

DRAFT

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MILWAUKEE, WISCONSIN

August 13, 2013

Betsy Duckert, P.E.
Principal Civil Engineer
Lake County Division of Transportation
669 W. Winchester Road
Libertyville, IL 60048

Proposal No.: 13-0172 (Revised)

Re: Revised Proposal for Alternative Concept Plan Feasibility Study and Final Engineering
Buffalo Creek Forest Preserve Wetland Mitigation

Dear Ms. Duckert:

Hey and Associates, Inc. is pleased to present our revised proposal for the development of a concept feasibility study, and the preparation of final engineering plans and specifications for the wetland mitigation site at the Buffalo Creek Forest Preserve property. This is in follow up to our April 25, 2013 review of the plans and cost estimate for the original wetland mitigation bank design, and our revised July 3, 2013 proposal that included final engineering design costs. This proposal responds to your request for minor revisions. We propose the following scope of services.

MITIGATION BANK PROSPECTUS PHASE

This phase will provide a detailed evaluation of the potential to obtain wetland banking credits at the referenced site at a lower per-acre cost than was proposed in the original Lake County Streamwater Management Commission (LCSMC) plans dated April 12, 2013. The major tasks are described below.

WETLAND MITIGATION BANK SITE ASSESSMENT

1. Prepare a site-based inventory of hydric soils on the site, including mapping of poorly and somewhat poorly drained soils (if not available from LCIDOT). This work to be performed by a certified soil classifier.
2. Review drain tile survey information from Huddleston McBrade
3. Review existing conditions hydrology assessment by Block Engineering
4. Assess offsite hydrologic constraints

- a. Augment Huddleston McBrade file information with information extending north of Checker Road.

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- a. Perform supplemental topographic survey for adjacent basement elevations and Sentinel Lake outlet.
- b. Interview adjacent property owner to obtain anecdotal flooding and sump pump issues and concerns.
- c. Convert Block Engineering model from HEC-1 to XPSWMM to better account for tile flow, tailwater conditions, time to drawdown, etc. and prepare updated existing conditions model and with-bank (proposed) conditions model based on the concept plan
- d. Review existing site topography
- e. Review existing wetland delineation and field check for accuracy with current conditions
- f. Prepare a concept plan for wetland mitigation that minimizes earthwork/grading, and maximizes use of existing hydric soils
- g. Conduct analysis of concept plan to determine if:
 - a. Desired credit acreage can be achieved
 - b. Site selection requirements of Interagency Coordination Agreement (ICA) are met
 - c. Proposed condition hydrology will adequately support wetland vegetation
 - d. Preliminary cost opinion compares favorably with previous design
- h. Meet with client and present concept plan and analysis results

WETLAND MITIGATION BANK PROPOSAL (upon client approval)

1. Revise concept plans for wetland mitigation bank based on initial client meeting and review
2. Determine if concept plan will meet all requirements of the current mitigation banking ICA for the Chicago District USACE.
3. Prepare conceptual wetland mitigation bank engineering as necessary to:
 - a. Refine grading and drainage plans
 - b. Refine with-bank conditions hydrologic analysis
4. Meet with Interagency Review Team (IRT) and the Lake County Forest Preserves to determine concept plan viability for permitting and approval from agencies.

WETLAND MITIGATION BANK PROSPECTUS (upon client approval)

1. Certified Wetland Delineation – including documentation for a final on-site wetland delineation for Corps of Engineers and LCSMC certification, and farmed wetland determinations. This work has already been completed by LCSMC and is not included in this scope of services.

2. Conceptual Bank Engineering - complete necessary concept level engineering plans for mitigation bank refined as needed based on comments and input from resource and permitting agencies.
3. Prepare planting plans and cost opinions
4. Pro Forma for Mitigation Banking - work with LCDOT to prepare a financial pro-forma using unit costs and refined conceptual engineering results
5. Preparation of the Application for a Wetland Mitigation Bank - complete an application to the USACE for the wetland mitigation bank using the conceptual engineering and including technical information to satisfy the following sections of the ICA:
 - a. Section 6 - Site Selection Criteria
 - b. Section 7 - Feasibility
 - c. Section 10 - Establishing Credits
 - d. Section 12 - Bank Operations
 - e. Section 13 - Long Term Management

Most of the remaining sections of the ICA not listed above are primarily legal or administrative in nature and would be completed by the client.

CONSTRUCTION DOCUMENT PHASE

Should the per-acre cost estimated in the Mitigation Bank Prospectus Phase meet LCDOT's cost objectives, we would proceed to the construction document phase. The construction document scope and approach is derived from the standards required by the Lake County Forest Preserves.

