

**DRAFT FINDING OF NO SIGNIFICANT IMPACT**

**GRAND RIVER ECOSYSTEM RESTORATION STUDY**  
**FEASIBILITY REPORT AND INTEGRATED ENVIRONMENTAL ASSESSMENT**

**LOWER GRAND RIVER SUB-BASIN, MISSOURI**

The U.S. Army Corps of Engineers, Kansas City District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Integrated Feasibility Report and Environmental Assessment (IFR/EA) dated **8 October 2019**, for the Grand River Ecosystem Restoration Study addresses Ecosystem Restoration opportunities and feasibility in the Lower Grand River Sub-Basin, Missouri. The final recommendation is contained in the report of the Chief of Engineers, dated **Day Month, Year**.

The Final IFR/EA, incorporated herein by reference, evaluated various alternatives that would achieve ecosystem restoration benefits in the study area. The recommended plan is the National Ecosystem Restoration (NER) Plan and includes:

- **Locust Creek (LC) Study Area**
  - Acquire approximately 1,394 acres of existing private land.
  - Construct an approximate 1.5 feet tall diversion berm across Locust Creek and the floodplain, requiring approximately 1,525 cubic yards native soil excavation and 438 cubic yards of rock backfill.
  - Raise existing levees around the proposed sediment detention basin to 6 feet in height with rock armoring on west and north spillway areas.
  - Construct a 100 feet wide diversion channel at the entrance of the proposed sediment detention basin and a 25 feet wide pilot channel within the basin.
  - Notch portions of the levee along the east bank of Locust Creek and at 6 levee locations within the proposed sediment detention basin.
  - Incorporation of woody debris, log capture features within the proposed sediment detention basin with access roads to acquire collected material.
  - Construct three 6 feet by 6 feet concrete box culverts on the south side of the proposed sediment detention basin.
  - Construct grade control structures north of the proposed diversion channel, south of the diversion berm, along Higgins Ditch, and upstream of the confluence of Muddy Creek and the sediment basin. The Higgins Ditch grade control would require approximately 12,000 cubic yards of fill material, 360 feet of bank stabilization with 260 cubic yards of rock material.
  - Approximately 23,500 feet of Locust and Muddy Creeks would be dredged with use of fill material for levee raises and habitat enhancements.
  - Use of dredged spoil material to create guide swales or flowage berms that are approximately 1 foot high, 200 feet wide, with a 10:1 slope, at approximately 100 feet from Locust Creek. Flowage berms and massasauga rattlesnake habitat would require approximately 105,800 cubic yards of native soil fill material.
  - Partial removal and approximate 4 feet lowering of a levee separating the east and west side of the Locust Creek floodplain and south of Highway 36.
  - Incorporation of approximately 316 stream bank stabilization projects in the upper basin of Locust Creek. Soil bioengineering and rip-rap stabilization techniques would be incorporated at each site.

- **Fountain Grove (FG) Study Area**

- Place rip-rap armoring along the Jackson's Ditch stream bank, downstream of the Pool 3 Levee Water Control Structure.
- Replace Pool 1 Water Control Structure #1 with two sluice gates and 96-inch PVC pipes.
- Construct a new north/south levee on the west side of Fountain Grove to prevent Parsons Creek flows lower than the 1.2 year recurrence from entering Fountain Grove. Higher Parsons Creek flows would be directed towards a controlled overtopping point into a conveyance channel.
- Construct a flood flow conveyance channel through Pools #1-3 to Jackson's Ditch. The feature would also serve as a water distribution channel and provide aquatic habitat.
- Relocate the Pool #2-3 levee closer to the existing pump station and construct an additional levee within Pool #3 to allow independent water control.
- Setback the existing northeast levee along Locust Creek to increase flood resiliency.
- Remove part of the Chillicothe-Brunswick railroad berm that is no longer in service.
- Enhance existing micro-topography in west Fountain Grove pools #1-3 through the creation of sloughs and habitat mounds. Spoil from drainage channel excavation would be used to form the habitat mounds.
- Conduct micro-topography work and removal of existing Water Control Structures in east Fountain Grove pools to increase wetland habitat value and water management.
- Construct a new drainage ditch from the proposed Parsons Creek levee to the Fountain Grove pump station to allow drainage of Pool 1.
- Install two new electric groundwater pumps within south Fountain Grove to provide a water source for emergent wetland habitat.

