congressionally Approved Acquisition Boundary (CAAB), making it 86% acquired. The former cropland has naturally returned to a forest of young silver maple, cottonwood, willow, and pecan. The land is mostly riverfront and floodplain forest, with a small side channel and mile-long slough. Parking for this division is provided only at the southern end of the island, at the Missouri Department of Conservation's Truman Park entrance. Harlow Island Division is open to archery deer and upland game hunting in accordance with state regulations. Sport fishing is allowed all year in accordance with state seasons and regulations, but only from sunrise to sunset. The Ameren Electric Power Plant is located on adjacent property to the southeast of this island.

III. User Provided Information

Site visits, records search, and personal interviews with persons familiar with the area and local hazardous response personnel revealed the remote possibility of encountering HTRW issues. The environmental impact for the migration of off-site contaminants onto the project property is negligible. However, located next to a major river does expose these properties to potential debris drifting down the river from either a spill or flood event.

IV. Records Review

For the purpose of this Phase I, the following standard records sources were obtained and reviewed to assist in the identification of potential REC's in connection with this project:

- National Response Center (NRC)
- Historical aerial photographs
- USACE historical information
- Historical topographic maps
- USFWS

These records assist in meeting the requirements of EPA's Standards and Practices for All Appropriate Inquires (40 CFR Part 312), and the ASTM Standard Practice for Environmental Site Assessments (E 1527-05). For properties that contained inadequate address information for mapping purposes, reasonable efforts were made to identify the approximate location of the sites in relation to the target properties as part of the review process. In addition, the physical setting was assessed for the target properties by reviewing topographic maps to identify conditions in which hazardous substances or petroleum products could migrate.

4.1 Historical Use Information

The following available historic information sources were obtained and reviewed:

- The following historical aerial photographs were reviewed: Harlow Island 1953, 1968, 1980, and 1990
- The following historical topographic maps were reviewed: Harlow Island 1915, 1964, 1982, and 1993

Harlow Island is a relative recent landform with no known prehistoric occupation. In the early 1900s, the newly formed island was unoccupied and vegetated by willows. Parts of the island were in cultivation in 1925 and by the 1980s the majority of the island was in row crop agriculture. The island was purchased by the Fish & Wildlife Service in 1996 and taken out of cultivation. A detailed archaeological survey has not been conducted.

Seventeen vessels have been recorded as being wrecked in the vicinity of Harlow, Island. The nearest known historic wreck to any of the islands is over 1.5 miles away. The nearest known modern wreck is over 3.5 miles away.

Sanborn maps were not available for this area. Review of land use maps reveal that the majority of land adjacent to the project is rural and has been vacant or used for agriculture. The Middle Mississippi River National Wildlife Refuge Habitat Management Plan dated October 2012 was used as a reference.

V. Site Reconnaissance

On 22 April 2015 Rick Archeski of CEMVS-EC-EQ conducted a site visit to Harlow Island. In addition, the surrounding adjacent properties were also inspected as part of this survey. Photographs documenting the site visit are available upon request.

VI. Interviews

Interviews were conducted in order to obtain information indicating RECs in connection with this site. The content of the questions asked followed the questionnaire format of ASTM 1528. Interviews were conducted with the following persons:

- Jason Wilson - U.S. Fish and Wildlife Assistant Manager Mississippi River National Wildlife Refuge
- John Hartleb Wildlife Refuge Specialist Middle Mississippi River National Wildlife Refuge

5.1 Interview Summary

- Is the entire Island considered in this project?
 - Yes

- What were previous uses of the property?
 - *Agriculture*
- Do you know of specific chemicals that are present or once were present, or used on the property?
 - *Agriculture pesticides*
- Do you know of any spills or other chemical releases that have taken place on the property?
 - *No*
- Do you know of any environmental cleanups that have taken place at the property?
 - *No*
- Name of any threatened or endangered species on the property?
 - *Monarch butterflies and bald eagles but no other occurrences have been documented. Species of concern (T&E) that have documented in the surrounding counties include: gray bats, Indiana bats, pallid surgeon, and interior least terns.*
- Are there any 4D Rules in place for threatened species in this area?
 - *Yes, Interior least tern (*Sternula antillarum*)*
- List primary agency for implementation of the 4D rules.
 - *USFWS*
- Are there any "incidental taking" permits in place for the subject property? If yes describe permit.
 - *No*
- Have any meth labs been discovered on property?
 - *NO*

VII. Findings

Relevant findings for Harlow Island are as follows:

- Jefferson County, Missouri is considered a National Priority List (Superfund) site for heavy metals. Historic mining activities since the 1800's have impacted a wide area. As a result, several areas of the county fall into categories on the Federal CERCLIS list, have institutional controls in place, and/or are named in the Record of Decision. The closest site to this property is approximately 2 miles (Figure 2). This is not considered a REC.