CONSTRUCTION DOCUMENT CONTENTS

The Plan Set will generally consist of the following:

The drawings shall illustrate all information required to permit, bid and construct the project. All hand survey elements shall be included on the appropriate sheets. Upon the completion of this contract, the consultant shall deliver to the Owner the complete plan set and contract documents in both AutoCAD 2012 format and as a PDF file with all sheets formatted per the final "for Construction" plan set and containing the stamp of the Professional Engineer. At minimum, the plan set should include:

1. Cover Sheet with project name, project number, location map, and index of sheets, information required by permitting agencies, date and stamp of the Professional Engineer.
2. General Notes, Construction Notes and Permitting Notes
3. Overall Trail Plan(s) showing trail layout, property lines, roads, access points, wetlands, a plan and profile sheet key, control locations and station data.

4. Trail Plan and Profile sheets with a horizontal scale no greater than 1" = 50' and showing the proposed trail with stationing, one foot existing and proposed topography, culverts, swales with drainage arrows, high points, wetlands, natural resource protection measures and all other proposed improvements and existing surveyed site features.
5. Parking Area Geometries (if included), showing all pavement layout, dimensioning, public road with stationing, access location and data, pavement markings and traffic control.
6. Parking Area Grading (if included), showing existing and proposed one foot contour lines, spot elevations, erosion control measures, drainage patterns and drainage structures.
7. Utilities (if included) showing the type, size and location of utilities such as electric, lighting, water, gas, phone, data and sanitary system lines and related equipment.
8. Roadways and Traffic Control (if included) showing all proposed improvements according to the standards of the appropriate jurisdictional body.
9. Wetland Mitigation Plans and Details (if included), showing detention / retention basins for compensatory storage.
10. Details, Sections, Elevations, and Manufacturer's Sheets as necessary to successfully permit, bid and construct the improvements.

CAD Standards: All design and engineering will be completed in AutoCAD V. 2012 format using the Owner's seed file, standard base files, and levels. All design and engineering information shall be located in separate files by discipline as specified in the provided standards. All vector information in the files shall be current and pertinent to the design.

LAND SURVEYING AND STAKING

1. Qualifications: Field surveying shall be performed by a State of Illinois Professional Land Surveyor (Surveyor) and field staff under the direction of a State of Illinois Professional Engineer in order to obtain data necessary for design, permitting, and construction. Surveying shall include the following:
 - Control Data and Standards: The Surveyor shall establish control points at strategic locations within all areas proposed for improvements. All surveyed points shall include both horizontal and vertical data. All horizontal control data shall reference the Illinois State Plane Coordinates Eastern Zone NAD 83; all vertical control data shall reference NAVD 88. Global Positioning Systems (GPS) may be utilized and should be in feet and not meters. In determining the quantity and location of these points, the surveyor shall assume that, at any one location along trails or other areas of development, two control points shall be visible. The Owner may provide initial control data if available. Base control data is subject to review and approval by the Owner.
3. Topographic Survey: This work has already been provided and is therefore excluded from this scope of work.

4. **Digital File Standards:** All field survey data shall be adjusted to the horizontal and vertical standards as set forth in B.2. and imported to AutoCAD 2012. We will obtain the Owner's seed file for use with all AutoCAD files. No other seed files shall be used for the project.
5. **Staking:** After trail design and engineering is complete and approved by the Lake County Forest Preserves, the Surveyor shall stake the trail location in the field. Staking interval shall be every 50' and shall also include all points of curvature (P.C.) and points of tangency (P.T.). Two stakes shall be set at each station, a wood lathe at the centerline and a flexible composite stake which shall be off-set 30' to one side. The composite stakes shall be Boundary Markers or Dual Sided Markers, minimum 60" in length and white, yellow or orange in color, as manufactured by Carsonite Composites, Inc., (800-648-7916, www.carsonite.com). All stakes shall be clearly marked with the corresponding station number using permanent marker. All other staking shall be the responsibility of the contractor.
6. **Record Topographic Survey and Drawings:** We will provide as-built surveys when required by permitting agencies. These may include entry roads when accessing LDCOT or IDOT rights-of-way and detention/retention basins as required by LCSMC. LCSMC requirements may also include topography (e.g., compensatory storage areas) and platted deed restricted areas. The survey shall include the following:

- a. Record information of drainage structures (i.e., culverts, culvert control structures) and record grading of compensatory storage areas added to the original set of engineering drawings and submitted to the LCSMC.