- **Yellow Creek (YC) Study Area**

- Setback the existing levee located adjacent to Yellow creek and the U.S. Fish and Wildlife Service, Swan Lake National Wildlife Refuge.
- The levee setback would include removal of the existing levee footprint, construction of a new levee farther to the north and away from Yellow Creek, and raising a portion of existing levee.
- Removal and replacement of 3 existing culverts within the existing levee footprint with 3 new 3-foot diameter concrete culverts with flap gates at the new levee setback location.

### **Alternatives Considered:**

In addition to a "no action" plan, 26 Locust Creek, 50 Fountain Grove, and 13 Yellow Creek alternatives were evaluated.<sup>1</sup> The alternatives included a wide array of proposed ecosystem restoration measures at each of the three study areas to address problems associated with flooding, sedimentation, log jams, avulsions, river de-watering, and associated loss of emergent wetland, bottomland forest, wet prairie, and aquatic riverine habitats. Section 4.0 of the IFR/EA, entitled "Formulation and Evaluation of Alternative Plans", provides the detailed information for the alternative formulation process and rationale used for final selection of the Tentatively Selected Plan (TSP).

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<sup>1</sup> 40 CFR 1505.2(b) requires a summary of the alternatives considered.

For Locust Creek, alternatives included construction of berms or barriers to divert flow, creation of new channels, dredging and filling of existing channels, various sediment detention basin locations and configurations, an upper basin reservoir, and combinations of upper basin stream bank stabilization sites. The recommended restoration plan was identified as LC 15, which included construction of four primary features: a diversion berm and large sediment detention basin to the east of Locust Creek to remove logs/sediment and divert flows from the current avulsion on Higgins Ditch to the historic Locust Creek channel, addition of grade control on Higgins Ditch to prevent head-cutting and capture additional sediment above Highway 36, and dredging a portion of Locust and Muddy Creeks to restore base flow channel capacity. For the Locust Creek study area, an additional risk based analysis was performed due to the uncertainty with existing and future sediment loads in the watershed. The assessment looked at a range of 95 to 2,212 upper basin stream bank stabilization sites to be included with the recommended plan, Alternative LC 15. The risk assessment identified Alternative 15.25 as the NER plan at Locust Creek, which included the measures identified above and the addition of 316 upper basin stream bank stabilization sites to reduce approximate 14% of the quantified risk associated with sediment loads.

A number of different restoration measures were developed for East, West, and South Fountain Grove emergent wetlands that included changes to water control structures, modifications to existing levees, micro-topography work, drainage changes, and infrastructure improvements. The combinations of different restoration measures within each of the three areas were assessed, and Alternative FG 37.5 was identified as the recommended and NER plan at Fountain Grove. Alternative FG 37.5 provided the greatest operational capability and flexibility relative to management of emergent wetlands, and provided the greatest reduction in long-term sedimentation and flooding, which resulted in the highest amount and quality of emergent wetland and bottomland hardwood habitat in the three areas.

For Yellow Creek, different levee setback areas and configurations were examined along with removal of existing flow impediments. Alternative YC 11 was identified as the recommended and NER plan. This was the only plan to reduce the impacts of inundation and sedimentation on native habitat and also avoid planning constraints associated with flood risk management. Implementation of YC 11 would require action and investment by the U.S. Fish and Wildlife Service as the proposed levee setback is located on existing Federal property.

The combination of NER plans from the three study areas resulted in a Tentatively Selected Plan (TSP) that included Alternative LC15.25 for Locust Creek, Alternative FG 37.5 for Fountain Grove, and Alternative YC 11 at Yellow Creek. Based on August 2019 price levels, the total Federal project cost was estimated at \$130,246,100. Habitat units were used to measure the quality and quantity of bottomland forest, emergent wetland, wet prairie, and aquatic riverine habitat within the three study areas over the 50 year project life. Habitat modeling results indicated that the TSP would provide a net gain of approximately 2,538 average annual habitat units (AAHUS) as compared to the No Action Alternative or future without project condition.

### **Summary of Potential Effects:**

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the TSP are listed in Table 1 below. See Section 2.0 “Existing Conditions and Affected Environment”, Section 3.0 “Future Without Project Condition”, and Section 5.0 “Environmental Consequences” of the IFR/EA for a detailed description of existing human and natural resources, future without project conditions, and potential environmental consequences associated with the TSP.