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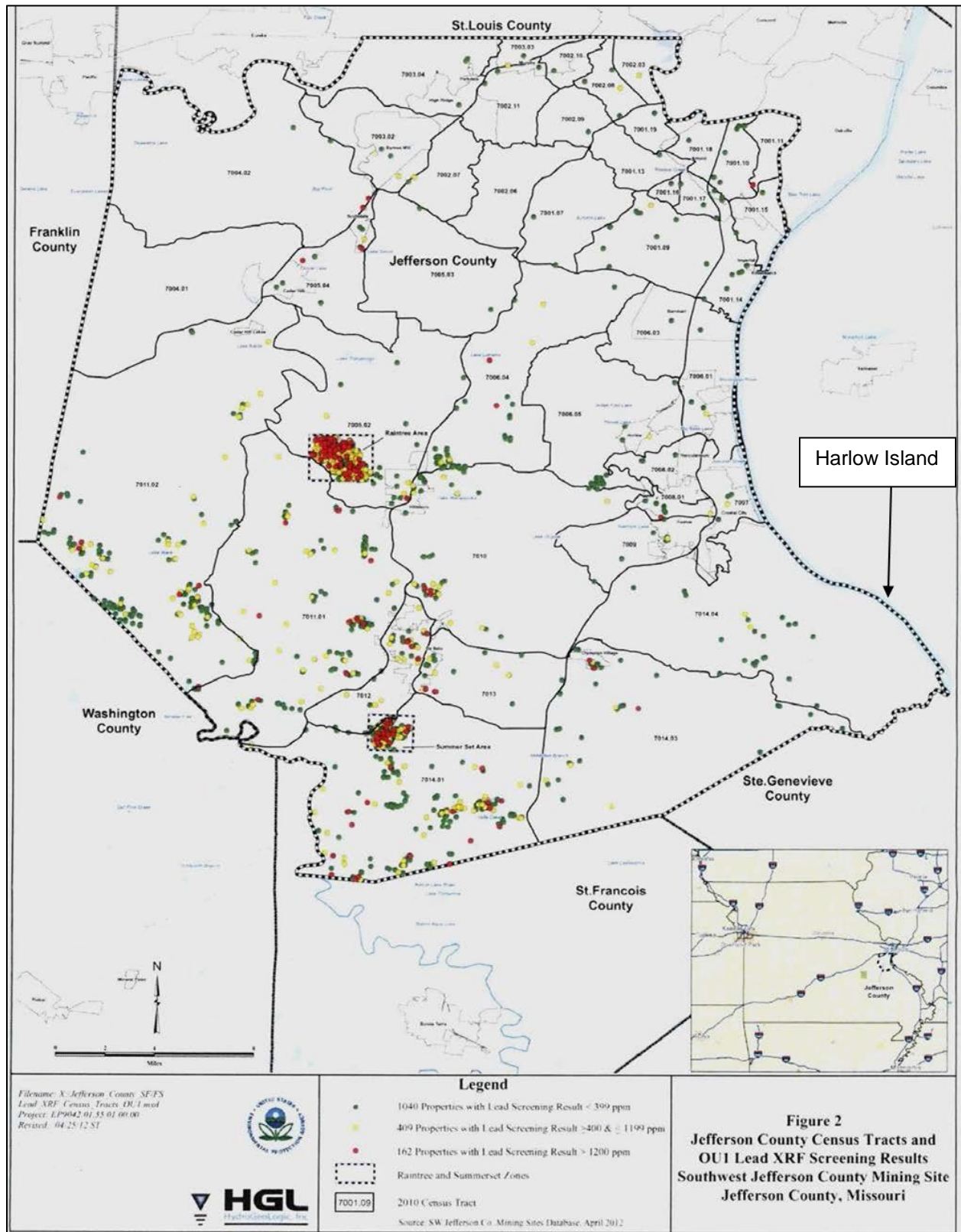


