Restoration Plan for the

Embarras River Bottoms State Habitat Area

This plan was developed by the ERBSHA Restoration Planning Workgroup. The workgroup consists of the following IDNR staff: Beth Whetsell and Jessica Riney (Office of Land Management-Contaminant Assessment Section), Bob Edgin (Illinois Nature Preserves Commission), Terry Esker (Office of Resource Conservation-Natural Heritage), Doug Brown (Office of Resource Conservation-Wildlife Resources), Tony Holtschlag (Office of Land Management-Red Hills State Park), Trent Thomas (Office of Resource Conservation-Fisheries), and Dusty Taylor (Office of Law Enforcement).

November 2014

FACT SHEET

Restoration Plan for the Embarras River Bottoms State Habitat Area, Lawrence County, Illinois.

LEAD AGENCY FOR the Restoration Plan:
Illinois Department of Natural Resources

COOPERATING AGENCY:
Illinois Environmental Protection Agency

ABSTRACT:
This Restoration Plan describes for the general public and interested parties the restoration measures proposed to be implemented at the Embarras River Bottoms State Habitat Area (ERBSHA) in an effort to restore and replace the natural resources injured as a result of the releases of hazardous substances and/or oil from the former Indian Refinery, Lawrenceville, IL. (Refinery). Recreational opportunities related to ERBSHA will be developed after restoration actions are implemented and the natural communities begin to stabilize. Groundwater conservation measures related to releases from the Refinery will be reported on under a separate cover.

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COPIES:
Copies of the plan are available at the Lawrence Public Library or available for download at http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx

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List of Acronyms and Abbreviations

CWA	Clean Water Act
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CD	Consent Decree
ERBSHA	Embarras River Bottoms State Habitat Area
EWPPF	Emergency Watershed Protection Program Floodplain
HEA	Habitat Equivalency Analysis
IAGO	Illinois Attorney General's Office
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IESPB	Illinois Endangered Species Protection Board
INAI	Illinois Natural Area Inventory
INHS	Illinois Natural History Survey
INPC	Illinois Nature Preserve Commission
IWAP	Illinois Wildlife Action Plan
MMP	Management-Monitoring Plan
NRCS	Natural Resource Conservation Service
NRDA	Natural Resource Damage Assessment
OWR	Illinois Department of Natural Resources Office of Water Resources
PAHs	Poly-Aromatic Hydrocarbons
Refinery	former Indian Refinery
RI/FS	Remedial Investigation/Feasibility Study
RP	Restoration Plan

RWG	Restoration Work Group
TSI	Timber Stand Improvement
Trustees	Illinois Natural Resource Trustees
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

I. Introduction and Authority

Releases of hazardous substances and oil into our environment can pose a threat to human health and natural resources. Natural resources are plants, animals, land, air, water, groundwater, drinking water supplies, and other similar resources. When the public's natural resources are injured by a release of hazardous substances or oil, federal and state law provide mechanisms, Natural Resource Damage Assessment (NRDA) or NRDA-like processes, that authorize Illinois Natural Resource Trustees[1] (Trustees), the Illinois Department of Natural Resources (IDNR) and Illinois Environmental Protection Agency (IEPA), to seek compensation for those injuries to natural resources. Relevant laws, authorities, policies, and guidance for such actions are summarized in Appendix I.

The Illinois Attorney General's Office (IAGO), on behalf of IDNR and IEPA in their capacities as Trustees for Illinois' natural resources, developed and entered a consent decree with Texaco Inc. (IAGO 2010). The Consent Decree (CD) was established under Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 USC § 9607, and Section 311 (f)(5) of the Federal Water Pollution Control Act [the "Clean Water Act" (CWA)], 33 USC § 1321 (f)(5), and other federal and State laws. The CD describes the recovery of damages for injury to, destruction of, and loss of natural resources resulting from releases of hazardous substances, contaminants and pollutants into the environment from a former petroleum refinery at Lawrenceville, IL, that was originally known as the Indian Refinery (Refinery). Site-related hazardous substances, contaminants and pollutants included, petroleum, petroleum constituents, including xylene, toluene, benzene, and Poly-Aromatic Hydrocarbons (PAHs), metals, including lead, zinc, cadmium, and copper, and acid and caustic waste.

The settlement, entered in the United States District Court on December 30, 2010, provided approximately $1.3 million for Natural Resource Restoration, approximately 2400 acres of floodplain habitat and associated resources, and $115,000 for groundwater conservation.

For additional information about this NRDA, including, but not limited to, releases and injuries to natural resources, visit http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx .

This Restoration Plan (RP) describes for the general public and interested parties a proposal to restore natural resources of Lawrence County.

II. Public Involvement, Notification and Review

Prior to expending funds for restoration, CERCLA requires the Trustees to develop a publicly reviewed restoration plan [(42 USC § 9611(i)] (Appendix I.).

Public review of the draft RP is an integral component of the restoration planning process. Through

[1] The Directors of IEPA and IDNR have been designated as the natural resource Trustees for the State of Illinois, pursuant to Section 107(f)(2)(B) of CERCLA. CERCLA, as amended, 42 U.S.C. 9601 et seq., and the CWA, 33 U.S.C. 1251-1376, provide that natural resource Trustees may assess damages to natural resources[1] resulting from a discharge of oil or a release of a hazardous substance covered under CERCLA or the CWA and may seek to recover those damages.

the public review process, the Trustees seek public comment on the projects and actions being proposed to restore injured natural resources and/or replace services provided by those resources.

The draft RP becomes available to the public for a 30-day comment period. Written comments received during the public comment period are considered by the Trustees in preparing the final RP.

Public comments and suggestions on the draft RP are an important part of the public participation process. Anyone who reviews the draft RP is encouraged to evaluate and comment on any part of the document, including descriptions of the affected areas and the proposed restoration projects and actions. The public is further encouraged to evaluate and comment on the feasibility of the proposed restoration projects and actions. If additional restoration alternatives are proposed by the public, how the additional restoration alternatives meet the factors contained in Section VI. below and benefit the area natural resources should be described.

A public notice of the release of a draft plan was issued, September 22, 2014. No comments were received. Additional opportunity for public review will be provided in the event that significant changes are made to this RP.

A copy of the plan is accessible at http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx and on file at the Lawrence Public Library, Lawrenceville, Illinois.

A plan for public use will be developed at a later date. The public will have an opportunity to be involved in such development when the time comes.

III. Affected Environment and Summary of Natural Resource Injuries

The Refinery operated from 1907 to 1985 and from 1990 to 1995. This 990-acre facility on the banks of the Embarras River (Figure 1.) produced liquid petroleum gas, motor gasoline, aviation gasoline, jet fuel, burner oil, diesel oil, home heating oil, fuel oil, asphalt materials, lube oil, and motor oil. Waste products from refining this petroleum included oily sludges, leaded tank bottoms, acidic lube oil filter clay, lime sludge, catalyst waste, and tar/asphalt wastes. These wastes frequently were placed in the Embarras River floodplain forest, exposing natural resources to hazardous substances and/or petroleum products. In addition, surface and subsurface petroleum product spills have exposed vegetation, birds, wildlife, aquatic biota, and groundwater to hazardous substances and/or petroleum products.

Refinery operations resulted in releases of hazardous substances and/or petroleum products and subsequent injury to Trustee natural resources in the:

- Floodplain forest habitat adjacent to the Embarras River
- Aquatic habitat, including the Embarras River and the associated wetlands/backwaters
- Birds and wildlife exposed to contaminated soils and ponds within the industrial footprint of the Refinery.
- Groundwater underlying the Refinery

Natural resources have been exposed to contaminants via direct contact; infiltration and transport via the groundwater pathway; and runoff and transport via the surface water pathway.

The Refinery was listed on the National Priorities List for Superfund hazardous waste sites in December 2000. Texaco was named as a responsible party for the site; Texaco is now a wholly owned subsidiary of the Chevron Corporation. The remedial investigation/feasibility study (RI/FS) to address contamination at the site is ongoing. IEPA is the lead regulator.

For additional information about the Refinery NRDA, visit http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx . For additional information about the RI/FS, visit http://www.epa.state.il.us/community-relations/fact-sheets/indian-refining/index.html .

IV. Restoration Planning and Strategy

The CD entered in the matter State of Illinois v. Texaco, Inc., No. 01-cv-3221, outlines the cooperative assessment that, with much consideration, the Trustees and Texaco followed to collectively assess injury and identify habitat in the Embarras River valley to be acquired as part of the compensation owed for injuries to natural resources (IAGO 2010). Cooperatively, the Trustees and Texaco conducted a Habitat Equivalency Analysis (HEA) to quantify injuries to habitat; this served as a debit. The parties then designed and scaled land conservation and restoration projects to offset the debit by improving existing habitat and preventing habitat loss from land use change; this served as a credit. To view the CD in its entirety, visit http://www.dnr.illinois.gov/programs/NRDA/Documents/LawrencevilleNRD-ConsentDecree.pdf

The Trustees and Texaco identified floodplain forest habitat in the Embarras River floodplain, south of the Refinery, that could be acquired, conserved, and restored to provide the equivalent floodplain forest habitat services. The parties cooperatively agreed to, based on available data and professional judgment, the acquisition, conservation, and restoration of a minimum of 1,750 acres of floodplain forest habitat to offset the floodplain forest injuries. To compensate for uncertainties, the final acreage owed was ~2400 acres.

The Trustees and Texaco produced a restoration conceptual plan and estimated costs for such floodplain forest and aquatic habitat restoration actions. The State Trustees estimated that $1,362,000 would pay for implementation of identified floodplain forest and aquatic habitat restoration actions, as well as provide funds for additional restoration, acquisition, and/or preservation of floodplain forest (IDNR and IEPA 2008). For further details about the assessment of the Refinery, including, but not limited to, the valuation of resources, visit http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx, specifically the Assessment Plan (United States Fish and Wildlife Service (USFWS) et al. 2006) and Report of Assessment (IDNR and IEPA 2008) under "Documents – Settlement."

The compensation for said injuries includes, $250,000 for damage assessment costs, $1,362,000 for restoration and enhancement activities, and $115,000 for groundwater conservation measures (Table

1). The CD also legally binds Texaco to transfer parcels, consisting of approximately 2400 acres along the Embarras River in Lawrence County, Illinois, to the State for restoration and enhancement as part of the compensation (Table 1) (Figure 1). IDNR has named and classified the said parcels, collectively, the Embarras River Bottoms State Habitat Area (ERBSHA).

The $250,000 is covering costs of actions to prepare the site for restoration. These actions are described in the site Management-Monitoring Plan (MMP) (IDNR 2014). To view the MMP in its entirety, visit http://www.dnr.illinois.gov/programs/NRDA/Documents/ERBSHA-MMP.pdf

The restoration and enhancement of the approximately 2400 acres is the subject of this plan. Groundwater conservation measures will be described under a separate cover.

V. Alternatives

To abide by the stipulations of the CD, the restoration and enhancement, including acquiring the equivalent, of approximately 2400 acres, a Restoration Work Group (RWG) was formed to develop project alternatives. The RWG consists of the following IDNR staff: Bob Edgin (Illinois Nature Preserves Commission) (INPC), Terry Esker (Office of Resource Conservation-Natural Heritage), Doug Brown (Office of Resource Conservation-Wildlife Resources), Trent Thomas (Office of Resource Conservation-Fisheries), Tony Holtschlag (Office of Land Management-Red Hills State Park), Dusty Taylor (Office of Law Enforcement), Jessica Riney and Beth Whetsell (Office of Land Management-Contaminant Assessment Section).

The generation and selection of restoration alternatives in this case was a two-step process. The first step was to consider three broad alternatives for the site. The following broad project alternatives were considered:

i. No action
ii. Acquire additional property adjacent to 2400 acres
iii. Restore a complex of floodplain habitats

The second step involved generating and selecting project-related actions for the preferred broad alternative. The actions are further defined in Section VII.

VI. Factors to Consider for Project Selection

When generating both project alternatives and related actions, factors to consider from multiple efforts were relied upon to plan restoration according to all relevant national and statewide goals and objectives. The selection of projects and actions is based on such factors from NRDA guidance, Natural Resource Conservation Service (NRCS) objectives, Illinois Wildlife Action Plan (IWAP) goals, and Federal and State species recovery efforts.

NRDA guidance (43 CFR Part 11) lists 10 criteria for selecting alternatives for restoration, rehabilitation, replacement, and/or acquisition of equivalent resources (Appendix I). Criteria include,

but are not limited to, technical feasibility, cost-effectiveness, potential effects of the action on human health and safety, consistency with relevant Federal, State, and tribal policies, and compliance with applicable Federal, State, and tribal laws. These criteria have been used as factors to consider by the Illinois Trustees when evaluating NRDA-related restoration alternatives. Appendix II. lists and further describes the criteria listed above as well as other factors utilized by the Illinois Trustees. The criteria listed in the table are in no order of priority.

Approximately 1900 acres of ERBSHA are preserved under an NRCS Emergency Watershed Protection Program Floodplain (EWPPF) easement (Appendix III). The purpose of this easement is to restore, protect, manage, maintain, and enhance the functional values of floodplains, wetlands, riparian areas, and other lands, for the conservation of natural values including fish and wildlife and their habitat, water quality improvement, flood water retention, groundwater recharge, open space, aesthetic values, and environmental education (NRCS 2002). Applying the goals and objectives of the easement as factors to consider will positively influence the restoration of ERBSHA. Stipulations and restrictions of the easement are included in Appendix III.

The Trustees will consider IWAP goals and objectives as factors when implementing and further planning restoration at ERBSHA. The IWAP was developed to provide guidance to improve the health of wildlife and fulfill responsibilities to conserve wildlife and protect species before they become critically rare. The IWAP statewide goals and actions may be reviewed at http://www.dnr.illinois.gov/conservation/IWAP/Pages/default.aspx (IDNR 2005).