**Table 1: Summary of Potential Adverse Effects of the TSP**

|  | Insignificant effects               | Insignificant effects as a result of mitigation* | Resource unaffected by action       |
|--|-------------------------------------|--|-------------------------------------|
| Aesthetics                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Air quality                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Aquatic resources/wetlands                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Invasive species                               | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Fish and wildlife habitat                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Threatened/Endangered species/critical habitat | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Historic properties                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Other cultural resources                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Floodplains                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Hazardous, toxic & radioactive waste           | <input type="checkbox"/>            | <input type="checkbox"/>                         | <input checked="" type="checkbox"/> |
| Hydrology                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Land use                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Navigation                                     | <input type="checkbox"/>            | <input type="checkbox"/>                         | <input checked="" type="checkbox"/> |
| Noise levels                                   | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Public infrastructure                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Socio-economics                                | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Environmental justice                          | <input type="checkbox"/>            | <input type="checkbox"/>                         | <input checked="" type="checkbox"/> |
| Soils  | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Tribal trust resources                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Water quality                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Climate change                                 | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Flood Risk                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Recreation                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |
| Prime and Unique Farmlands                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>                         | <input type="checkbox"/>            |

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the proposed TSP. Best management practices (BMPs) as detailed in the IFR/EA will be implemented, if appropriate, to minimize impacts.<sup>2</sup> All of the proposed TSP restoration measures were formulated to benefit the ecosystem, priority habitat, and fish & wildlife resources in the study areas. Therefore, the TSP would result in net increases in AAHUs for the priority habitat types, which represents direct beneficial effects. Other resource categories that would have short-term and long-term beneficial effects from the TSP include: local aesthetics, hydrology, hydraulics, soils, water quality, prime farmlands, socioeconomic, local infrastructure, recreation, and area floodplains. Resources that would be unaffected from the proposed TSP either because the resource was not present or the proposed restoration measures would not have a negative impact on the resource, included: hazardous toxic & radioactive waste, navigation, and environmental justice communities.

Minor, insignificant effects to the following resources would be avoided, minimized with Best Management Practices (BMPs) or mitigated as possible:

<sup>2</sup> 40 CFR 1505.2(C) all practicable means to avoid and minimize environmental harm are adopted.

- Water Quality – The proposed project could result in minor short-term adverse impacts to local water quality due to ground-disturbing construction activities that could increase erosion, water surface runoff, and stream turbidity. BMPs would be implemented during and following construction to reduce potential negative effects to water quality. Disturbed areas would be replanted with native plant species to avoid bare ground and exposed soils. Existing suspended sediment loads in the study area streams are high and the TSP would result in beneficial impacts by reducing sediment loads in the study area.
- Threatened/Endangered species/critical habitat – Any necessary tree clearing would be restricted to the non-active period of November 1 to March 31 to avoid any impacts to federally-listed bat species.
- Invasive Species – During construction, BMPs would be implemented to reduce spread of invasive species such as reed canary grass while construction areas are being disturbed. All previously used construction equipment would be required to be cleaned prior to being brought onto construction sites.
- Land Use – The proposed Locust Creek sediment detention basin would require fee property acquisition of approximately 1,394 acres of land that is primarily in agricultural use. Land owners would be compensated at fair market property value and purchased lands would transition into natural habitat over the project life. This represents a less than 5% change in the amount of cultivated land existing in the focused study area; and would be a much smaller percentage when considered at the sub-basin scale. As a result, this is considered a minor long-term impact.
- Flood Risk Modeling indicates there would be induced flooding on 10 adjacent private parcels, totaling 206 acres, as a result of LC15 representing localized long-term adverse impacts. The affected private parcels are agricultural lands. Due to the depth, duration, and frequency of the impacts, USACE would mitigate these impacts by acquiring flowage easements from the affected landowners (Appendix E, Real Estate Plan).
- Cultural Resources – Due to the potential to effect unknown, buried cultural resources with proposed ground-disturbing activities, a Programmatic Agreement (PA) to fulfill responsibilities under the National Historic Preservation Act (NHPA) will be executed as part of the TSP. The Missouri State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), federally recognized Native American Tribes, and other interested parties are invited to participate in the development of the PA. The official correspondence on the PA is included in Appendix H Agency/Public Coordination.
- Recreation – Hunting, bird watching, hiking, and other recreational activities within the study areas would have short-term minor adverse impacts due to disruption from construction activities. Recreational activities and access would be limited during construction to avoid potential life health and safety issues. Beneficial long-term impacts to recreation would be anticipated for all TSP measures.

