Addendum to the Final Assessment Plan for the Natural Resource Damage Assessment of the Sauget Industrial Corridor Sites: Inclusion of the 2023 Avian Exposure Study and Avian Population Density Study

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Introduction

Acting under their authority as natural resource trustees pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §9601 et seq., (CERCLA) and the Clean Water Act, 33 U.S.C. §§ 1251-1376 (Federal Water Pollution Control Act or CWA), the United States Department of the Interior, represented by the Fish and Wildlife Service (FWS), the State of Illinois, represented by the Illinois Environmental Protection Agency (IEPA) the Illinois Department of Natural Resources (IDNR), and the State of Missouri, represented by the Missouri Department of Natural Resources (MDNR) (collectively, the "Trustees") are conducting a natural resource damage assessment (NRDA) within the Sauget Industrial Corridor (SIC), in Sauget, Cahokia Heights, and East St. Louis, St. Clair County, Illinois. The Assessment Plan (2013) explains that the Trustees will conduct assessments in accordance with the following:

- The Illinois State Trustees will conduct assessment of Groundwater Resources
- The Illinois State Trustees and the Missouri State Trustee will conduct assessment of State Natural Resources in the Mississippi River
- The Illinois State Trustees and the Federal Trustee will conduct assessment of State and Federal Natural Resources in Dead Creek
- The Illinois State Trustees and the Federal Trustee will conduct assessment of State and Federal Surface Resources (terrestrial and other aquatic, wetlands, ponds, small streams)

The studies conducted under this addendum assess avian exposure and avian population densities within and surrounding surface resources (Borrow Pit Lake and Site Q ponds) and Dead Creek.

The NRDA Assessment Area (Assessment Area) (Figure 1) is a relatively flat area of land in the municipalities of Sauget, Cahokia, and East St. Louis directly adjacent to and located within the floodplain of the East Bank of the Mississippi River, known as the American Bottoms Ecoregion. The SIC provides important habitat for a variety of fish and wildlife species and is situated within the Mississippi River Flyway. The American Bottoms Ecoregion is home to numerous species of endangered and threatened aquatic birds. The aquatic areas of the SIC that are the focus of this Addendum provide important ecological services to both local and migratory animals.

This Assessment Area contains numerous hazardous waste disposal sites, back-filled former wastewater impoundments and adjacent affected areas, including natural wetlands and waterways contaminated through releases of hazardous substances. As part of remedial investigation and response activities under CERCLA, the U.S. Environmental Protection Agency (USEPA) grouped these features into two areas ("Area 1" and "Area 2"), each comprised of multiple sub-units delineated on the basis of geographic features, historical aerial photographs, magnetometer surveys, soil gas surveys, and test trenches.

Given the long history of industrial development, unpermitted releases and dumping of hazardous substances within the Assessment Area, natural resources have been exposed to and injured by hazardous substances throughout much of the last century, and injury is expected to continue.

The Trustee's Preassessment Screen (PAS) for the Assessment Area evaluated readily available information related to releases of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), dioxins and furans, and metals from the SIC Assessment Area at concentrations that "constituted an imminent and substantial threat to public health and the environment". The Trustees determined that an assessment was warranted and prepared the Assessment Plan for the NRDA of the Sauget Industrial Corridor Sites in January 2013 (https://www.fws.gov/project/sauget-industrial-corridor-sites-natural-resources-damage-assessment-and-restoration), focusing their efforts on surface water injury. The Surface Water Injury Determination Report (https://www2.illinois.gov/dnr/programs/NRDA/Pages/Sauget---Assessment-Documents-for-Surface-Resources.aspx), drafted by the Trustees for the SIC Assessment Area, identified injuries to natural resources, while exposing gaps in the data required by the Trustees to fully quantify the extent of contamination and to evaluate potentially on-going releases of contaminants that may not be addressed by the remedial process.

Based on existing data, the Trustees determined that environmental media from OU1 and OU2 have been contaminated by PCBs and other contaminants, including heavy metals, posing potential risk to ecological receptors, like birds and fish. Through a phased approach, the Trustees are evaluating pathway, exposure, injury and damages associated with the release of hazardous substances to the environment. The first step of this process focused on sampling sediments and benthic invertebrates pursuant to the 2018 Sediment and Benthic Macroinvertebrate Study (Sediment and Benthic Study). The purpose of the Sediment and Benthic Study was to identify if there were any uncertainties and data gaps associated with the spatial characterization of the concentrations of PCBs and other contaminants in sediments and benthic invertebrates in the vicinity of the SIC Assessment Area. Results from that study confirmed continued high levels of PCBs and other contaminants in sediments across many of the SIC Assessment Area 1 and 2 Sites. Benthic surveys were also conducted in 2018 in the same areas as the sediment sampling, and the Trustees found that nearly all the sampling sites within the Assessment Area had no or few benthic macroinvertebrates (mostly snails) that could be

recovered. Based on these findings, and in continued support of assessing injury to natural resources, the Trustees conducted the 2021 Aquatic Invertebrate Assessment, which focused on evaluating the direct toxicity of contaminated sediments on invertebrates and the potential for contaminants to bioaccumulate in aquatic invertebrates – a critical point for contaminant bioaccumulation in the Sauget floodplain ecosystem. Invertebrates collected at the Site in 2022 showed elevated levels of contaminants.