The Trustees will consider Federal and State goals and objectives in various action/recovery plans for sensitive species applicable to the site. For additional information about State-specific recovery plans, visit http://www.dnr.illinois.gov/ESPB/Pages/RecoveryPlans.aspx .

VII. Proposed project and related actions

Based on factors to consider (Section VI.) and professional judgment, the broad preferred alternative is to restore a *complex of floodplain habitats,* consisting of actions that provide benefits to numerous and various natural resources similar to those likely injured as a result of Refinery releases. The evaluation of the alternatives is summarized in Tables 2 and 3.

The overall goal of this restoration effort is to restore and maintain a complex consisting of, but not necessarily limited to, bottomland forests with depressional pools, shallow-water wetlands, sedge meadows, oxbow ponds and sloughs as well as remnants of the former river channel, sand prairie, and river able to support an array of natural resources. Such restoration, enhancement, preservation and conservation management of key habitats is intended to strongly benefit resources, and maximize the level of ecological services to those resources, similar to resources affected by Refinery releases. The approximate 2400 acres transferred to IDNR through settlement provide an unprecedented opportunity for wetland restoration in the Wabash Border Natural Division of Illinois.

To develop restoration actions for a complex of floodplain habitats, the site was divided into ecological community types (i.e., Restoration Units) and preferred community types were identified.

a. Restoration Units

An initial effort to divide the site into ecological community types to aid in the preparation of the site and development of restoration and long-term management plans was completed in Fall 2012. The product of this effort is a map of existing vegetation patterns of the property. A cover map should not be considered a perfect representation of any landscape. Adaptations to the cover map will, and should be made as additional "ground truth" information about actual land cover components and spatial patterns are acquired through time.

The covermapping effort yielded the following community types: old field, upland forest, seep, created wetland, sedge meadow, oxbow, floodplain forest, river and swamp.

As a result of the covermapping and site planning, the site has been divided into 16 Restoration Units (Figure 2) (Table 4). River restoration is not described nor are actions proposed at this time. IDNR will monitor the Embarras and Wabash Rivers and plan restoration and notify the public accordingly.

There are active oil wells within the boundary of ERBSHA (Figure 2). Efforts will be made to coordinate with oil well operators about best management practices and leak prevention measures before restoration is planned for this area.

b. Preferred Community Types

Desired community types include, but are not limited to, floodplain forest, wetland, upland forest, prairie, savanna and swamp. Restoration actions proposed for ERBSHA desired communities are based on professional judgment and the goals and objectives of the NRDA guidance, IWAP, and NRCS EWPPF easement. These restoration actions will also aid in the achievement of Federal and State objectives in various action/recovery plans.

The next sections provide descriptions of these types of communities, reason for preference, proposed actions, and locations to restore/re-establish, enhance, create and/or maintain the desired community types (Figure 2) (Table 4). For the most part, descriptions are based on the Illinois Natural Area Inventory (INAI) standards and guidelines (IDNR 2012).

Information pertaining to specific activities, restoration, management and monitoring, will be provided twice per year in a site update; in the spring and fall. This information will be available online and at the local library.

I. FLOODPLAIN/WETLANDS/RIVER

Floodplain and wetland restoration would benefit many species already known to use southern Illinois floodplains, for example, migratory birds, reptiles and amphibians and more. In addition to these species, several sensitive species known to occur or historically occur in southern Illinois could benefit from floodplain habitat restoration or reintroduction or translocation of appropriate species.

Specific types of floodplain forest and wetland communities and related restoration measures identified and proposed for ERBSHA include enhancement of existing NRCS wetlands, creation of vernal ponds, enhancement of sedge meadow, enhancement of oxbow waterbodies, enhancement and creation of mesic floodplain forest, restoration of cane, enhancement of swales, enhancement of wet prairie, restoration of wet savanna, enhancement of shrub swamp, and management of old field. Descriptions and proposed actions are outlined below.

*Enhancement of NRCS **wetlands**.*

Pre-settlement land coverage shows much of ERBSHA as floodplain forest. For a variety of reasons, primarily anthropogenic, much of the area is no longer forested. Aerial photographs indicate the floodplain forest began to be converted to agricultural land as early as 1938. In 2001, NRCS placed a EWPPF easement across much of what is now ERBSHA (Figure 1). In 2003, NRCS funded and planned for a modification of the floodplain into 16 wetlands with water control capabilities. Given the presence of hydric soils, NRCS deemed the work a wetland enhancement by NRCS definition[2] (NRCS 2008).

[2] **Wetland enhancement** is defined as the rehabilitation or reestablishment of a degraded wetland, and/

The NRCS wetlands provide forage and breeding habitat for many species, such as, but not limited to, waterfowl, marsh bird, amphibian, and reptile species. The water control capabilities allow for management of a variety of natural resources (i.e., waterfowl prefer shallow water for nesting and some species of waterfowl prefer deeper water for foraging). The IDNR plans to enhance and manage these wetlands along the existing and former Embarras River channels to maintain and increase the foraging and nesting habitat for these and other species.

To enhance NRCS wetlands, IDNR will conduct the following practices:

The removal of undesirable woody species is ongoing and will continue. Mechanical (cutting/grinding) and chemical (herbiciding) removal of undesirable woody species will continue in an effort to thoroughly evaluate the wetlands for repairs and proposed enhancements. Such activity is key to improving and enhancing the NRCS wetlands onsite.

Wetland water control structures will be repaired to allow manipulation of water levels throughout the year, enabling IDNR to manage for the most suitable habitat for various natural resources, such as waterfowl, marsh birds, amphibians, reptiles, vegetation, surface water and groundwater across all seasons.

Excavation and/or scraping may be done to enhance habitat. Such activity may be completed with heavy equipment such as a bulldozer. Various water depths in a wetland will yield an increase in habitat variability; thereby, increasing the overall biodiversity of the system.

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or the modification of an existing wetland, which augments specific site conditions for specific species or purposes, possibly at the expense of other functions and other species (CPS 659). An enhancement project is still in the original wetland geomorphic setting, but its functions have been altered to add additional benefit for particular species or purposes. For example, an increase in water depth **(hydrologic regime)**, duration of water presence **(hydroperiod)**, or a change in plant community from the one originally supported by the natural wetland is considered to be an enhancement. An enhancement usually requires more management and is more expensive to construct. It augments specific functions, often at the expense of other functions.

*Creation of **vernal ponds***

Seasonal, fishless, depressional wetlands provide a unique environment for numerous plants and animals that are able to survive and thrive in harsh non-to-semi permanent conditions. Vernal pools are often inhabited by amphibians, reptiles, aquatic vegetation, marsh birds, waterfowl and aquatic insects. Vernal pools are a valuable environment for such species and an increasingly threatened ecosystem (United States Environmental Protection Agency (USEPA) 2014).

To enhance or create vernal ponds at ERBSHA, IDNR will conduct the following practices:

The removal of undesirable woody species is ongoing and will continue. Mechanical removal will be used to create and enhance such depressional areas on site, including placing woody material, such as logs and limbs, in the depressional areas to enhance breeding habitat for amphibians and reptiles.

Prescribed burning will be performed in an effort to control undesirable plant species.

Scraping of soil may be done to enhance depressions. Such activity may be completed with heavy equipment. Appropriate precautions will be taken to avoid excess soil run-off until native vegetation has re-established.

*Enhancement of **sedge meadow***

A sedge meadow is defined as a wetland dominated by sedges (Carex species) on peat, muck or wet sand; remarkably homogenous in composition and structure. Hummocks, clumps of sedges and/or grasses, are indicative of this community. Such clumps of sedges and grasses provide cover and a diverse amount of food for many wetland organisms. The soil moisture level is analogous to that of wet prairie (described later in this section), and there is some degree of floristic overlap between the 2 communities (IDNR 2012).

Prescribed burning will continue for purposes of evaluating the site for restoration potential and to remove undesirable woody species. On a small scale, such action is showing promise of allowing native sedge vegetation to re-establish.

Mechanical removal, likely with a chainsaw, of invasive woody species will be completed to also allow native sedges to re-establish.

Enhancement of ***oxbows/former channel***

Functions of oxbow waterbodies include:

- spawning, nursery, and refuge habitat for many river fish species, plankton, turtles and snakes.

- Backwater waterbodies yield water quality improvements via overland run-off intercepted by the backwater lakes where nutrients and pollutants could potentially be processed before they ended up in the river.

- These waterbodies also act as sediment settling areas.

In an effort to preserve and enhance these functions, dredging or excavation may be necessary to resume (block previous draining attempts) or enhance connectivity and hydrology, providing adequate depths.

Riverbank stabilization measures may be necessary to preserve former channel backwater habitat. IDNR Office of Water Resources (OWR) is currently evaluating identified areas. Supplemental information will be provided when available.

Enhancement/creation of ***mesic floodplain forest***

A mesic floodplain forest is a dynamic forested system representing an interface between terrestrial and aquatic ecosystems (Tepley 2004). It is a community dominated by trees, 80% or better average canopy cover that is subject to periodic flooding. Soil is considered moderately well-drained, because of relatively high elevation or coarse texture. Characteristic species include, but are not limited to, sugar maple, white oak, bur oak, American elm, slippery elm, basswood, black walnut, white ash, and eastern mole (IDNR 2012). A well-managed forest provides many benefits to wildlife:

- leaving several hollow trees per acre benefits multiple wildlife species;

- leaving several dead, standing trees per acre provides habitat for cavity-nesting birds and bats;

- leaving large oaks, hickories, or walnuts scattered throughout the area provides a continued food source for wildlife;

- after thinning, briars and annual plants may appear in the understory providing browse for deer and food and cover for many other species of birds and mammals; and

- allowing flowering trees to remain provides valuable fruits as a food source for wildlife.
- enhancing watersheds by absorbing most of the precipitation that falls, reducing soil erosion, replenishing groundwater, and stabilizing the flows of springs.

Pre-settlement land coverage shows much of ERBSHA as floodplain forest. To enhance and re-establish mesic floodplain forest, IDNR proposes the following actions.

Timber Stand Improvement (TSI) is a practice implemented to free desirable trees from competition with undesirable trees[3]. The purpose of TSI in several of the restoration units listed in Table 4 is to improve conditions for more desirable species of trees, such as mast trees, to improve wildlife habitat. A side benefit of TSI would be the creation of small openings in the forest, which could improve landscape and species diversity and in some cases, allow for establishment of cane (described later in this section) (Missouri Department of Natural Resources (MoDNR 2006).

IDNR plans to plant bottomland hardwood trees such as a variety of oak, hickory, pecan, and walnut species.

Prescribed burning is needed to open understory, control invasive species, release desirable hardwood tree species, and in some areas, prepare for tree planting.

In areas of the mesic floodplain forest of ERBSHA, Kentucky coffee trees are present but under stress. Mechanical- and/or chemical-induced understory thinning of smaller trees, shrubs and weedy plant species to release the coffee trees has been recommended.

In addition to these restoration actions, IDNR will be evaluating, monitoring and preserving **spring** communities within the floodplain forest. A spring is a community where a concentrated flow of groundwater surfaces from a definite orifice. Water is typically cold and vascular plant communities are not well developed. Plant species may include, late alumroot, marsh purslane, spotted touch-me-not, yellow monkeyflower, chara, and various moss species (IDNR 2012).

[3] Periodic thinning can improve tree quality and reduce the time span to reach maturity to less than 100 years. After thinning, the remaining trees usually increase nut or seed production. This provides food for wildlife and a seed source for the next generation of trees. More open space between tree crowns - 15 to 20 feet - will encourage larger crowns with more nut production and understory growth for wildlife. A stand may be thinned by dividing a woodlot into several units and thinning one unit each year; the job is not so costly and time consuming. Thinned forests have more moisture and growing room available, allowing vigorously growing trees to withstand stresses caused by insects, disease and drought. Without TSI, surplus trees would naturally be thinned out, but the unaided natural process may take a stand 150 to 200 years (MODNR 2006).

***Cane** restoration*

Giant cane (*Arundinaria gigantea* (Walt.) Muhl.) is a native, perennial bamboo species historically found in vast expanses of southeastern floodplains prior to European settlement (Campbell 1985; Platt and Brantley 1997)[4]. Canebrake is considered to be a critically endangered ecosystem, reduced to less than two percent of its former extent (Noss et al. 1995). Canebrakes are considered critical habitat for several species[5].

There are several openings in the ERBSHA floodplain forest that would benefit from canebrake restoration (Table 4). There are several actions proposed for restoring cane communities to ERBSHA:

Propagation of cane will be attempted with seed and planting stock[6].

A prescribed burn cycle of every ten years is recommended to eliminate competing woody vegetation (Shepherd et al. 1951; Hughes 1957). Winter or summer burns are generally successful (Hughes 1957; Stevenson 1991)[7].

*Enhancement of **swales***

Swales are low wet areas within the mesic floodplain forest, commonly a result from where former channels and backwater swamps were cut off and abandoned by a meandering stream (IDNR 2012).

[4] It is a rhizomatour (non-clump forming) bamboo with erect culms bearing evergreen foliage, arising from rhizomes, and attains a height of 9 to 10 m (McClure 1973). Mature culms form dense monotypic stands known as canebrakes (Brantley and Platt 2001).

[5] A literature review documented 50 species inhabiting canebrakes, including 23 mammals, 16 birds, 4 reptiles and 7 invertebrates (Platt et al. 2001). Available data indicate that at least seven species in North America are obligate bamboo specialists, including six species of butterfly. All of 6 species are known to occur in southern Illinois (United States Geological Survey (USGS) 2006; Illinois Natural History Survey (INHS) 2006). Another potential obligate canebrake species is the Bachman's warbler (*Vermivora bachmanii)* (Hamel 1986).