Figure 2: Jefferson County Lead Screening Results

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- The USACE Saint Louis District collected 60 sediment cores in 2007 and 2017. Of the 60 core samples collected, one sample contained lead concentrations exceeding the toxicity threshold for aquatic life, and one core contained zinc concentrations exceeding the toxicity threshold for aquatic life (figures 3). This is not considered a REC.
- Union Electric Company Rush Island Plant is listed as CERC-NFRAP, small quantity generator, and COAL ASH which is within 2 miles of property. It is also listed as a LUST site. The 2,000-gallon gasoline tank was removed in 1996. This site is down river of the project property. Any spills would move down river away from project property. This is not considered a REC.
- Two sites were listed as MO SPILLS and MO CDL in 2003 and 2009 approximately 1.5 miles from the target property. This involved drug lab materials confiscated in 2003 and 2009 at private residences. This is not considered a REC.
- MO SPILLS-Spill report in 2000 concerning improper disposal of sewage at Lifestyle Mobile Home Park approximately 1 mile from site. Further investigation revealed this site is several miles away from the project site. This is not considered a REC.
- River Cement Company is listed as a MO LAST and RCRA-CESQG. On September 29, 2014 the Missouri Department of Natural Resources issued a No Further Corrective Action with Institutional Controls at the River Cement facility. This site is located to the northwest of the project site. This is not considered a REC.
- Gateway FS Inc. a cargo handling facility on the Illinois side of the river is listed as a FINDS and US AIRS site. This is not considered a REC.
- Standard agricultural chemicals were probably used on all these sites at some time. However, farming practices have been halted for at least 8 years and in some cases for more than 20 years, and flood events have probably leached most of the chemicals from the soil.
- Interviews with the manager indicated that no spills have occurred on any of these properties in the recent past.
- U.S. EPA's Enforcement and Compliance History Online (ECHO) did not indicate any violations on these sites.
- Generally, the project areas contain no sites of interest, which pose significant environmental concerns.