WETLAND STUDIES/PERMITTING

1. We will provide complete wetland consulting services for the purposes of obtaining permits and approvals from all relevant agencies. All work shall meet the wetland criteria of the Lake County Watershed Development Ordinance (WDO) and the USACE's Regional Permit Program. The initial wetland delineation has previously been performed under a separate Purchase Order by LCSMC.
2. It is assumed that the project will require a Wetland Permit-Category IV authorization from LCSMC and a Regional Permit 5 Wetland and Stream Restoration and Enhancement permit authorization from the USACE.

SUBSURFACE DRAINAGE INVENTORY (DRAIN TILE INVESTIGATION)

1. This work has already been performed by others and is therefore excluded from the scope of work.

GEOTECHNICAL STUDIES

1. Upon review of the proposed improvements and available soils maps, we will determine the need for professional soil testing and analysis to support final engineering and construction. Types of improvements which may require soil investigation include:

- a. Representative wetland creation/restoration locations (10 boring probes, 5-foot deep)
 - b. Trail or pavement areas underlain with organic soils (15 boring probes 5-foot deep)
 - c. Boardwalks (three (3) assumed; 3 borings each, 25-foot deep)
 - d. Any other improvement dependent on proper soil structure
2. Upon determination that critical sub-surface information is required to achieve the proposed improvements, we will engage a licensed professional geotechnical engineer to provide field sampling, testing, analyses and construction recommendations specific to the planned improvements. All structural borings shall be conducted in accordance with the requirements of the Illinois Department of Transportation (IDOT) Specifications for Structure Borings. Upon completion of this work, the Consultant shall provide the Owner with two (2) copies of the testing report, which shall include a map of the sampling locations, description of the sampling and testing procedures, standard boring logs for each location, indicating sample depths, soils classification, sample number and field and laboratory test results, testing summaries and structure recommendations. The testing report shall also be included in the contract documents for construction.

WETLAND MITIGATION DESIGN AND ENGINEERING

1. The concept wetland mitigation plans will be refined to produce final engineering documents. Plans will include required grading and drainage improvements including drain tile manipulation, planting and seeding communities will be developed based on the associated grading and hydrology (time to drawdown or stage excursion). The mitigation design will be integrated with the desired Forest Preserve trail system. The plans will include temporary soil erosion and sediment control and temporary and permanent vegetation.

TRAIL DESIGN AND ENGINEERING

1. **Horizontal Alignment:** The Lake County Forest Preserves shall establish the preliminary trail alignment before refinement and finalization by the Consultant. The trail route shall be staked or flagged in the field by the Lake County Forest Preserves for location by the Surveyor. After surveying, we will refine the horizontal alignment and curve data for final review by the Lake County Forest Preserves. Upon completion of the horizontal alignment, we will identify preliminary culvert locations along the trail.
2. **Vertical Alignment:** We will refer to the Lake County Forest Preserves' typical Aggregate Trail Section for guidance in determining the appropriate grades and slopes for the trail and swales. In particular, we will note the size and depth of the swales in relation to the trail surface elevations. This typical section places great emphasis on drainage efficiency and capacity and generally results in a finished trail grade above the existing topography. Culvert elevations must be set to achieve adequate drainage in the lateral swales and must assure continuous flow away from the trail. Mass grading for all trails shall achieve a cut and fill balance.

BOARDWALK DESIGN AND ENGINEERING

1. Pedestrian boardwalks shall be wood structures constructed with zero wetland impact methods and match the basic design parameters of existing boardwalks as constructed by the Lake County Forest Preserves at Nippersink, Lakewood, and Cuba Marsh Forest Preserves. The design and engineering shall be performed by the DPT Corporation, 5055 Babcock Street N.E. #7, Palm Bay, Florida, 32909, Dan Hughes @ (866) 727-7100, www.dpt-inc.com, or an Owner-approved equal, under contract to the Consultant. The Consultant shall review and incorporate the drawings and specifications of the subconsultant. These drawings and specifications shall include plans, elevations, sections and data necessary to successfully bid and construct the boardwalk.
2. This project budget currently includes three (3) boardwalks. All boardwalks shall be 11 feet in width with a minimum of 10 feet of free passing width.