[6] Seed propagation is problematic because seeds are sporadically produced and are often low in viability (Farrelly 1984; Platt and Brantley 1997). Propagation by digging and transplanting culms and allowing for subsequent spreading of rhizomes is labor intensive, cumbersome, and costly (Platt and Brantley 1993). Zaczek et al. (2004) had success using rhizome sections to generate machine-plantable stock for site restoration. Giant cane planting stock of a manageable size was produced by using rhizome cuttings under an intermittent mist in a greenhouse. Preliminary outplanting observations indicated that the majority of the planting stock survived through the first two growing seasons and began to spread.

[7] Decline of cane growing under a forest canopy has been noted previously, and some form of disturbance is apparently necessary to maintain canebrakes (Meanley 1966; Campbell 1985; Hamel 1986).

These low wet areas provide breeding and foraging habitat for amphibians, reptiles, migratory birds and other wildlife.

To enhance swales present at ERBSHA, mechanical and chemical control of invasive and undesirable plant species, including thinning of undesirable trees to release desirable hardwood species will be necessary.

Enhancement of ***wet prairie***

If standing water is present on the surface during winter and spring, and the soil is nearly always saturated, the community is likely a wet prairie. Plant species may include bluejoint grass, sedges, cord grass, prairie-Indian plantain, common boneset, wild blue iris, winged loosestrife and water parsnip (IDNR 2012).

Wet prairies provide valuable habitat for wetland birds, amphibians, reptiles and other wildlife. Wet prairies can act as recharge areas for groundwater and filters of sediment for nearby surface waters.

To enhance and restore wet prairie, IDNR will work to control invasive and undesirable plant species using mechanical and chemical means such as cutting/grinding and herbiciding, respectively.

Prescribed burns will also be implemented in an effort to control invasive and undesirable plant species.

Restoration of ***wet savanna***

Wet savanna communities exist at the interface of floodplain forest and wet prairie or sedge meadow; distinguished from other savanna community types by their hydric soils. Groundlayers of lowland savannas are diverse, containing species associated with floodplain forests, sedge meadows, and wet to wet-mesic prairies. The diversity may be due to the complex matrix of microhabitats created by the overlapping light and soil moisture gradients (USEPA 1993).

To enhance and restore wet savanna, IDNR will work to control invasive and undesirable plant species using mechanical and chemical means such as cutting/grinding and herbiciding, respectively.

A prescribed burn was conducted in an effort to evaluate a unit of ERBSHA for restoration action. It is already apparent that the burn is working to control invasive and undesirable plant species in the unit.

Tree planting of lowland savanna species such as swamp white oak will also be planned.

Efforts to aid in the recovery of native species will be made. Placement of barn owl nesting boxes per the State recovery plan is occurring at ERBSHA (Illinois Endangered Species Protection Board (IESPB) 2010) [http://www.dnr.illinois.gov/ESPB/Documents/IllinoisBarnOwlRecoveryPlanNovember2010.pdf].

Enhancement of ***shrub swamp***

A shrub swamp is comprised of 50% or greater coverage by shrubs; less than 20% tree cover; and often associated with ponds in wet floodplain forest communities. Characteristic plants include, swamp aster, sedge, white turtlehead, bog willow herb, spotted joe-pye weed, cowbane, cinnamon willowherb, and marsh St. John's wort (IDNR 2012).

Copperbelly watersnakes[8] are almost always found near bottomland forests and shrub swamps. Copperbellies emerge from their hibernation sites in early spring and migrate through wooded or vegetated corridors to wetland areas. They can sometimes be seen basking, breeding, and foraging near shallow wetland edges in woodlands (USFWS 2014). Shrub swamps also provide valuable habitat for other reptiles, amphibians and marsh birds.

To enhance shrub swamp, IDNR will work to control invasive and undesirable plant species using mechanical and chemical means such as cutting/grinding and herbiciding, respectively.

Prescribed burns will be conducted in areas to control invasive and undesirable plant species and enhance shrub swamp habitat at ERBSHA.

[8] The copperbelly water snake *(Nerodia erythrogaster neglecta)* is a subspecies of the more common plain-belly water snake. It is a non-venomous snake identified by its brightly colored orange underside. The copperbelly has a dark back with its orange underside visible from the side. These snakes can reach lengths of up to 5 feet. The copperbelly water snakes found at ERBSHA are the southern population segment not the endangered northern population segment (USFWS 2014).

*Management of **old field***

An old field is a community comprised primarily of abandoned cropland and pastureland to a progression of vegetative stages that may or may not be representative of progression to a natural community type. Exotic species may be prevalent (IDNR 2012).

The following actions will be taken to manage old field habitat to more readily progress towards a stable preferred natural community type, such as but not limited to mesic floodplain forest:

- Mechanical and chemical control of invasive and undesirable plant species.

- Prescribed burns to control invasive and undesirable plant species.

II. UPLANDS

Upland habitat restoration would benefit many species, for example, grassland and shrubland birds, reptiles, amphibians and mammals. In addition to these species, several sensitive species known to occur or historically occur in southern Illinois could benefit from upland restoration through reintroduction or translocation efforts or habitat enhancement. These restoration alternatives will also aid in the achievement of Federal and State objectives in various action/recovery plans.

Preferred upland natural community types, such as dry mesic upland forest, seep, sand prairie, and old field to restore at ERBSHA are briefly defined and related restoration actions proposed below.

*Enhancement of **dry mesic upland forest***

A dry mesic upland forest community is generally dominated by trees; 80% or better average canopy cover that normally does not flood; and may include terraces. Trees make good growth, but canopy is more open than mesic. Characteristic species include, but are not limited to, white oak, red oak, black oak, shagbark hickory, mockernut hickory, flowering dogwood, hop hornbeam, black haw, broad-headed skink, white-footed mouse, and eastern chipmunk (IDNR 2012).

The dry mesic upland forest lies above a shrub swamp and forested wetland, providing valuable wintering, breeding and foraging habitat for such species as the copperbelly watersnake, among a variety of others, some of which are listed above.

Actions proposed for enhancing existing and re-establishing this community type include, tree plantings of desirable hardwood trees such as a variety of oak, hickory, and walnut species, as well as mechanical and chemical control of undesirable woody species.

***Seep** enhancement*

The INAI standards and guidance define a seep as an area with saturated soil caused by groundwater flowing to the surface in a diffuse rather than concentrated flow. Plant species may include, sedges, alternate-leaved dogwood, black ash, skunk cabbage, fowl manna grass, spotted touch-me-not, clearweed, angelica, marsh marigold, liverwort, swamp wood betony, white turtlehead, spreading goldenrod, and cinnamon willow herb (IDNR 2012). Seeps harbor many amphibians and reptiles as well.

Seeps at ERBSHA will be enhanced by conducting prescribed burns to control encroachment of undesirable woody species. Activities involving mechanical and chemical control of invasive and exotic species, including, but not limited to, woody species will also be implemented.

A reintroduction of the rare native species, winged sedge, is being developed (IESPB 2013a) [http://www.dnr.illinois.gov/ESPB/Documents/Recovery%20Docs/recovery%20planning%20outline%20carex%20alata%20082213%20-%20Final022014.pdf].

*Restoration of **sand prairie***

Sand prairies are typically found on sandy outwash plains, lake plains, and valley trains. The soil moisture varies from dry to wet (IDNR 2012).

A dry sand prairie is generally comprised of grasses usually less than three feet tall and diversity is relatively low (IDNR 2012). Characteristic species include, little blue stem, buffalo grass, northern dropseed, pale purple coneflower, white prairie clover, purple prairie clover, sand milkweed, bee balm, and bracken fern (IDNR 2012).

Species existing in southern Illinois dry prairie include: Broom sedge, dogbane, common milkweed, hairy aster, mockernut hickory, partridge pea, Maryland senna, field thistle, flowering dogwood, buttonbush, white oak, shingle oak, Chinquapin oak (INPC B. Edgin, personal communication, 2013). Such habitat harbors many species of wildlife, including, but not limited to small mammals, migratory birds and reptiles.

A wet sand prairie generally holds standing water on the surface for as much as 1/3 of the year (IDNR 2012). Species existing in wet sand prairie at ERBSHA include: Valley redstem, swamp

milkweed, false aster, frank's sedge, lake sedge, beakgrass, saw-toothed sunflower, blue joint grass, and Maryland senna (INPC B. Edgin, personal communication, 2013).

Actions proposed in the sand prairie units of ERBSHA include,

- Prescribed burns to control invasive and exotic species.
- Mechanical and chemical control invasive and exotic species.
- Planting of native grasses and forbs to enhance diversity and overall community structure.

A reintroduction of the rare native species, royal catchfly, is being developed (IESPB 2013b)[http://www.dnr.illinois.gov/ESPB/Documents/Recovery%20Docs/recovery%20planning%20outline%20silene%20regia%20082813-Final022014.pdf].

Efforts to aid in the recovery of native species will be made. Placement of barn owl nesting boxes per the State recovery plan is occurring at ERBSHA (IESPB 2010) [http://www.dnr.illinois.gov/ESPB/Documents/IllinoisBarnOwlRecoveryPlanNovember2010.pdf].

A prescribed burn was conducted in an effort to evaluate a unit of ERBSHA for restoration action. It is already apparent that the burn is working to control invasive and undesirable plant species in the unit. Chemical control was recently conducted in an effort to augment the control of invasive and undesirable plant species in the unit.

*Management of **old field***

An old field is a community comprised primarily of abandoned cropland and pastureland to a progression of vegetative stages that may or may not be representative of progression to a natural community type. Exotic species may be prevalent (IDNR 2012).

The following actions will be taken to manage old field habitat to more readily progress towards a stable natural community type:

- Mechanical and chemical control of invasive and undesirable plant species.
- Prescribed burns to control invasive and undesirable plant species.

VIII. Monitoring and Adaptive Management

Biological monitoring at ERBSHA began in Spring 2013. The monitoring information will help establish a baseline of current habitat and biological resources on site prior to and during management and restoration actions. Monitoring will be conducted over time, including post restoration assessments, to determine restoration success or need for adaptive management[9]. The site MMP is available online and at the local library. Updates to this plan are posted by the month of May on an annual basis at http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx .

Overall, the monitoring information will document habitat improvements and the natural resources of the project site. This information will be beneficial in documenting project success and/or need for adaptive management.

IX. Coordination with Other Programs

This RP was drafted in coordination with the INPC, NRCS, Russell-Allison Ambraw Levee District, and inholding landowners. These partners, as well as non-governmental entities, such as Ducks Unlimited, will provide the technical expertise, finances, and permissions to implement conservation practices, increasing the environmental benefits on the property. This RP complies with all Federal, State, and local laws, regulations and policies. The plan is consistent with the terms and requirements of each of the programs through which it will be implemented, and the joint effort creates no conflict for any partnering program or interest.

All permits (Army Corps of Engineers, OWR, IEPA, etc) will be obtained before relevant work begins.

X. Fiscal Procedures

Restoration funds for the ERBSHA total $1.346 million. It is the intention of IDNR to expend funds in Fiscal Year 2015-2017 (calendar year: September 1, 2014 – December 31, 2017) for restoration activities. After the RP goes through the public process and the necessary permits are received, the funds can be released and restoration activities can begin. IDNR will oversee all restoration activities. The IDNR Springfield headquarters will handle all fiscal transactions. All billings with supporting documentation shall be submitted to the IDNR Springfield Office for review and payment. IDNR Office of Fiscal Management will be responsible for the approval and payment of all expenses, obligations and contracts in accordance with the State of Illinois fiscal and procurement procedures.

[9] In natural resource management, adaptive management simply refers to a structured process of learning by doing, and adapting based on what's learned (Walters and Holling 1990).

XI. References

Brantley, C.G. and S.G. Platt. 2001. Canebrake conservation in the southeastern United States. *Wildlife Society Bulletin*. 29(4): 1175-1181.

Campbell, J.N. 1985. The land of cane and clover: presettlement vegetation in so-called Bluegrass region of Kentucky. Herbarium Report, University of Kentucky, Lexington.

Farrelly, D. 1984. The book of bamboo. San Francisco (CA): Sierra Club Books. 340 pp.

Hamel, P.B. 1986. Bachman's warbler: A species in peril. Smithsonian Institution, Washington, D.C.

Hughes, R.H. 1957. Response of cane to burning in the North Carolina coastal plain. North Carolina Agricultural Experiment Station, Technical Bulletin 402.

Illinois Attorney General's Office. State of Illinois v. Texaco, Inc., No. 01-cv-3221, filed 30 December 2010, United States District Court, IL.

Illinois Department of Natural Resources. 2014. Management-Monitoring Plan for the Embarras River Bottoms State Habitat Area May 15, 2014 – June 30, 2015.

Illinois Department of Natural Resources and Illinois Environmental Protection Agency. 2008. Report of Assessment for the Former Indian Refinery NPL Site Natural Resource Damage Assessment. December.

Illinois Department of Natural Resources. 2005. Illinois Wildlife Action Plan. 11 July 2005. www.dnr.illinois.gov/conservation/IWAP . Accessed April 2014.

Illinois Department of Natural Resources. 2012. The Standards and Guidelines for the Illinois Natural Areas Inventory. Natural Areas Program, Division of Natural Heritage. March.

Illinois Endangered Species Protection Board. 2010. The Illinois Barn Owl Recovery Plan. State Wildlife Grant Program T-35-P-1. In cooperation with the University of Illinois and IDNR. November.

Illinois Endangered Species Protection Board. 2013a. Final Recovery Planning Outline with Listing Status Review Triggers for the Illinois Endangered Winged Sedge (*Carex alata*). In cooperation with the Illinois Nature Preserves Commission. August.