No additional compensatory mitigation is required as part of the recommended plan.

Public review of the draft IFR/EA and FONSI was completed on Day Month, Year. All comments submitted during the public review period were responded to in the Final IFR/EA and FONSI. A 30-day state and agency review of the Final IFR/EA was also completed on Day Month, Year.

#### **OTHER ENVIRONMENTAL AND CULTURAL COMPLIANCE REQUIREMENTS:**

Endangered Species Act (ESA) – Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan

may affect but is not likely to adversely affect the following federally listed species or their designated critical habitat: gray bat, Indiana bat, and northern long-eared bat. A determination of no effect was made for the pallid sturgeon. The U.S. Fish and Wildlife Service (FWS) concurred with the Corps' determination on Day Month, Year. Appendix J of the EA includes a Biological Assessment prepared for the TSP and consultation with FWS.

Fish and Wildlife Coordination Act (FWCA) – The TSP would result in beneficial long-term impacts to fish and wildlife resulting from an increase in the quantity and quality of habitat. The TSP would also include construction of features that would result in ground disturbance and/or tree clearing. Fish and wildlife within proximity to project features would experience short-term direct adverse impacts from construction activities and/or short-term indirect adverse impacts from construction-related noise or disturbance. These impacts are anticipated to be negligible to minor. Appendix I includes the Draft Fish and Wildlife Coordination Act Report prepared by the FWS in coordination with the state natural resource agencies. It describes agency views on the effects of the project to fish and wildlife resources in the study area.

National Historic Preservation Act (NHPA) – Pursuant to section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that there is potential to affect historic properties by the TSP. The Corps has invited the Missouri SHPO, ACHP, federally recognized Native American Tribes, and other interested parties to participate in the development of a Programmatic Agreement (PA), dated Day Month, Year. All terms and conditions resulting from the agreement shall be implemented in order to minimize adverse impacts to historic properties.<sup>3</sup> The PA approach to Section 106 compliance is applicable because: 1) the exact location of upstream bank stabilization projects is not known at this time and 2) there is potential for future flood events and sedimentation to cause changes in the final design, footprint, and TSP components during pre-construction engineering and design (PED). The official correspondence to date on the PA is included in Appendix H of the EA.

Clean Water Act of (CWA) – Pursuant to the Clean Water Act of 1972, as amended, there is potential for discharge of dredged or fill material associated with the TSP. Project features such as the diversion berm, stream dredging, grade control, and bank stabilization projects would require in-channel construction activities. Direct impacts on water quality would be minor, short-term, and adverse during construction from increased turbidity and potential for sediment or other construction-related pollutant to enter a water body. BMPs would be implemented to minimize the incidental fallback of material into a waterway and to minimize the introduction of fuel, petroleum products, or other deleterious material. A 404(b)(1) assessment (404(b)(1) Guidelines, 40 CFR 230) was completed, included in Appendix K of the EA, and will be the basis for application for a Section 401 water quality permit from the Missouri Department of Natural Resources (MoDNR) prior to construction. In a letter dated Day Month, Year, the MoDNR stated that the TSP appears to meet the requirements of the water quality certification, pending confirmation based on information to be developed during the pre-construction engineering and design phase. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

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<sup>3</sup> Required by 36 CFR 800.6(c)(3) meeting the terms and conditions of the MOA<sup>4</sup> 40 CFR 1505.2(B) requires identification of relevant factors including any essential to national policy which were balanced in the agency decision.

**FINDING:**

Technical, environmental, and cost effectiveness criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives.<sup>4</sup> Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.<sup>5</sup>

\_\_\_\_\_  
Date

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William C. Hannan, Jr.  
Colonel, Corps of Engineers  
District Commander

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<sup>4</sup> 40 CFR 1505.2(B) requires identification of relevant factors including any essential to national policy which were balanced in the agency decision.

<sup>5</sup> 40 CFR 1508.13 stated the FONSI shall include an EA or a summary of it and shall note any other environmental documents related to it. If an assessment is included, the FONSI need not repeat any of the discussion in the assessment but may incorporate by reference.