Habitats in and around the Assessment Area support numerous bird species, with several heron rookeries known to occur in and around the Site. Evaluations of injuries to avian receptors utilizing aquatic and riparian habitats are typically conducted by modeling dietary exposure to chemicals of potential concern (COPCs) and comparing estimated daily intake rates to published tolerable daily intakes or effects thresholds from the literature. While this is a reasonable approach for estimating damages, it is also useful to document exposure of avian species to PCBs and other COPCs. For this reason, in 2021, a preliminary Breeding Birds Survey was completed that evidenced high usage of the site by 83 bird species. To better understand the nature, magnitude, and extent to which avian resources are exposed to and impacted by contamination at the Site, FWS will be conducting an Avian Exposure Study and Avian Population Density Study to evaluate exposure and potential effects associated with accumulation of PCBs and heavy metals in bird eggs, pippers (unhatched but fully formed birds within eggs), and nestlings and to quantify migratory bird losses associated with that exposure.

The investigations of contaminant exposure and avian density will be conducted jointly by the FWS, Industrial Economics (IEc), and Wren Expert Consulting.

Objectives

1. Determine concentrations of hazardous substances present in bird eggs, pippers, and nestlings from the Sauget Industrial Corridor and determine if nestlings demonstrate additional contaminant loading from the Site through feeding.

2. Understand bird densities at the Sauget Sites.

General Design

Avian Exposure Study

The study is scheduled to begin in early May. An experienced field team with trained observers will survey the SIC Sites (Figure 1), as well as a reference area (to be determined), within a reasonable buffer of the selected target species' home ranges. The species that best combine potential exposure, likely abundance, and nest collection feasibility are common grackle, gray catbird, and red-winged blackbird. These species are followed in suitability by all swallow

species and the song sparrow, which may present logistical challenges for nest collection but are an otherwise ideal species, and by the American robin and yellow warbler. Gray catbird is the priority species because it is the most sensitive to PCBs. Gray catbird, common grackle, and red-winged blackbird will be targeted with swallow species and American robins as a backup plan in the event one of the three target species cannot be obtained. The field team will survey areas identified and GPS marked during a 2022 site recon for target species nests (Figure 2). Eggs from three target species will be collected, as available. Viable eggs of each target species will be held on ice in coolers. Within 48 hours, egg contents will be removed and frozen. The frozen egg contents will be shipped to the appropriate laboratory for chemical analysis as soon as possible. It is anticipated that each clutch sample will be split three ways: one split each for (1) analysis of total PCBs; (2) frozen for potential future analysis of total metals; and (3) frozen for achive. The goal is to collect a minimum of 105 clutches for analysis over six weeks of work from three different bird species (25 clutches from contaminated sites and ten clutches from reference locations for each of the three species).

In addition, a total of 15 pippers and 15 nestlings of two of the three targeted species will be collected, if possible, from only contaminated sites, with the goal of evaluating additional contaminant loading associated with nestling feeding and growth by comparing tissue concentrations of nestlings and pippers. Gray catbird is the priority species for pippers and nestlings with the second species being from the target list and attainable at the time of survey. To implement this task, any pippers collected throughout the study will be set aside for analyses separately, as opposed to being treated as an egg sample. Nestlings will be collected later in the study and whole-body nestling samples will be sent to the lab for analysis of the same contaminants as described above for eggs.

Avian Population Density Study

The field team will conduct distance-corrected point count surveys of the predetermined SIC Sites based off the 2021 Breeding Birds Survey and 2022 field recon as well as reference locations. The field team will conduct surveys in the early morning, identifying every species of bird by sight and/or vocalization and estimating the distance between the bird and the observer to allow for density estimation. Each survey will last approximately 10 minutes and be repeated three times approximately a week apart (i.e., one survey in each chosen location every week for three weeks).

Data Quality Objectives:

Generation of high quality, reliable data is a primary objective of the study. All reasonable efforts will be made to minimize the potential for sample contamination and/or degradation during sample collection, handling, and processing. A Quality Assurance Project Plan (QAPP) documenting the planning, implementation, and assessment procedures and specific standard operating procedures (SOPs) will be developed and maintained for the project. The SOPs and detailed study plan will be essential to understand and assist in performing field studies and laboratory analyses consistently following good scientific practices.

Summary
The 2023 Avian Exposure Study and Avian Population Density Study are follow-up studies to the 2018 Sediment and Benthic Study, 2021 Aquatic Invertebrate Study, and 2021 Breeding Birds Study. The 2023 studies will support injury assessment by documenting whether hazardous substances in site sediments are accumulating in avian tissues and impacting hatching success.

It is anticipated that the results of the Avian Exposure Study will provide information needed to determine the extent to which avian species utilizing habitats in the Assessment Areas are currently being exposed to PCBs and heavy metals and at what levels. The results from the Avian Density study will be used to produce a migratory bird Resource Equivalency Analysis (REA) to quantify loss of migratory birds.