Illinois Endangered Species Protection Board. 2013b. Final Recovery Planning Outline with Listing Status Review Triggers for the Illinois Endangered Royal Catchfly (Silene regia). In cooperation with the Illinois Nature Preserves Commission. August.

Illinois Natural History Survey. 2006. INHS Reports September-October 1995. Survey Document #2178 Pearly eyes in Illinois. Available: www.inhs.uiuc.edu/inhsreports/sep-oct95/butterfly.html. Accessed April 2006.

McClure, F.A. 1973. Genera of bamboos native to the New World (Graminae: Bambusoideae). Soderstrom, T.R., editor. *Smithsonian Contributions Botany* 9: 1-148.

Meanley, B. 1966. Some observations on habitats of the Swainson's warbler. *Living Bird* 5: 151-165.

Tepley, A.J., J.G. Cohen, and L. Huberty. 2004. Natural Community abstract for floodplain forest. Michigan Natural Features Inventory, Lansing, MI. 15 pp.

Missouri Department of Conservation. 2006. Timber stand improvement: A guide for improving your woodlot by cutting firewood. Available: http://www.mdc.mo.gov/documents/forest/3-660.PDF. Accessed January 2006.

Natural Resource Conservation Service. 2002. Emergency Watershed Protection Program Floodplain (EWPPF) easement. Warranty Easement Deed No. 75-5A12-9-8666. May.

Noss, R.F., E.T. Laroe, III, and J.M. Scott. 1995. Endangered ecosystems of the United States: A preliminary assessment of loss and degradation. United States Department of Interior. National Biological Service. Biological Report 28. Washington, D.C.

Platt, S.G., C. G. Brantley, and T.R. Rainwater. 2001. Canebrake fauna: Wildlife diversity in a critically endangered ecosystem. *Journal of the Elisha Mitchell Scientific Society* 117: 1-19.

Platt, S.G. and C.G. Brantley. 1993. Switchcane propagation and establishment in the southeastern United States. *Restoration and Management Notes* 11: 134-137.

Platt, S.G. and C.G. Brantley. 1997. Canebrakes: an ecological and historical perspective. *Castanea* 62: 8-21.

Stevenson, J.A. 1991. Shift to lightning-season burns aids pineland restoration in Florida State Parks. Restoration and Management Notes 9: 113-114.

United States Environmental Protection Agency. 2014. Vernal Pools. http://water.epa.gov/type/wetlands/vernal.cfm . Accessed March 2014.

United States Environmental Protection Agency. 1993. 1993 Proceedings of the Midwest Oak Savanna Conferences. Lowland Oak Savannnas: groundlayer composition and distribution in relation to light and soil moisture. www.epa.gov/greatlakes/ecopage/upland/oak/oak93 . Accessed April 2014.

United States Fish and Wildlife Service, IDNR, and IEPA. 2006. Assessment Plan for the Former Indian Refinery NPL Site. June. 72 pp.

United States Fish and Wildlife Service. 2014. Copperbelly Water Snake Conservation Agreements. http://www.fws.gov/midwest/endangered/reptiles/cws/copprCAfcts.html . Accessed June 2014.

United States Geological Service. 2006. Butterflies of North America. Butterflies of Illinois. Available: www.npwrc.usgs.gov/resource/distr/lepid/blfyusa/il. Accessed April 2006.

Walters, C.J., and C.S. Hollings. 1990. Large-scale Management Experiments and Learning by Doing. Ecology 71, 2060-2068.

Zaczek, J.J., R.L. Sexton, K.W.J. Williard, and J.W.Groninger. 2004. Propagation of Giant Cane (*Arundinaria gigantea*) for Riparian Habitat Restoration. USDA Forest Service Proceedings RMRS-P-33.

Table 1. Terms of the Former Indian Refinery NRDA Settlement.

Condition	Description	Cost/Property
Assessment	Planning and preparing for restoration	$250,000
Acquisition	Property to the State for permanent habitat conservation	~2400 acres
Habitat restoration action	Restoration of floodplain communities to conserve Illinois natural resources	$1,362,000
Groundwater conservation	Groundwater quality improvements	$115,000

Table 2. Evaluation Standards Considered for ERBSHA Restoration Alternatives.

Standard	Source	Alternative 1 *No Action*	Alternative 2 *Additional Acquisition*	Alternative 3 *Floodplain Restoration*
Cost Effective	NRDA guidance	Yes	Yes	Yes
Meets trustees' goals & objectives in returning the natural resources & services to baseline and/or compensating for interim losses	NRDA guidance	No	Yes	Yes
Likelihood of success	NRDA guidance	Strong	Strong	Strong
Future injury expected to be prevented & collateral injury from implementing alternative expected to be avoided	NRDA guidance	No	No	No
Benefits more than one natural resource and/or service	NRDA guidance	Yes	Yes	Yes
Protects public health and safety	NRDA guidance	No	No	No
Technically feasible	NRDA guidance	Yes	Yes	Yes
Complies with applicable/relevant federal, state, local, and tribal laws, regulations, and policies	NRDA guidance	No	Yes	Yes
Provides benefits not being provided by other restoration projects being or having the potential of being planned/implemented/funded under other programs	NRDA guidance	No	Yes	Yes
Expected costs: expected benefits	NRDA guidance	Low	Low	High
Results of any actual or planned response actions	NRDA guidance	No	No	No
Addresses in-kind habitat in the same watershed	NRDA guidance	Yes	Yes	Yes
Addresses/incorporates restoration of "preferred" trust resources or services	NRDA guidance	Yes	Yes	Yes
Generates collateral benefits	NRDA guidance	Yes	Yes	Yes
Provides long-term benefits	NRDA guidance	Yes	Yes	Yes
Consistent with regional planning	NRDA guidance	No	Yes	Yes
Provides benefits sooner	NRDA guidance	No	No	Yes
Targets a resource or service that is unable to recover to baseline without restoration action, or that will require a long time to recover naturally	NRDA guidance	No	No	No
Restores, rehabilitates, and/or replaces habitats of injured resources and the services that the habitats provide. Acquiring the equivalent may also be a viable option.	NRDA guidance	Yes, in 100 years+	Yes, in 100 years+	Yes, in 10 years
Acceptable to the public	NRDA guidance	To be determined	To be determined	To be determined
Compatible with NRCS Easement stipulations and restrictions	NRCS easement	No	Yes, with approved agreements	Yes, with approved agreements
Compatible with Illinois Barn Owl Recovery Plan	State Recovery Plan	NA	NA	Yes
Compatible with Illinois Winged Sedge Recovery Plan	State Recovery Plan	NA	NA	Yes
Compatible with Illinois Royal Catchfly Recovery Plan	State Recovery Plan	NA	NA	Yes
Compatible with Illinois Wildlife Action Plan Goals and Objectives	Illinois Wildlife Action Plan	No	Yes	Yes

Table 3. Summary of the Restoration Alternatives

Alternative	Restoration Location	Project Description	Preferred or Not Preferred
1. No Action			Not preferred. Based on expert opinion and evaluation of relevant project standards.
2. Acquire additional acreage	In immediate vicinity of injury site	Expanding area of natural resource preservation	Not preferred. Based on expert opinion and evaluation of relevant project standards.
3. Habitat restoration and long term management	2400 acres subject to NRDA settlement	Restoration of Embarras River floodplain communities	Preferred. Based on expert opinion and evaluation of relevant project standards.

Table 4. Desired Community Types and Associated Features for the 16 Restoration Units Identified at ERBSHA.

Restoration Unit	Desired community and associated features
R1	mesic floodplain forest vernal ponds cane
R2	mesic floodplain forest vernal ponds cane
R3	mesic floodplain forest
R4	mesic floodplain forest old field created wetland
R5	mesic floodplain forest old field created wetland
R6	sedge meadow old field created wetland
R7	mesic floodplain forest sedge meadow swales old field created wetland
R8	mesic floodplain forest with swales
R9	mesic floodplain forest vernal ponds sedge meadow created wetland old field cane
R10	mesic floodplain forest
R11	mesic floodplain forest wet savanna, currently old field vernal ponds barn owl nestbox created wetland
R12	mesic floodplain forest
R13	mesic floodplain forest old field created wetland
R14	mesic floodplain forest created wetland, currently with old field component
R15	mesic floodplain forest created wetland
R16	sand prairie (day and wet), currently old field dry mesic upland forest with seeps mesic floodplain forest shrub swamp canebrake plant reintroduction barn owl nestbox created wetland

Figure 1. Embarras River Bottoms State Habitat Area near Lawrenceville, IL.

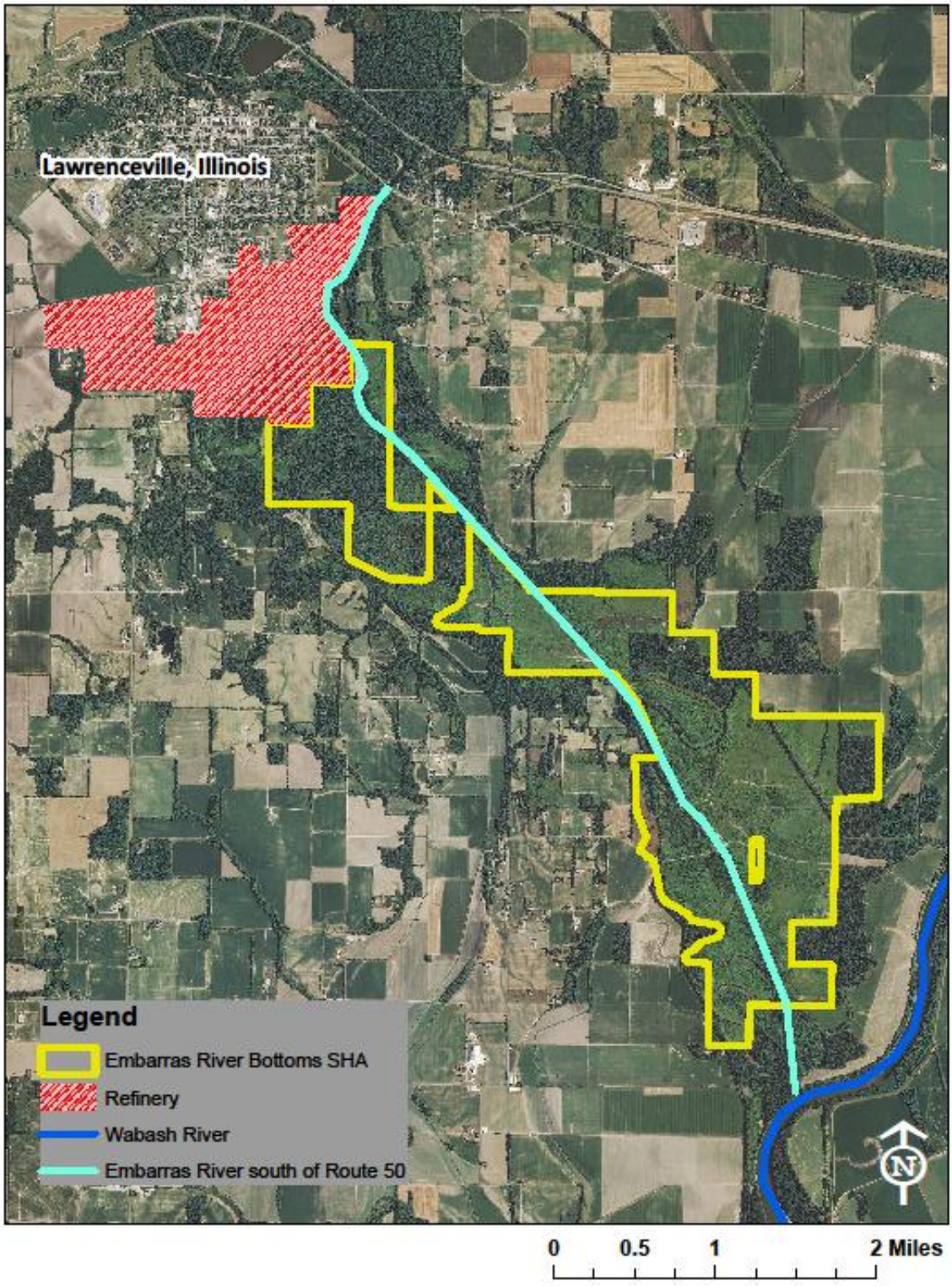
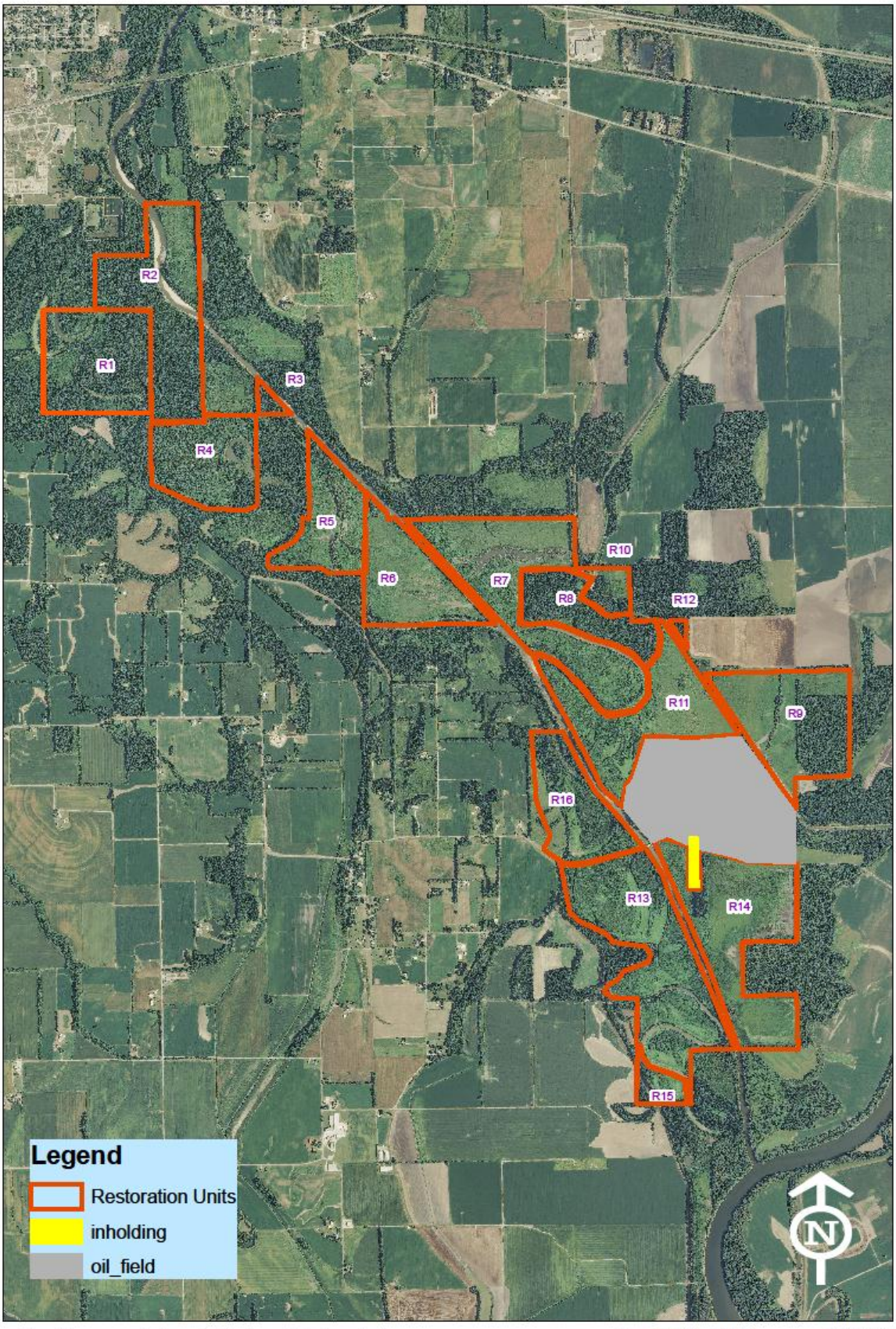