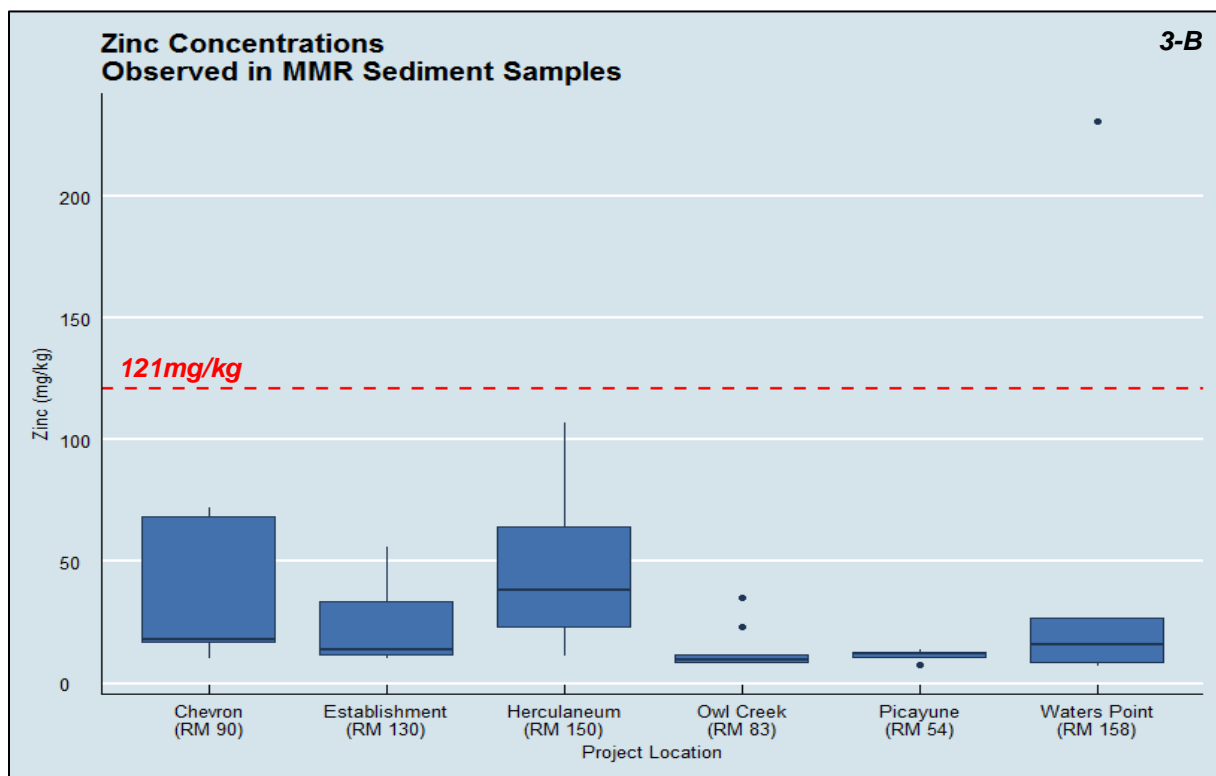
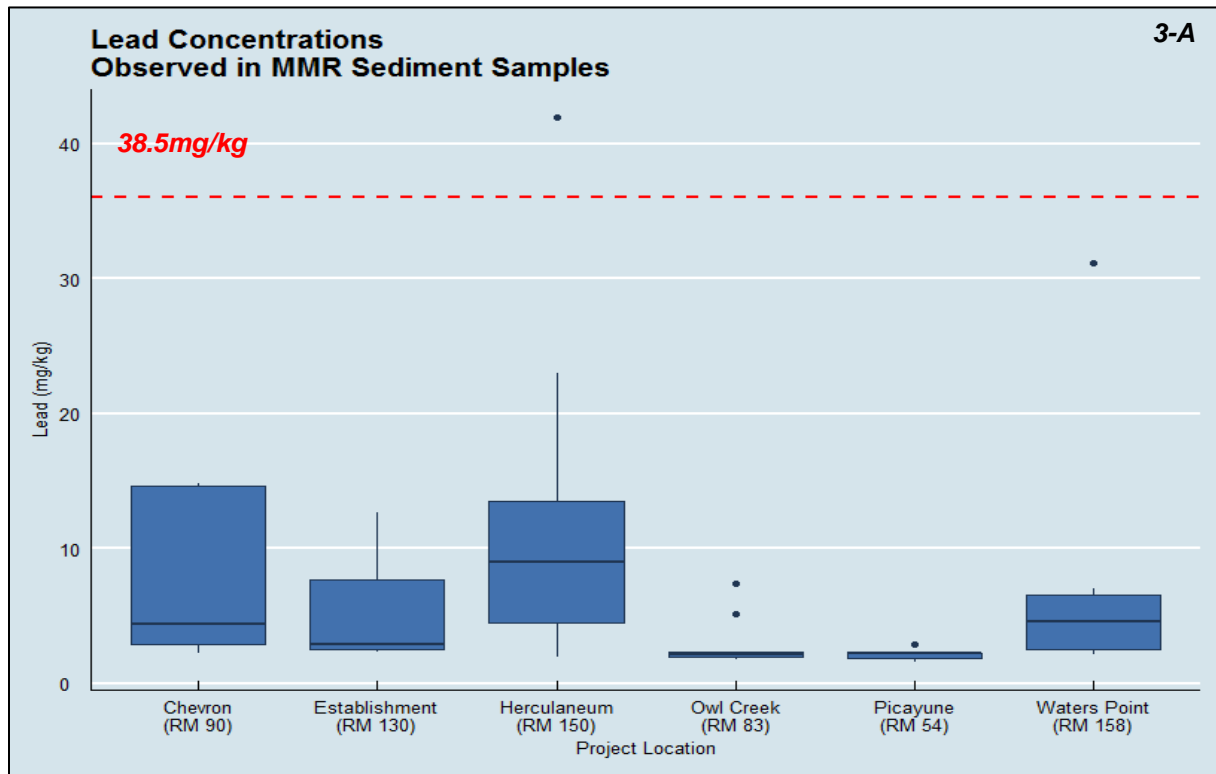


Figure 3: Concentrations of lead (3-A) and zinc (3-B) observed in sediment core samples collected from the Middle Mississippi River. The red dashed line represents the EPA's recommended threshold for aquatic life. Harlow Island is located between RM 140-144

- Potential RECs on adjoining or nearby properties are either considered de minimus or only potential RECs that are not expected to impact these sites due to the distance or topographic features.
- Currently the only real potential of RECs is from dumping of solid waste by local residents or debris drifting down the river from either a spill or flood event.
- According to the NRC there were 43 incidences that took place from 2005 to 2015 that occurred above these islands. The majority occurred in Jefferson County, Missouri and Randolph County, Illinois. A listing of these incidences is available upon request.

