

# SCOPE OF SERVICES ENGINEERING DESIGN PROJECT

## **LAKE AND RIVER ENHANCEMENT (LARE) PROGRAM INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF FISH AND WILDLIFE**

### **I. Project Purposes:**

The purposes of the Engineering Design project include:

1. Prepare a complete physical design(s) that is ready to move to the construction phase
2. Ensure project success through necessary communication with permitting agency staff and affected landowner.

### **II. Project Tasks:**

The scope of services outlined below should be considered a draft that is subject to revision prior to the final contract, based on discussion with the LARE staff, and the sponsoring local organization.

1. Identify boundaries of the project site(s)

Determine exact site locations for proposed structures and other design elements. Record the 12 digit HUC (Hydrologic Unit Code). Record the location of proposed measures using Latitude and Longitude Coordinates expressed in decimal degrees, using NAD 1983 Datum. If the project is for a lake as a whole, note the location of the outlet or lowest elevation in the lake or river watershed within the project's proposed bounds.

Generate appropriate maps and drawings for discussion purposes.

2. Complete engineering/calculations

Complete all necessary engineering computations to generate a workable design including surveying and mapping, soil borings and geotechnical analyses, hydrologic and hydraulic analyses and all associated calculations (if not previously completed in the feasibility phase).

3. Complete early coordination process for obtaining all project permits including USACE, IDEM, USFWS, IDNR, County Drainage Boards, and pertinent citizen organizations.

Coordinate review of the preliminary design plan with all pertinent agencies and institutions in order to facilitate issuance of all necessary permits (if permits not previously secured in the feasibility phase). This includes meeting with affected

landowners to discuss specific design elements and expected results.

#### 4. Project progress reporting

Issue monthly progress reports for the duration of the project. Copies of progress reports must be submitted to the project sponsor and LARE program staff.

#### 5. Complete design drawings

Develop plan sheet drawings of all proposed sites and structures (including plan view and/or cross sectional details).

#### 6. Determine construction cost estimates and timelines

Develop cost estimates for the construction phase of the project if built to the specification developed under the current design. Specify appropriate seasonal timing for construction to begin.

#### 7. Confirm easements and land availability

Determine all necessary project property easements including those for construction ingress, egress and flooding. This task also includes obtaining land rights sufficient for the purpose of construction and inspection (if not previously completed in the feasibility phase).

#### 8. Complete a flood stage analysis if determined necessary.

Complete a hydraulic computer model illustrating flood profiles sufficient for the purpose of securing necessary project permits (if not previously completed in the feasibility phase).

#### 9. Model functionality and/or impact of proposed project with respect to condition of the lake or stream

Use the Region 5 model to estimate the amount of nutrients reduced and soil saved by the proposed project relative to contributions from other watershed sources and characteristics of the proposed project.

#### 10. Conduct a wetland functional assessment or vegetation survey.

Conduct a preliminary survey to identify and give approximate distribution maps for wetland vegetation existing at locations that may be affected by the project, as well as predicted distributions of plantings included in project design. An appropriate field method for wetland functional assessment should be used to estimate the level of ecological benefit and impact predicted from the project.

## 11. Complete engineering design report

This task includes completion of a bound engineering design report illustrating no less than the following:

- a. Executive Summary.
- b. A statement of project purpose.
- c. A general overall project description.
- d. A heading and summary for each project task with accompanying appendices if necessary. The appendices should include (if applicable) but are not limited to:
  - 1) All pertinent data, including field sheets.
  - 2) Engineering calculations.
  - 3) Computer model input and output.
  - 4) Geotechnical investigation information.
  - 5) All pertinent and appropriate project correspondence.
  - 6) Necessary maps, charts, graphs, computations and computational breakdowns.
  - 7) Pertinent meeting agendas, attendance lists and agreements.
- e. Final plan sheets.

### **III. Data Presentation:**

1. Raw data sheets need not be bound into each copy of the report. However, at a minimum, one set of all design and field data must be submitted to the LARE program office to aid in the review of the draft report and plan sheets.
2. Presentation of data in English units with metric units in parenthesis is preferred. Example: 5 ft (1.5m).

### **IV. Review Process:**

1. Four (4) **hard copies** and **three (3) electronic copies** (in either MS-Word or Adobe PDF format) of the draft report and plan sheets must be provided to the LARE program office for review by the local sponsor, LARE staff, county SWCD and Drainage Board. Where the project area covers more than one county, two (2) additional copies of the report and plan sheets should be supplied for each additional county.
2. The LARE staff will forward two (2) copies of the draft report and plan sheets to the local sponsor for review.

3. Both draft and final report must be reproduced with two-sided pages for hard copies and presented as a single electronic file in MS-Word or Adobe PDF format, suitable for posting to the LARE website.
4. The titles of the draft report and plan sheets must refer to the report as a “draft” version. Additionally, each page of the draft report and plan sheets must be labeled “Draft - Subject to Revision.”
5. To facilitate review of the draft report and plan sheets, a meeting between a representative of the local sponsor, consultant, and LARE staff will be held to discuss the review comments. This meeting will be coordinated by LARE staff.
6. Upon addressing the review comments, four (4) copies of the final report and plan sheets must be provided to the LARE office. Three (3) digital copies in either MS-Word or Adobe PDF format must also be submitted. Where the project area covers more than one county, two (2) additional copies of the report and plan sheets should be supplied for each additional county involved.
7. Both draft and final reports must be reproduced with two-sided pages for hard copies and as a single electronic file in Microsoft Word or Adobe .pdf format, suitable for posting to the LARE website.

Follow these guidelines for electronic copies:

- a) Electronic file names must follow this protocol:  
Draft\_Name\_Lake\_Name\_County\_Eng\_Design\_Project\_Month\_Year.pdf
- b) All electronic copies must contain the complete digital copy of the full report including appendices, figures, maps and photos in either Microsoft Word<sup>®</sup> or Adobe PDF<sup>®</sup> format as a single electronic file. Do not prepare multiple files that need to be merged into one file for web posting.
- c) Keep file sizes as small as possible to facilitate email exchange and downloading by adjusting pixel size on graphics, compressing photos, or exporting GIS files to pdf or jpeg formats.