Figure 2. Sixteen Restoration Units of ERBSHA.



unit boundaries are approximate. subject to change with further evaluation.

Appendix I.

Laws, authorities, and guidance associated with NRDA and Natural Resource Injuries.

Overview

A number of federal and state statutes, regulations, policies, and guidance documents provide a framework for conducting natural resource damage assessments, natural resource injury evaluations and the associated restoration. To administer the program, the Trustees integrate the applicable Federal and State laws, regulations, policies, and guidance documents. Frequently, due to this integration, these terms are sometimes used interchangeably, despite there being a distinct difference between them. Basically, laws written by Congress or the Legislature provide the authority for State Agencies to seek a broad goal. In this instance, laws provide authority for assessment and restoration of natural resources that have been injured by hazardous substances. Federal and/or State agencies can develop regulations when the authority is too general or the matter too complex; hence, needing further explanation of the technical, operational, and legal details necessary to implement laws. Policy and guidance documents are also prepared to assist the process. For natural resource injuries, substantial guidance is found at 43 CFR Part 11; an Act created by the Federal Department of Interior. An example of an applicable State policy guidance is IDNR's Comprehensive Environmental Review Process – the State's abridged version of the Federal NEPA (National Environmental Protection Act) process. CERP insures applicable laws & rules are followed before implementing a restoration project on State property.

The major federal laws contributing to the restoration of the injured resources and services framework include the Oil Pollution Act (OPA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Clean Water Act (CWA), Natural Resource Damage Assessment, 43 CFR Part 11, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and the Rivers and Harbors Act of 1899 (Sections 9 and 10). In addition, but not limited to, the State laws relevant for guiding the restoration of injured resources are the Illinois Environmental Protection Act (415 ILCS 5/1, et seq.), the Illinois Natural Areas Preservation Act (525 ILCS 30/1, et seq.), the Illinois Endangered Species Protection Act (520 ILCS 10/1, et seq.), the Interagency Wetland Policy Act of 1989 (20 ILCS 830/1-1, et seq.),),Rivers, Lakes, and Streams Act (615 ILCS 5/18), the Wildlife Code (520 ILCS 5/1.10, et seq.), and Fish and Aquatic Life Code (515 ILCS 5/5-5, et seq.). These laws along with the Comprehensive Environmental Review Process (CERP) are summarized below. Overall, by an integration of applicable laws, regulations, policies and guidance, the State Trustees can purse restoration of injured natural resources.

Key Statutes, Regulations, Policies, and Guidance

The potentially relevant laws, regulations, policies, and guidance are set forth below.

Oil Pollution Act of 1990, 33 U.S.C. §§ 2701, *et seq.*

The Oil Pollution Act establishes a liability regime for oil spills that injure or are likely to injure natural resources and/or the services that those resources provide to the ecosystem or humans. Federal and state agencies and Indian tribes act as Trustees on behalf of the public to assess the injuries, scale restoration to compensate for those injuries, and implement restoration. The National Oceanic and Atmospheric Administration promulgated regulations for the conduct of natural resource damage assessments at 15 C.F.R. Part 990. Natural resource damage assessments are intended to provide the basis for restoring, replacing, rehabilitating, and acquiring the equivalent of injured natural resources and services. The Trustees' actions are substantially consistent with the regulations found at 15 C.F.R. Part 990.

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

The Clean Water Act is the principal law governing pollution control for water quality of the nation's waterways. Section 404 of the law authorizes a permit program for the disposal of dredged or fill material into navigable waters. The U.S. Army Corps of Engineers administers the program. In general, restoration projects that move significant amounts of material into or out of water or wetlands (e.g., hydrologic restoration of marshes) require Section 404 permits. –Under Section 401 of the CWA, restoration projects that involve discharge or fill to wetlands or navigable waters must obtain certification of compliance with state water quality standards (section 401).

Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601, *et seq.*

This Act provides the basic legal framework for cleanup and restoration of the nation's hazardous-substances sites. Generally, parties responsible for contamination of sites and the current owners or operators of contaminated sites are liable for the cost of cleanup and restoration. CERCLA establishes a hazard ranking system for assessing the nation's contaminated sites with the most contaminated sites being placed on the National Priorities List.

Oil Spill Responders Liability Act, 740 ILCS 113/1, *et seq.*

This Act protects oil spill responders from liability for damages that may result from action taken or action omitted in the course of rendering assistance in an oil spill incident that is consistent with the National Contingency Plan. This protection does not apply to the responsible party, or entity which caused the oil spill incident. Under this Act, the responsible party is liable for removal costs and damages to natural resources resulting from a discharge or spill of oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge and oil refuse.

Illinois Environmental Protection Act, 415 ILCS 5/1, *et seq.*

The Environmental Protection Act is the state law that prohibits most forms of pollution occurring on land, in water, or in the air. It also establishes a liability regime, including enforcement and penalties, for entities that violate the provisions of the Act. The Environmental Protection Act was developed for

the purpose of establishing a unified state-wide program for environmental protection and cooperating with other states and with the United States in protecting the environment. It was also developed to restore, protect and enhance the quality of the environment and to assure that adverse effects upon the environment are fully considered and borne by those who cause them.

Illinois Natural Areas Preservation Act, 525 ILCS 30/1 *et seq.*

The Act serves to protect any area in Illinois that has been designated as a nature preserve, including the species of plants and animals in each habitat. Any endangered plant and animal species found in designated nature preserves are also protected under this Act. Dedicating and holding an area for natural preserves is also encouraged in this Act.

Illinois Endangered Species Protection Act, 520 ILCS 10/1 *et seq.*

This Act gives protection to any plant and animal species on the endangered or threatened list from being moved or destroyed. Any species that the Secretary of the Interior of the United States lists as endangered or threatened is also included on Illinois's endangered and threatened species list. The Act also provides rules of law for searching any premises suspected of illegally keeping goods, merchandise, or animals, plants, or animal or plant products subject to the Act and seizing such products.

Illinois Fish and Aquatic Life Code, 515 ILCS 5/5-5 *et seq.* and Illinois Wildlife Code, 520 ILCS 5/1.10 *et seq.*

These Codes state that IDNR shall take all measures necessary for the conservation, distribution, introduction and restoration of aquatic life and wildlife, and they provide protection for aquatic life and wildlife from any person who causes waste, sewage, thermal effluent, or any other pollutant to enter into the waters of the State or habitat supporting the wildlife, which causes the death of aquatic life or wildlife. The IDNR, acting through the IAGO, has the authority to bring action against such persons to recover the value of any and all aquatic life or wildlife that is destroyed, related costs in determining such value, and any other fines or penalties provided for by these Codes.

Interagency Wetland Policy Act of 1989, 20 ILCS 830/1 *et seq.*

This Act states that state agencies are responsible for preserving, enhancing, and creating wetland areas for the purpose of increasing quality and quantity of the State's wetland resource base. The goal behind the Act is that there shall be no overall net loss of the State's existing wetland acres or their functional value due to State supported activities.

Comprehensive Environmental Review Process (CERP)

Internal process within IDNR that reviews any action taken by the Department that may alter any chemical, physical, or biological conditions of air, land, or water, as well as any alterations to standing structures. CERP staff will review project proposal to see if any damages will occur to threatened and endangered species, wetlands, INAI sites, or cultural resources. Other resources such as migratory

birds, fisheries, forests, prairies, streams, riparian corridors, and site aesthetics may also be considered. If staff determines that adverse effects are likely, a CERP sign-off may include project modifications.

Rivers, Lakes, and Streams Act 615 ILCS 5/18

No person is allowed to fill or deposit rock, earth, sand, or other material, or any refuse matter of any kind or description or build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, causeway, harbor, or mooring facilities for watercraft, or any other structure, with the exception of duck blinds, in public a water body of the State without first submitting plans, data, and other important information to the Department of Natural Resources of the State and receiving a permit signed by the Director of the Department. Under this act, no person is allowed to build, deposit, or discharge any materials into Lake Michigan unless the Illinois Environmental Protection Agency permits one to do so under subsection (a) of section 39 of the Environmental Protection Act.

Rivers and Harbors Act of 1899, Sections 9 and 10

9. It is unlawful to build any structure in or across waters of the United States until plans are submitted and approved by Secretary of Transportation, Chief of Engineers, and Secretary of Army and consent is given by Congress. Under permission of the legislation of the State, a person may build in or across waters whose navigable parts lie wholly in that state. The approval required by this section of the location and plans or any modification of plans of any bridge or causeway does not apply to any bridge or causeway over waters that are not subject to the ebb and flow of the tide and that are not used and are not susceptible to use in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce.

10. It is unlawful to build obstacles that prohibit navigation, unless authorized by Congress, and building of any structure outside harbor lines or where no harbor lines have been established is prohibited unless authorized by Chief of Engineers and Secretary of War. It is also unlawful to fill or modify any plan or structure within limits of breakwaters or the channel of any navigable waters of the United States unless approved by Chief of Engineers and Secretary of War.

43 CFR Part 11 – Natural Resource Damage Assessment

CERCLA and CWA provide that natural resource trustees may assess damages to natural resources resulting from a discharge of oil or a release of hazardous substance covered under CERCLA and/or CWA. Trustees may seek to recover those damages and under National Oil and Hazardous Substances Pollution Contingency Plan (NCP) trustees can seek compensation for injuries to natural resources that may not be addressed by response actions of NCP.

40 CFR part 300.605 – National Oil and Hazardous Substances Pollution Contingency Plan

State trustees shall act on behalf of the public as trustees for natural resources, including their supporting ecosystems, within the boundary of a state or belonging to, managed by, controlled by, or appertaining to such state. The governor of a state is encouraged to designate a state lead trustee to coordinate all state trustee responsibilities with other trustee agencies. The state lead trustee should

have ready access to appropriate state officials with environmental protection, emergency response, and natural resource responsibilities. The EPA Administrator or USCG Commandant or their designees may appoint the state lead trustee as a member of the Area Committee. Response strategies should be coordinated between the state and other trustees for specific natural resource locations in an inland or coastal zone and should be included in the Fish and Wildlife and Sensitive Environments Plan annex of the ACP.

15 CFR Part 990 – Natural Resource Damage Assessment

The Oil Pollution Act of 1990 (OPA) provides the designation of federal, state, and, if designated by the Governor of the state, local officials to act on behalf of the public as trustees for natural resources and for the designation of Indian tribe and foreign officials to act as trustees for natural resources on behalf of, respectively, the tribe or its members and the foreign government. This part may be used by these officials in conducting natural resource damage assessments when natural resources and/or services are injured as a result of an incident involving an actual or substantial threat of a discharge of oil. This part is not intended to affect the recoverability of natural resource damages when recoveries are sought other than in accordance with this part.

Appendix II. NRDA Guidance Standards Considered for ERBSHA Restoration Plan.