VIII. Data Gaps

Due to the large volume of the NRC report, only the last ten years were reviewed. Due to the large amount of acreage, access roads, and dense vegetation the entire area of Harlow Island was not walked.

IX. Opinion

An Environmental Site Assessment was conducted in conformance with the scope and limitations of ASTM Practice E for Harlow Island. This assessment has revealed no RECs that will affect the project in connection with this property.

X. Conclusions

An Environmental Site Assessment Phase I ESA was conducted in accordance with the scope and limitations of ASTM Practice E 1527 for Harlow Island. The assessment revealed no RECs in connection with this property.

XI. Limitations

U.S. Army Corps of Engineers, Environmental Quality Section, should be contacted with any known or suspected variations from the conditions described herein. If future development of the property indicates the presence of hazardous or toxic materials, USACE should be notified to perform a re-evaluation of the environmental conditions.

The scope of this assessment did not include any additional environmental investigation, not outlined herein, or analyses for the presence or absence of hazardous or toxic materials in the soil, ground water, surface water, or air, in on, under or above the subject tract.

This site assessment was performed in accordance with generally accepted practices of consultants undertaking similar studies at the same time and in the same geographical area, and USACE observed that degree of care and skill

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generally exercised by consultants under similar circumstances and conditions. The findings and conclusions stated herein must be considered not as scientific certainties, but rather as professional opinions concerning the significance of the limited data gathered during the course of the environmental site assessment. No other warranty, express or implied, is made.

Specifically, USACE does not and cannot represent that the site contains no hazardous waste or material, oil (including petroleum products), or other latent condition beyond that observed by USACE during its site assessment.

The observations described in this report were made under the conditions stated herein. The conclusions presented in the report were based solely upon the services described therein, and not on scientific tasks or procedure beyond the scope of described services or the time and budgetary constraints imposed by the client. Furthermore, such conclusions are based solely on site condition, and rules and regulations, which were in effect, at the time of the study.

In preparing this report, USACE relied on certain information provided by state and local officials and other parties referenced therein, and on information contained in the files of state and/or local agencies available to USACE at the time of the site assessment. Although there may have been some degree of overlap in the information provided by these various sources, an attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this site assessment was not made. Observations were made of the site and of structures on the site as indicated within the report. Where access to portions of the site or to structures on the site was unavailable or limited, USACE renders no opinion as to the presence of indirect evidence relating to hazardous waste or material or oil, or other petroleum products in that portion of the site or structure. In addition, USACE renders no opinion as to the presence of hazardous waste or material, oil or other petroleum products or to the presence of indirect evidence relating to hazardous material, oil, or petroleum products where direct observation of the interior walls, floor, roof, or ceiling of a structure on a site was obstructed by objects or coverings on or over these surfaces.

Unless otherwise specified in the report, USACE did not perform testing or analyses to determine the presence or concentration of asbestos, radon, formaldehyde, lead-based paint, lead in drinking water, electromagnetic fields (EMFs) or polychlorinated biphenyls (PCBs) at the site or in the environment at the site.

The purpose of this report was to assess the physical characteristics of the subject site with respect to the presence in the environment of hazardous waste or material, oil, or petroleum products. Except as otherwise described in this report, no specific attempt was made to check on the compliance of present or past owners or operators of the site with federal, state, or local laws and regulations, environmental or otherwise.

XII. References

- E1527-13: Standard Practice for Environmental Site Assessments – Phase I Environmental Site Assessment Process, ASTM
- E1528-06: Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (interview questionnaire), ASTM
- E2247-08 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property

XIII. Qualifications

USACE EC-HQ has the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of the subject properties and declare that, to the best of our professional knowledge and belief meet the definitions of Environmental Professionals as defined under 40 CFR 312.