Timeline for Tasks to be Completed:

Sample collection and population surveys: May – July 2023
Data compilation and analysis of population density study: July 2023 – November 2023
Population density study report generation and review: November 2023 – February 2024
Avian exposure laboratory results expected: January 2024
Data compilation and analysis of avian exposure study: January 2024 – April 2024
Avian exposure study report generation and review: May 2024 – July 2024

Agency Responsibilities:

- Wren Expert Consulting will serve and the field team lead, retain all necessary permits, collect all the samples and data, send the samples to the laboratory, and draft the final reports
- IEc will draft the QAPP, serve as a technical advisor to the field team, assist with drafting the reports, and implementing Trustee comments
- FWS will serve as the Site expert, serve as a technical advisor to the field team, oversee sample and data collection and shipment of samples to the lab, facilitate Site access, collaborate with the Trustees on any potential issues or changes to the SOW, distribute reports to the Trustees for review, and review the reports
- Illinois State Trustees will review reports and provide technical input as needed

Public Review and Comment:

The Trustees intend for this Addendum to communicate the approach for this Study to the public, so that the public can become engaged and comment on the proposed approach. The Addendum is available for public review and comment for 30 days. The public comment period for this Addendum begins on the day the notice of availability is published at https://www.fws.gov/project/sauget-industrial-corridor-sites-natural-resources-damage-

assessment-and-restoration and lasts for 30 calendar days. Comments may be submitted in writing or by email to:

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Figure 1

Sauget Industrial Corridor Site

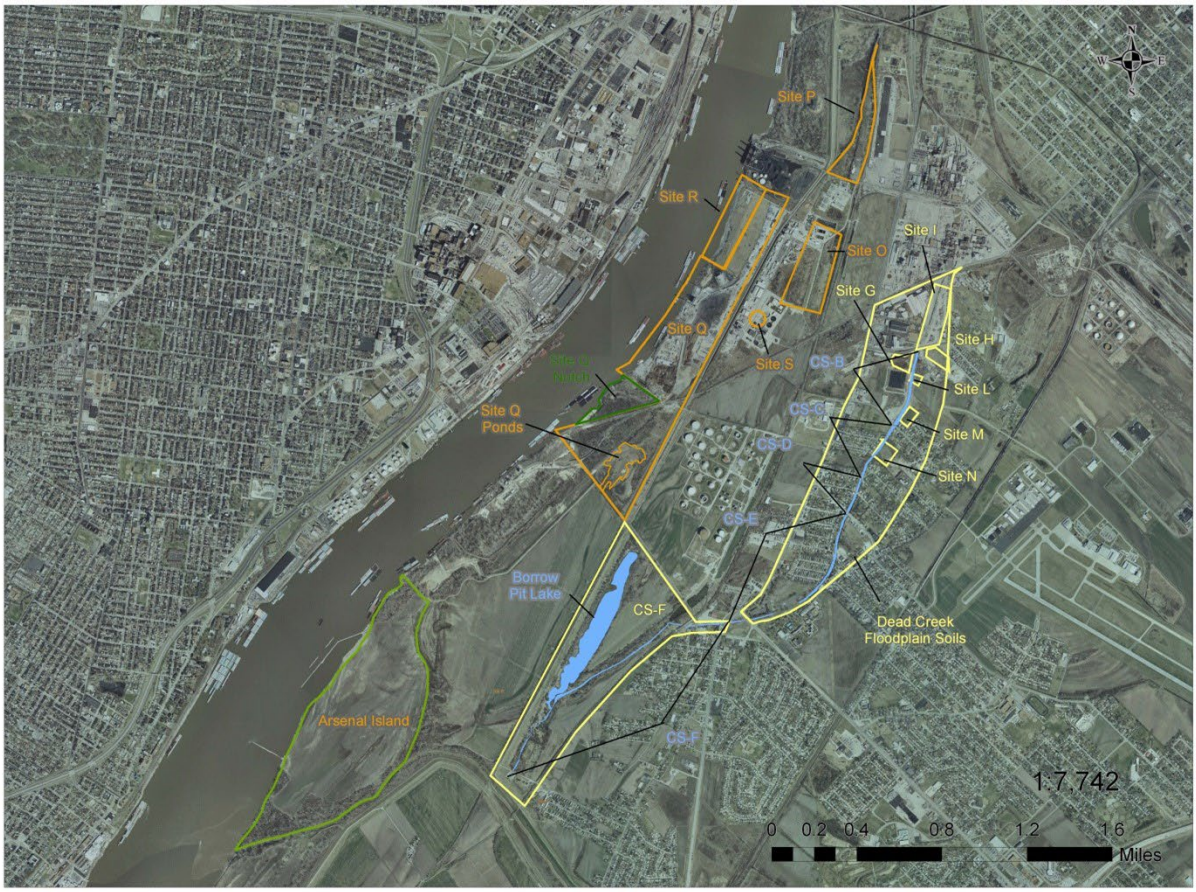

Figure 2

Avian Survey Locations