Standard	Interpretation
Technically feasible	• Project has a high likelihood of success. This factor will be evaluated in more depth for projects that are initially believed to be feasible. • Reliable methods/technologies known to have a high probability of success will be considered • Projects incorporating experimental methods, research, or unproven technologies may be evaluated
Complies with applicable/relevant federal, state, local, and tribal laws, regulations, and policies	• Project must be legal
Provides benefits not being provided by other restoration projects being or having the potential of being planned/implemented/funded under other programs	• Preference is given to projects that are not already being implemented or have planned funding under other programs. Although the Trustees will make use of restoration planning efforts by other programs, preference is given to projects that would not otherwise be implemented without NRDA restoration funds.
Expected costs: expected benefits	• The relationship of the expected costs of the proposed actions to the expected benefits from the restoration, rehabilitation, replacement, and/or acquisition of equivalent resources
Addresses in-kind habitat in the same watershed	• Trustees' preference is to restore, rehabilitate, and/or replace in-kind habitat in the same watershed. Acquiring the equivalent may also be a viable option.
Addresses/incorporates restoration of "preferred" trust resources or services	• Trustees will develop a list of priorities based on the resource types injured and degree of injury. Preference may be given to: specific habitats, species of special concern, living resources, native species groundwater, etc.
Generates collateral benefits	• Secondary or cascading benefits to ecological resources and economic benefits, including enhancing the public's ability to use, enjoy, or benefit from the environment • Projects that benefit more than one injured resource or service will be given priority • Projects that benefit a single group or individual may be ranked lower
Provides long-term benefits	• Projects that persist will be favored over short-term projects
Consistent with regional planning	• Project is not inconsistent with regional planning (e.g., supportive of species recovery plans, etc.); project is administratively feasible
Provides benefits sooner	• Project will achieve full expected results sooner than resource would achieve the result through natural recovery (and remediation); sooner than other projects that benefit the same resource. The sooner restoration is achieved, the better.
Targets a resource or service that is unable to recover to baseline without restoration action, or that will require a long time to recover naturally (e.g., >25 years)	• Projects that target resources/services that will be slow to recover will be favored over projects that target resources/services that will soon recover naturally

Restores, rehabilitates, and/or replaces habitats of injured resources and the services that the habitats provide. Acquiring the equivalent may also be a viable option.	• Projects may be evaluated based on the degree to which they restore, rehabilitate, and/or replace habitat for injured resources. Habitat protection/restoration may be a preferred means of restoring injured resources. • May also include consideration of on-site resources and habitats
Acceptable to the public	• Project meets a minimum level of public acceptance; project is not a public nuisance. Degree of public acceptance/support can also be used as a criterion following initial screen of projects.

Appendix III. NRCS EWPPF Warranty Easement Deed

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Nancy J Hoke. Recorder Lawrence Cty. IL
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U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-LTP-20
OMB No. 0578-0013
EWP-FP

EMERGENCY WATERSHEDS PROTECTION PROGRAM
FLOODPLAIN

WARRANTY EASEMENT DEED

AGREEMENT NO. 75-5A12-9-8666

THIS WARRANTY EASEMENT DEED is made by and between **CLAUDE WHITE and FRIEDA WHITE, husband and wife,** of P. O. Box 37 Marion, Illinois 62959, (hereafter referred to as the "Landowner"), Grantor(s), and the **UNITED STATES OF AMERICA,** by and through the Natural Resources Conservation Service (hereafter referred to as the "United States"), Grantee. The Landowner and the United States are jointly referred to as the "Parties." The acquiring agency of the United States is the Natural Resources Conservation Service (NRCS), United States Department of Agriculture. A cooperating Federal agency is the Fish and Wildlife Service of the United States Department of the Interior.

Witnesseth:

Purposes and Intent. The purposes of this easement are: to restore, protect, manage, maintain, and enhance the functional values of floodplains, wetlands, riparian areas, and other lands, for the conservation of natural values including fish and wildlife and their habitat, water quality improvement, flood water retention, groundwater recharge, open space, aesthetic values, and environmental education; and to safeguard lives and property from floods, drought, and the products of erosion. It is the intent of the United States to give the Landowner the opportunity to participate in the restoration and management activities on the easement area.

Authority. This easement deed acquisition is authorized by 16 U.S.C. 2203, as amended, and 7 U.S.C. 428a.

NOW THEREFORE, for and in consideration of the sum of **TWO MILLION NINETY NINE THOUSAND TWO HUNDRED SIXTY-FIVE and 80/100 DOLLARS ($2,099,265.80)**, the Grantor(s) hereby grant(s) and convey(s) with general warranty of title to the UNITED STATES OF AMERICA and its assigns, the Grantee, forever, all rights, title and interest in 1911.9 acres of land, more or less, in Lawrence County, Illinois, which lands comprise the easement area described in Part I together with appurtenant rights of access to the easement area, but reserving to the Landowner only those rights, title and interest expressly enumerated in Part II. It is the intention of the Landowner to convey and relinquish any and all other property rights not so reserved. This easement shall constitute a servitude upon the land so encumbered, shall run with the land in perpetuity and shall bind the Landowner, (the Grantor(s)), their heirs, successors, assigns, lessees, and any other person claiming under them.

SUBJECT, however, to Oil & Gas Lease recorded June 2, 1938 in Lease Rec. 19 at page 422; Oil & Gas Lease recorded February 23, 1946 in Lease Record 25 at page 572; Oil & Gas Lease recorded February 23, 1946 in Lease Record 25 at page 575; Oil & Gas Lease recorded July 5, 1952 in Lease Record 32 at page 245; Oil & Gas Lease recorded March 9, 1965 in Lease Record 47 at page 399-401 as Doc. No. 4663; Oil & Gas Lease recorded March 9, 1965 in Lease Record 47 at pages 402-405 as Doc. No. 4664; Oil & Gas Lease recorded September 14, 1976 in Lease Record 55 at page 221-224 as Doc. No. 46,966; Oil & Gas Lease recorded June 27, 1979 in Lease Record 1979 at pages 134-136 as Doc. No. 58382; Oil & Gas Lease recorded March 17, 1981 in Lease Rec. 1981 at pages 246-248 as Doc. No. 65778; Oil & Gas Lease recorded April 10, 1981 in Lease Rec. 1981 at pages 274-276 as Doc. No. 66169; Oil & Gas Lease recorded May 28, 1981 in Lease Rec. 1981 at pages 350-352 as Doc. No. 66,852; Oil & Gas Lease recorded May 28, 1981 in Lease Rec. 1981 at pages 353 as Doc. No. 66,853; Oil & Gas Lease recorded July 3, 1942 in Lease Record 22 at page 202; Oil & Gas Lease recorded September 20, 1944 in Lease Rec. 24 at page 496; Oil & Gas Lease recorded December 30, 1949 in Lease Record 27 at page 258; Oil & Gas Lease recorded December 15, 1978 in Lease Rec. 1978 at pages 276-277 as Doc. No. 56,336; Oil & Gas Lease recorded September 14, 1976 in Lease Rec. 55 at page 217 as Doc. No. 46,965; and Oil & Gas Lease recorded August 3, 1981 in Lease Rec. 1981 at pages 528-530 as Doc. No. 67,699.

SUBJECT, also to Reservation of 1/16 of all oil, gas and other minerals in Quit Claim Deed recorded March 16, 1939 in Deed Rec. 83 at page 79; Reservation of an interest in oil, gas and other minerals for a term of fifteen years in Warranty Deeds recorded July 13, 1990 in Book 72 at pages 122-128 as Doc. No. 0010,886; Reservation of ½ interest in oil and gas for a term of ten years and as long as produced in Quit Claim Deed recorded January 23, 1989 in Book 40 at page 93 as Doc. No. 0005920; Reservation of ½ interest in oil, gas and other minerals in Warranty Deed recorded November 28, 1938 in Deed Rec. 80 at page 271; Reservation of 1/4 interest in coal, oil, gas and other minerals in Warranty Deed recorded November 8, 1979 in Deed Rec. 1979 at page 1182 as Doc. No. 59,931; Reservation of 1/4 interest in coal, oil, gas and other minerals in Warranty Deed recorded November 8, 1979 in Warranty Deed 1979 at page 1184 as Doc. No. 59,932; Trustees Mineral Deed recorded June 4, 1980 in Deed Book 1980 at pages 603-605 as Doc. No. 62,153; Reservation of oil, gas, coal and other minerals in Warranty

Deed recorded June 14, 1966 in Deed Rec. 130 at page 341-343 as Doc. No. 9220; Notice Preserving Interest in Oil & Gas recorded September 21, 1972 in Mineral Interest Rec. 1 at page 114 as Doc. No. 33,154; Reservation of ½ of all minerals in Warranty Deed recorded November 6, 1968 in Deed Rec. 138 at page 125-126 as Doc. No. 18,429; Reservation of ½ interest in oil, gas and other minerals in Warranty Deed recorded September 3, 1964 in Deed Rec. 126 at page 218 as Doc. No. 2674 and as referred to in Executors Deed recorded September 3,1964 in Deed Rec. 121 at page 280, as Doc. No. 2672; Executors Mineral Deed recorded September 26, 1966 in Mineral Deed Rec. 133 at pages 69-72 as Doc. No. 10,228; and Mineral Deed recorded August 12, 1969 in Mineral Deed Rec. 133 at page 171 as Doc. No. 20,981.

SUBJECT, also to Pipe Line Right-of-Way recorded July 9, 1947 in Misc. Rec. C-1 at page 314; Right-of-Way for public road purposes recorded July 13, 1960 in Road Deed Rec. 8 as Doc. No. 18959 at page 98; Right-of-Way recorded July 13, 1960 in Road Deed Rec. 8 at page 92 as Doc. No. 18956; Right-of-Way for public road purposes recorded July 13, 1960 in Road Deed Rec. 8 at page 90 as Doc. No. 18,955; Permit recorded October 15, 1930 in Misc. Rec. T, pages 510-511, State of Illinois to straighten and improve the channel of the Embarrass River; Right-of-Way to Norris Electric Cooperative recorded September 13, 1963 in Misc. Rec. 14 at page 313 as Doc. No. 37,774; Right-of-Way to General Telephone Company recorded August 11, 1969 in Misc. Book 24 at page 349 as Doc. No. 20,953; Right-of-Way to Pure Oil Company recorded March 1, 1909 in Misc. Oil & Gas Rec. 10 at page 310; Right-of-Way to Norris Electric Cooperative recorded February 3, 1964 in Misc. Rec. 15 at page 183 as Doc. No. 211; and Right-of-Way recorded February 13, 1964 in Misc. Rec. 15 at page 182 as Doc. 210.

Under date of December 4, 2001, William J. Gradle, State Conservationist has determined that these outstanding rights are compatible with the purposes for which this conservation easement is being purchased.

PART I. Description of the Easement Area. The lands encumbered by this easement deed, referred to hereafter as the easement area, are described in EXHIBIT A and depicted generally in EXHIBIT A-1, both of which are appended to and made a part of this warranty easement deed.

TOGETHER with a right of access for ingress and egress to the easement area across adjacent or other properties of the Landowner. Such a right-of-way for access purposes is open and unobstructed and directly off County Road 620 N, locally known as Billet Black Top Road which runs East and West and Bisects the easement area in Sections 27 and 28, T3N, R11W of the Second Principal Meridian situated in Lawrence County, Illinois.

PART II. Reservations in the Landowner on the Easement Area. Subject to the rights, title, and interest conveyed by this easement deed to the United States, the Landowner reserves:

A. Title. Record title, along with the Landowner's right to convey, transfer, and otherwise alienate title to these reserved rights.

B. Quiet Enjoyment. The right of quiet enjoyment of the rights reserved on the easement area.

C. Control of Access. The right to prevent trespass and control access by the general public subject to the operation of State and Federal Law.

D. Recreational Uses. The right to undeveloped recreational uses, including hunting and fishing, and including leasing of such rights for economic gain, pursuant to applicable State and Federal regulations that may be in effect at the time.

E. Subsurface Resources. The right to oil, gas, minerals, and geothermal resources underlying the easement area, provided that any drilling or mining activities are to be located outside the boundaries of the easement area.

PART III. Obligations of the Landowner. The Landowner shall comply with all terms and conditions of this easement, including the following:

A. Prohibitions. Without otherwise limiting the rights of the United States acquired hereunder, it is expressly understood that the rights to the following activities and uses have been acquired by the United States and, unless authorized by the United States under Part IV, are prohibited of the Landowner on the easement area:

1. Haying, mowing or seed harvesting for any reason;
2. Altering of woodland, wildlife habitat, or other natural features by burning, digging, plowing, disking, cutting or otherwise destroying the vegetative cover;
3. Dumping refuse, wastes, sewage or other debris;
4. Harvesting wood products;
5. Draining, dredging, channeling, filling, leveling, pumping, diking, impounding or related activities, as well as altering or tampering with water control structures or devices;
6. Diverting or causing or permitting the diversion of surface or underground water into, within, or out of the easement area by any means;
7. Building or placing buildings or structures on the easement area;
8. Planting or harvesting any crop;
9. Grazing or allowing livestock on the easement area;
10. Disturbing or interfering with the nesting or brood-rearing activities of migratory birds; and,
11. Receiving any disaster assistance from the Secretary of Agriculture.

B. Noxious Plants and Pests. The Landowner is responsible for noxious weed control and emergency control of pests as required by all Federal, State and local laws. A plan to control noxious weeds and pests must be approved in writing by the United States prior to implementation by the Landowner.

C. Fences. Except for establishment cost incurred by the United States and replacement cost not due to the Landowner's negligence or malfeasance, all other costs involved in maintenance of fences and similar facilities to exclude livestock shall be the responsibility of the Landowner.

D. Taxes. The Landowner shall pay any and all real property and other taxes and assessments, if any, which may be levied against the land.

E. Reporting. The Landowner shall report to the United States any conditions or events which may adversely affect the wetland, wildlife, and other natural values of the easement area.

PART IV. Allowance of Compatible Uses by the Landowner.

A. General. The United States may authorize, in writing and subject to such terms and conditions the United States may prescribe at its discretion, the use of the easement area for a compatible use, including, but not limited to, managed timber harvest, periodic haying, or grazing.

B. Limitations. Compatible use authorizations will only be made upon a determination by the United States, in the exercise of its discretion and rights, that the proposed use is consistent with the long term protection and enhancement of the floodplain, riparian, wetland, and other natural values of the easement area. The United States shall prescribe the amount, method, timing, intensity, and duration of the compatible use.

PART V. Rights of the United States. The rights of the United States include:

A. Management Activities. The United States shall have the right to enter unto the easement area to undertake, at its own expense or on a cost-share basis with the Landowner or other entity, any activities (including removal of levees or other hydrologic alteration) to restore, protect, manage, locate and mark the boundary, maintain, enhance, and monitor the floodplain and other values of the easement area, including the reach and flow of waters. The United States, at its own cost, may apply to or impound additional waters on the easement area in order to maintain or improve wetland and other natural values.

B. Access. The United States has a right of reasonable ingress and egress to the easement area over the Landowner's property, whether or not the property is adjacent or appurtenant to the easement area, for the exercise of any of the rights of the United States under this easement deed. The authorized representatives of the United States may utilize vehicles and other reasonable modes of transportation for access purposes. To the extent practical, the United States shall utilize the access identified in Exhibit B.

C. Easement Management. The United States may delegate all or part of the management, monitoring or enforcement responsibilities under this easement to any entity authorized by law that the United States determines to have the appropriate authority, expertise and resources necessary to carry out such delegated responsibilities. State or federal agencies may utilize their general statutory authorities in the administration of any delegated management, monitoring or enforcement responsibilities for this easement.

D. Violations and Remedies - Enforcement. The Parties agree that this easement deed may be introduced in any enforcement proceeding as the stipulation of the Parties hereto. If there is any failure of the Landowner to comply with any of the provisions of this easement deed, the United States or other delegated authority shall have any legal or equitable remedy provided by law and the right:

1. To enter upon the easement area to perform necessary work for prevention of or remediation of damage to floodplain or other natural values; and,

2. To assess all expenses incurred by the United States (including any legal fees or attorney fees) against the Landowner, to be owed immediately to the United States.

PART VI. General Provisions.

A. Successors in Interest. The rights granted to the United States shall accrue to any of its agents or assigns. All obligations of the Landowner under this easement deed shall also bind the Landowner's heirs, successors, agents, assigns, lessees, and any other person claiming under them. All the Landowners who are parties to this easement deed shall be jointly and severally liable for compliance with its terms.

B. Rules of Construction and Special Provisions. All rights in the easement area not reserved by the Landowner shall be deemed acquired by the United States. Any ambiguities in this easement deed shall be construed in favor of the United States to effect the floodplain, wetland, and conservation purposes for which this easement deed is being acquired. The property rights of the United States acquired under this easement shall be unaffected by any subsequent amendments or repeal of the Emergency Watersheds Program. If the Landowner receives the consideration for this easement in installments, the Parties agree that the conveyance of this easement shall be totally effective upon the payment of the first installment.

PART VII Special Provisions. The United States acknowledges the existence of several oil and gas wells on the easement area, the location of which is indicated on Exhibit A-2. The Landowner(s) agrees to indemnify the United States and agrees to indemnify, defend, and hold the United States harmless from any and all liabilities, claims, costs, expenses, fines, penalties, fees, actions or sanctions asserted by or on behalf of any person or governmental authority arising from or in connection with all oil and gas activities. The Landowner(s) hereby also agrees to

reimburse the United States for any damage to the easement resulting from oil and gas activities, including but not limited to damages resulting from the improper disposal of brine, sale, or sulfur bearing water, or any oil field waste produced in the operation of any oil or gas well. The Landowner(s) is responsible for the removal of any remaining oil production equipment and appurtenances and capping of the exposed wells when production of oil and gas ceases. The Parties agree that the oil and gas production activities wil be considered to have ceased, if the wells have failed to operate and produce any oil or gas for a period of one year.

TO HAVE AND TO HOLD, this Warranty Easement Deed is granted to the United States of America and its assigns forever. The Landowner covenants that he, she or they are vested with good title to the easement area and will warrant and defend the same on behalf of the United States against all claims and demands. The Landowner covenants to comply with the terms and conditions enumerated in this document for the use of the easement area and adjacent lands for access, and to refrain from any activity not specifically allowed or that is inconsistent with the purposes of this easement deed.

Dated this 21st day of May, 2002.

Witnesses:

Landowners:

Claude White
CLAUDE WHITE

Frieda White
FRIEDA WHITE

Acknowledgment

STATE OF Illinois)
) ss
COUNTY OF Williamson)

The foregoing instrument was subscribed, sworn to and acknowledged before me this _____ day of May 21, 2002, by Claude White and Frieda White, husband and wife.

(NOTARIAL SEAL)

Connie S McNew
Notary Public

My Commission Expires:

This instrument was drafted by the Office of the General Counsel, U.S. Department of Agriculture, Washington, D.C. 20250-1400.

OMB DISCLOSURE STATEMENT

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0578-0013. The time required to complete this information collection is estimated to average 0.69 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection information.

NONDISCRIMINATION STATEMENT

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (202) 720-5964.

EMERGENCY WATERSHED PROTECTION (EWP) CONSERVATION EASEMENT AREA

CLAUDE WHITE

EWP #75-5A12-9-8666

LAWRENCE COUNTY, ILLINOIS

EASEMENT DESCRIPTION

TRACT 1:

PARCEL A: The North Half (N ½); the South Half of the Southeast Quarter (S ½ SE ¼); the Northeast Quarter of the Southeast Quarter (NE ¼ SE ¼); the East Half of the Southwest Quarter (E ½ SW ¼); the Northwest Quarter of the Southwest Quarter (NW 1/4SW ¼); and all that part of the Southwest Quarter of the Southwest Quarter (SW ¼ SW ¼), situated East and North of the Embarras River, all in Section Twenty-seven (27), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

PARCEL B: Thirty-two (32) acres off the East side of the Northwest Quarter of the Southeast Quarter (NW ¼ SE ¼ of Section Twenty-seven (27), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

TRACT II:

The fractional Southwest Quarter (SE ¼) of Section Seventeen (17), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

TRACT III:

PARCEL A: The West One-Half (W ½) of the Northwest Quarter (NW ¼) of Section Twenty-one (21), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

PARCEL B: The Southeast Quarter (SE ¼) of the Northeast Quarter (NE ¼) of Section Twenty-one (21), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

PARCEL C: That part of land lying North of the Embarras River in the Northwest Quarter (NW ¼) of the Southwest Quarter (SW ¼) of Section Twenty-two (22), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

PARCEL D: The Southwest Quarter (SW ¼) of the Northwest Quarter (NW ¼) of Section Twenty-two (22), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

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1 of 4

TRACT IV:

PARCEL A: Commencing at the Northwest corn. of the fractional Southeast Quarter (SE ¼) of Section Twenty-one (21), Township Three (3) North, Range Eleven (11) West of the Second Principa: Meridian, thence East following the meanderings of the Embarras River 42 chains and 87 links, thence South 15 chains to the said River, thence up the meanderings of said river 26 chains and 82 links to the Northeast corner of Location One (1) aforesaid thence Wes: with the North line of said Location 21 chains and 50 links, thence

North 8 chains to the place of beginning, EXCEPT a tract containing nine and one-half (9 ½) acres, conveyed to Julius P. Gognat and Doris R. Gognat, as shown in Deed Record 143, pages 10-12, described as follows: All that part of the Fractional Northwest Quarter of the Southeast Quarter (NW ¼ SE ¼) of Section Twenty-one (21), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian, lying South of the Embarras River or more particularly described as follows: Commencing at the Northwest corner of the Fractional Southeast Quarter (SE ¼) of Section 21, Township 3 North, Range 11 West of the Second Principal Meridian for a place of beginning, thence South along the one-half section line of said Section 21, a distance of 528 feet to a point which falls on the North line of Location 1; thence East along the North line of Location 1 a distance of 1067.76 feet to the Southwesterly bank of the Embarras River; thence Northwesterly along the South and Westerly bank of the Embarrass River to the place of beginning.

PARCEL B: Beginning at a point on the South bank of the Embarras River, which is Twenty (20) chains and fifty-seven (57) links East and Eighty-five (85) links North of the Northeast corner of Location One (1), Township Three (3) North, Range Eleven (11) West; thence down said Embarras River on the South bank thereon with its meanderings Eighteen (18) chains and Eighty (80) links to the West line of the land owned by Alice J. Cassel or others thence South 17 chains to the North bank of the Embarras River; thence down the said Embarras River with its meanderings, Twenty-three (23) chains and Fifty (50) links; thence North Fifteen (15) chains to the place of beginning, being the middle part of the West Half of the Southwest Quarter (W ½ SW ¼) of Section Twenty-two (22), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

PARCEL C: The West Half (W ½) of the Southeast Quarter (SE ¼) of the Northwest Quarter (NW ¼) of Section Twenty-one (21), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

TRACT V:

PARCEL A: That part of the Southwest Quarter (SW ¼) of the Northeast Quarter (NE ¼) of Section Seventeen (17), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian, lying Southerly and Westerly of the Embarras River, more particularly described as follows:

Beginning at an iron pin at the Southwest corner of the Southwest Quarter (SW ¼) of the Northeast Quarter (NE ¼) of said Section 17; thence North 00 degrees 12 minutes 56 seconds West to the South bank of the Embarras River; thence Southeasterly along said bank to the South line of said Quarter Quarter; thence West along said South line to the point of beginning.

PARCEL B: That part of the Northeast Quarter (NE ¼) of the Southeast Quarter (SE ¼) and that part of the Southeast Quarter (SE ¼) of the Southeast Quarter (SE ¼), Section Seventeen (17), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian, lying Southerly and Westerly of the Embarras River, more particularly described as follows:

Beginning at an iron pin at the Southeast corner of said Section 17; thence West along the South line of said Section 17, 1331.84 feet to an iron pin at the Southwest corner of the Southeast Quarter (SE ¼) of the Southeast Quarter (SE ¼) of said Section 17; thence North 00 degrees 05 minutes 27 seconds West to the South bank of the Embarras River; thence Southeasterly along said bank to the East line of said Section 17; thence South 00 degrees 01 minutes 35 seconds West along said East line to the point of beginning.

PARCEL C: That part of the North Half (N ½) of the Northeast Quarter (NE ¼), Section Twenty (20), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian, lying Easterly and Northerly of the Old Channel of the Embarras River, more particularly described as follows:

Beginning at an iron pin at the Northeast corner of said Section 20; thence South 00 degrees 01 minutes 35 seconds West along the East line of said Section 20, 1320.00 feet to an iron pin; thence West to the East bank of the Old Channel of the Embarras River; thence Westerly, Northerly, Northeasterly, along said bank to the North line of Section 20; thence East along the North line of said Section 20 to an iron pin at the Northwest corner of the Northeast Quarter (NE ¼) of the Northeast Quarter (NE ¼) os said Section 20; thence continuing East 1331.84 feet to the point of beginning.

TRACT VI:

The Southwest Quarter (SW ¼) of the Southwest Quarter (SW ¼) of Section Twenty-three (23), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

TRACT VII:

The Northwest Quarter (NW ¼) of the Northwest Quarter (NW ¼) of Section Twenty-six (26), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

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TRACT VIII:

The South Half (S ½)) of the Southeast Quarter (SE ¼) of Section Twenty-two (22), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

TRACT IX:

PARCEL A: All that part of the Northeast Quarter of the Southeast Quarter (NE ¼ SE ¼) of Section Twenty-one (21), Township Three (3) North, Range eleven (11) West of the Second Principal Meridian, lying and being on the North side of the embarras River, being the same land conveyed to Charles Crews by deed recorded in Deed Record "20", at page 393, of the records of Lawrence County, Illinois, to which deed reference is made for all purposes.

PARCEL B: The fractional East Part of the South One-Fourth (S ¼) of the West One-Half (W ½) of the Northeast Quarter (NE ¼), East of the River, Section Twenty-one (21), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

PARCEL C: The East Half (E ½) of the Southeast Quarter (SE ¼) of the Northwest Quarter (NW ¼) and the Northeast Quarter (NE ¼) of the Northwest Quarter (NW ¼), all in Section Twenty-one 21), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

TRACT X:

The West One-Half (W ½) of the Southwest Quarter (SW ¼) of the Southwest Quarter (SW ¼) of Section Sixteen (16), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian, lying South of the Embarras River, nothing on the North side of the River.

Better described as the West One-Half (W ½) of Lot five (5) in Section 16, Township 3 North, Range 11 West of the Second Principal Meridian, lying South of the Embarras River.

TRACT XI:

The North Half (N ½) of the Northeast Quarter (NE ¼); the North Half (N ½) of the Southwest Quarter (SW ¼) of the Northeast Quarter (NE ¼), all in Section Twenty-one (21), Township Three (3) North, Range Eleven (11) West of the Seconds Principal Meridian.

TRACT XII:

The Northeast Quarter (NE ¼) of the Southwest Quarter (SW ¼); and the Southeast Quarter (SE ¼) of the Southwest Quarter (SW ¼), all in Section Twenty-two (22), Township three (3) North, Range eleven (11) West of the Seconds Principal Meridian.

TRACT XIII:

The East Half (E ½) of the fractional Northeast Quarter (NE ¼) of Section Twenty-eight (28), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian, EXCEPT the following: Beginning at the Southwest corner of said East Half (E ½) of the Northeast Quarter (NE ¼) of Section 28; thence South 01 degrees 50 minutes 11 seconds East on an assumed bearing along a projection to the South of the West line of the said East Half (E ½) of the Northeast Quarter (NE ¼) a distance of 165.06 feet to the centerline of the existing public road; thence South 51 degrees 56 minutes 49 seconds East along the said centerline of the existing public road a distance of 657.97 feet; thence continuing along said centerline in an Easterly direction along a curve concave to the North a distance of 247.04 feet, said curve having a central angle of 28 degrees 53 minutes 13 seconds and a radius of 490.00 feet; thence continuing along said centerline South 80 degrees 50 minutes 02 seconds East a distance of 28.61 feet; thence North 16 degrees 52 minutes 07 seconds East a distance of 337.02 feet to an iron pin; thence North 00 degrees 28 minutes 49 seconds East a distance of 610.64 feet to an iron pin; thence North 18 degrees 18 minutes 57 seconds West a distance of 620.84 feet to an iron pin; thence South 78 degrees 59 minutes 15 seconds West a distance of 135.29 feet to an iron pin; thence North 17 degrees 30 minutes 46 seconds West a distance of 490.52 feet to an iron pin; thence North 02 degrees 26 minutes 50 seconds East a distance of 446.86 feet to an iron pin; thence North 11 degrees 06 minutes 30 seconds West a distance of 458.78 feet to an iron pin; thence North 01 degrees 20 minutes 29 seconds East a distance of 191.90 feet to an iron pin; thence North 02 degrees 34 minutes 22 seconds East a distance of 214.54 feet to the North line of said Northeast Quarter (NE ¼) of Section 28, thence South 87 degrees 52 minutes [illegible] seconds West along the North line of the said Northeast Quarter (NE ¼) a distance of 430.8 feet to the Northwest corner of the said East Half (E ½) of the Northeast

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Quarter (NE ¼); thence South 01 degrees 50 minutes 11 seconds East along the West line of the said East Half (E ½) of the Northeast Quarter (NE ¼) a distance of 2579.65 feet to the point of beginning.

TRACT XIV:

The South Half (S ½) of the Northeast Quarter (NE ¼); the Northwest Quarter (NW ¼) of the Northeast Quarter (NE ¼); the Northeast Quarter (NE ¼) of the Southwest Quarter (SE ¼); the Southeast Quarter (SE ¼) of the Northwest Quarter (NW ¼); and all that part of the North Half (N ½) of the Northwest Quarter (NW ¼), situated and being East of the Embarras River, all in Section thirty-four (34), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

TRACT XV:

PARCEL A: Commencing at a point in the center of the Embarras River 24 rods North of the Southeast corner of Location Two (2) in Township Three (3) North, Range Eeven (11) West of the Second Principal Meridian; thence North on the East line of said Location 89 rods and 20 links; thence North 79 degrees West 36 rods, thence South 16 degrees East 32 rods; thence South 4 degrees East 12 rods; thence South 25 degrees East 54 rods to the place of beginning.

PARCEL B: Commencing at the Southeast corner of Location One (1) in Township Three (3) North, Range Eleven (11) West of the Seconds Principal Meridian; thence East Nineteen (19) chains and Ten (10) links; thence South five (5) chains to the Embarras River; thence down the River South Sixty-five (65) degrees West Three (3) chains; thence South Thirty (30) degrees West Four (4) chains and Sixty-five (65) links, West Four chains North Fifty-five (55) degrees West Twelve (12) chains; thence North Two (2) chains and Sixty-five (65) links to the place of beginning.

TRACT XVI:

PARCEL A: All that part of the Southwest Quarter of the Southwest Quarter (SW ¼ SW ¼) lying South of the Embarras River in Section Twenty-two (22), Township Three (3) North, Range Eleven (11) West of the Second Principal Meridian.

PARCEL B: All that part of the fractional Southeast Quarter, situated South and East of the Embarras River, known and described on the tax books of Lawrence County, Illinois, as the North Half (N ½) of the fractional Southeast Quarter, all in Section Twenty-one (21), Township Three (3) North, Range Eleven (11) of the Second Principal Meridian.

EXCEPT FROM ALL THE ABOVE THE FOLLOWING DESCRIBED REAL ESTATE, TO-WIT:

Beginning at the Southwest corner of the North Half (N ½) of the Southwest Quarter (SW ¼) of the Northeast Quarter (NE ¼) of Section 21, Township 3 North, Range 11 West of the Second Principal Meridian; thence East 342 feet; thence North 43 degrees West 449.8 feet; thence South 366.5 feet to the place of beginning, containing 1.25 acres;

ALSO EXCEPTING a strip of land 250 feet wide, 125 feet on each side of the following described center line: Beginning at a point 800 feet East of the center of Section Thirty-four (34) in Township Three (3) North, range Eleven (11) West of the Second Principal Meridian; thence North 21 degrees 25 minutes West a distance of 4951.1 feet to a point of the curve; thence to the left by a curve, radius of which is 2864.93 feet, a distance of 889.15 feet to the point of tangency; thence tangent to the above named curve, North 39 degrees 12 minutes West a distance of 1558.8 feet to a point of curve; thence by a curve to the right, the radius of which is 3819.83 feet, a distance of 735.33 feet to a point of tangency; thence tangent to the above named curve North 28 degrees 10 minutes West, a distance of 978.3 feet to a point; thence North 25 degrees 25 minutes a distance of 2402 feet to a point in the property line, being the center line of the original channel of the Embarras River, in the Southeast Quarter (SE ¼) of Section Twenty-one (21) in Township three (3) North, Range Eleven (11) West, containing 66.12 Acres, more or less, containing in all 67.37 acres, more or less, which has heretofore been conveyed to the Ambraw River Drainage District to be used as the right-of-way for the construction and maintenance of an outlet ditch, for the said Ambraw River Drainage District, extending from the Baltimore & Ohio Railroad Bridge at and near the City of Lawrenceville, Illinois, to the mouth of the Ambraw where it enters the Wabash River.

ALL SITUATED IN THE COUNTY OF LAWRENCE, IN THE STATE OF ILLINOIS.

TOTAL EWP EASEMENT AREA CONSISTS OF 1911.9 ACRES, MORE OR LESS

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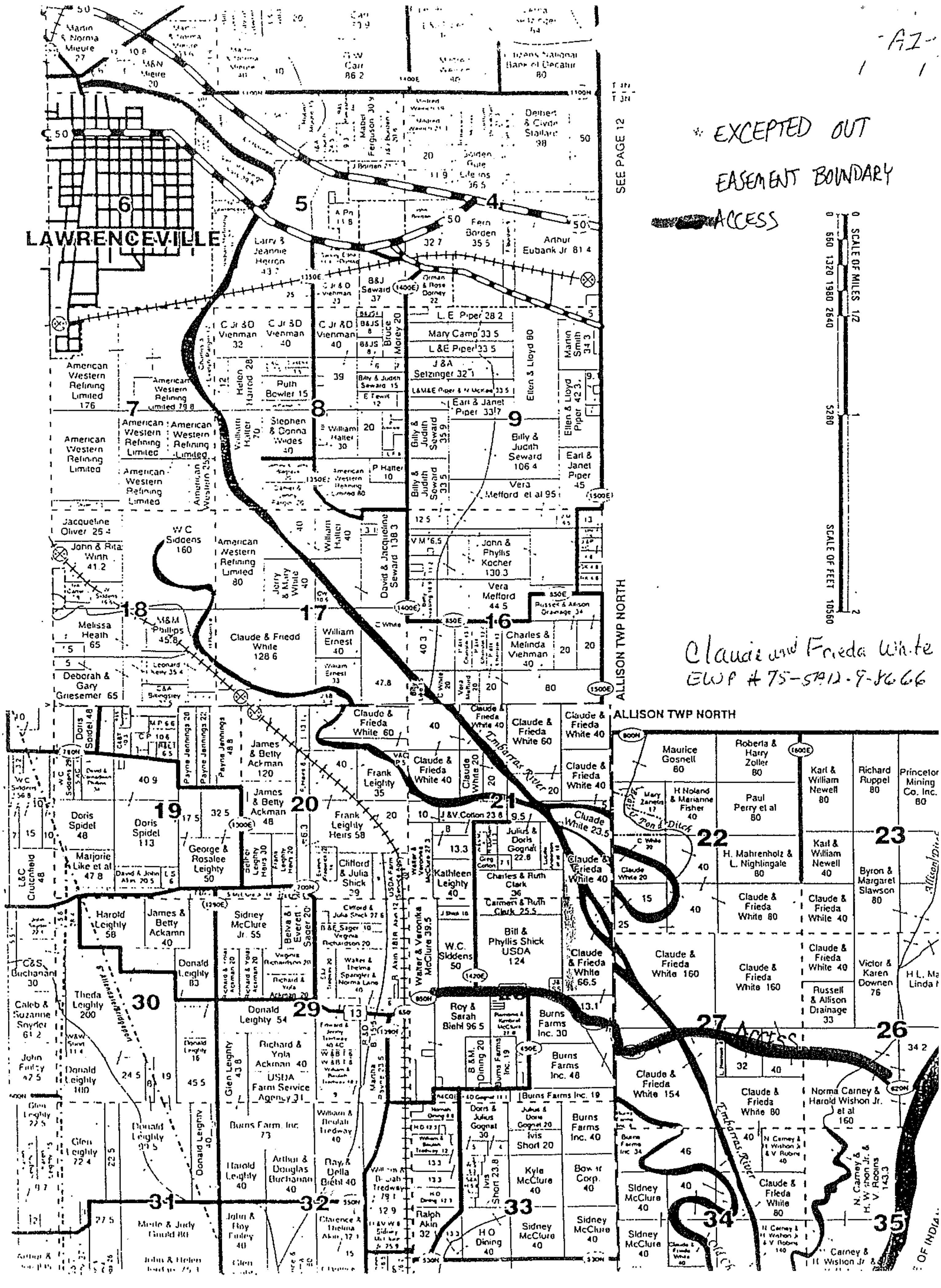
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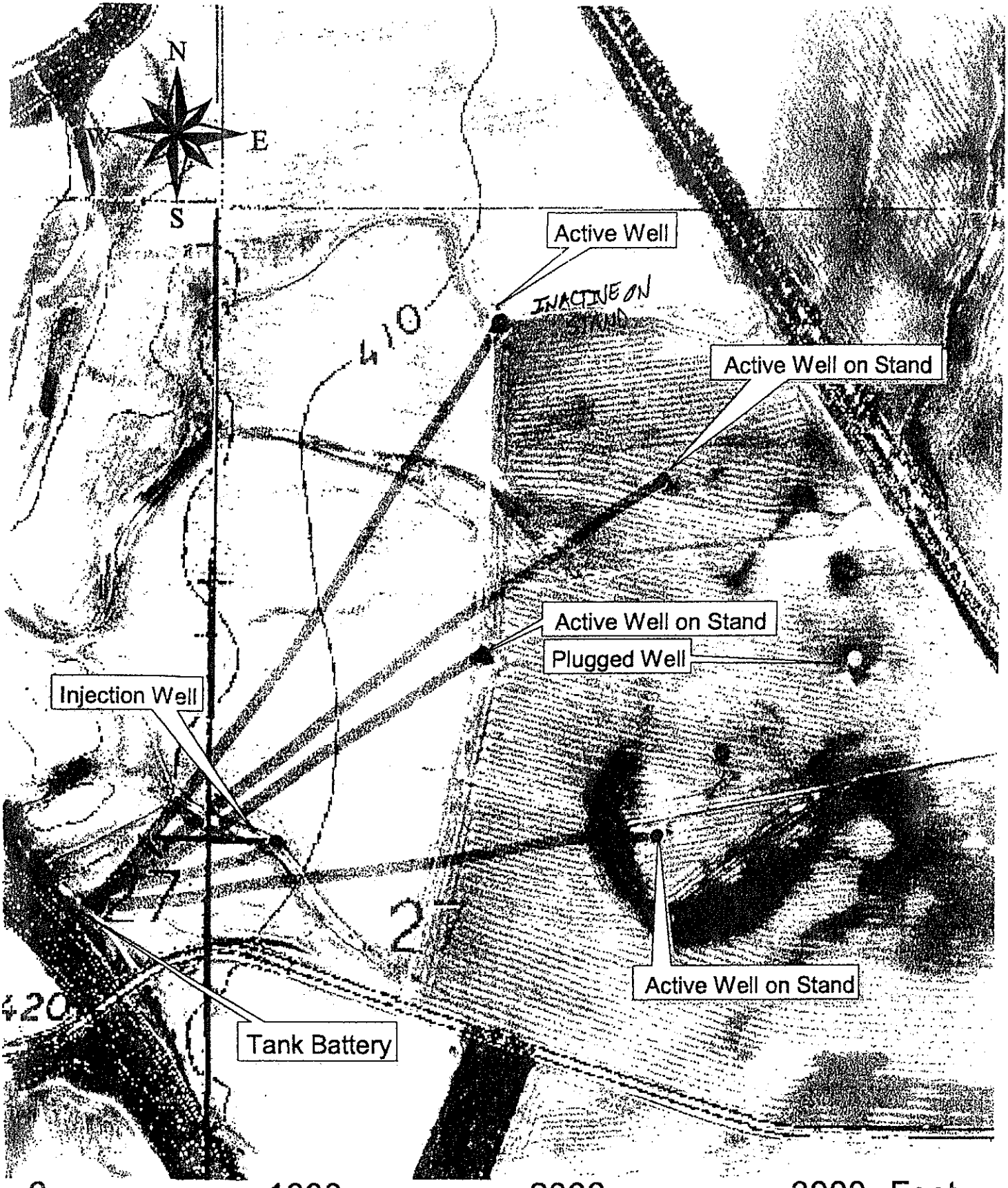
* EXCEPTED OUT
EASEMENT BOUNDARY
ACCESS
Claude and Frieda White
EWP #75-5A12-9-8666
LAWRENCEVILLE
SEE PAGE 12
ALLISON TWP NORTH
SCALE OF MILES
SCALE OF FEET
Embarras River
ACCESS



Oil Well Activitiy on Claude White EWP Easement Lawrence County, IL