HYDROLOGY AND HYDRAULICS STUDIES AND DESIGN

1. This task will build on the work performed during the mitigation assessment phase. We will perform a complete hydrologic and hydraulic study and analysis of the project area as required to satisfy permitting requirements by the pertinent agencies such as the LCSMC and USCOE and to properly construct drainage structures and culverts, swales, boardwalks, bridges or any other proposed improvement which impacts water flow and drainage. Existing maps, aerial photos, land surveys and data shall be utilized to identify drainage area tributaries and the most appropriate hydrologic model selected to correctly design and engineer the proposed improvements. The study area limits shall extend upstream and downstream for an appropriate distance to assure an accurate analysis of the conditions within the area of proposed improvements. The study shall include locations and data on existing field tiles where appropriate.
2. Stormwater detention is assumed to not be required for this project as the proposed trail width falls under the detention threshold for linear projects. Water quality treatment and compliance with LCSMC's runoff volume reduction (RVR) requirements are likely not required due to the nature of the project. This, along with confirming that detention will not be required will be verified at a pre-application meeting with LCSMC.
3. Based upon the preliminary plan and trail alignment, it is possible that portions of the trail will lie within the 100-year floodplain. A hydrologic and hydraulic model of the final proposed condition will be prepared to document conformance of trail construction with LCSMC floodplain regulations.
4. Stormwater conveyance calculation will be prepared for any storm sewer required to drain the area between the loop drive and parking areas or any other depressed areas requiring storm sewer.

5. We will prepare a stormwater report documenting the above information for submittal to the Lake County Stormwater Management Commission. We do not believe any other submittals will be necessary to document stormwater and floodplain management portions of the project. This task includes one (1) round of comment response.

PERMITS

1. We will be responsible for all work related to making application for permits, including meetings, submittals, design and engineering described elsewhere in this Contract and coordination, for the following agencies:
 - a. Lake County Stormwater Management Commission (LCSMC) (Wetland PJD, WDP, Floodway, LONI if no USACE permit needed) See also Task C
 - b. Illinois Department of Natural Resources (IDNR) (Threatened and Endangered Species Consultation)
 - c. U.S. Fish and Wildlife Service (USFWS) (Threatened and Endangered Species Consultation)
 - d. United States Army Corps of Engineers (USACE) (if impacts to jurisdictional wetlands)
 - e. Lake County Division of Transportation (Construction Site Access, Trail Connection, Entrance Permit)
 - f. Illinois Environmental Protection Agency (IEPA) (NPDES) includes SWPPP preparation and NOI submittal

It is assumed that all permit fees will be the responsibility of the client.

SPECIFICATIONS AND BID DOCUMENTS

1. All specifications shall follow the format described in the Lake County Forest Preserves "Master Specification and Detail Schedule" dated August 27, 2012. Specifications for improvements not listed in the schedule may be added in the appropriate division.
2. The Lake County Forest Preserves possesses specifications used on past projects for many common improvements and will provide these specifications for the Consultant's review and use for this project.
3. The specifications shall encompass all work required for the project.

PROJECT QUANTITIES AND ENGINEER'S COST OPINION

We will perform quantity takeoffs for all proposed work. All quantities shall match the Schedule of Prices and shall be exact measured quantities without rounding or contingencies. Contingency increases or decreases may be factored as a percentage of the whole project. Pricing shall be based on actual contractor bids received for projects of a similar nature during the prior six months.

BID AND CONSTRUCTION PHASE SERVICES

1. Bid and Construction Phase services are not included in this proposal. A separate proposal for this work can be prepared at the direction of LCDOT.

Work will commence on the tasks presented in this proposal immediately upon authorization to proceed from LCDOT.

FEE SUMMARY

PHASE	FEE	FEE BASIS
MITIGATION BANK PROSPECTUS PHASE		
WETLAND MITIGATION BANK SITE ASSESSMENT	\$17,000*	Fee and Expense
WETLAND MITIGATION BANK PROPOSAL	\$6,500	Fee and Expense
WETLAND MITIGATION BANK PROSPECTUS	\$10,000	Fee and Expense
SUBTOTAL MITIGATION BANK PHASE	\$33,500	
CONSTRUCTION DOCUMENT PHASE		
LAND SURVEYING AND STAKING	\$15,000	Fee and Expense
WETLAND PERMITTING (WP-CATEGORY IV AND RP5-CATEGORY I)	\$5,000	Fee and Expense
GEOTECHNICAL STUDIES	\$10,000	Fee and Expense
WETLAND MITIGATION DESIGN AND ENGINEERING	\$25,000	Fee and Expense
TRAIL DESIGN AND ENGINEERING	\$50,000	Fee and Expense
BOARDWALK DESIGN AND ENGINEERING	\$9,000	Allowance
NON-WETLAND PERMITTING	\$7,500	Fee and Expense
HYDROLOGY AND HYDRAULICS STUDIES AND DESIGN	\$15,000	Fee and Expense

PHASE	FEE	FEE BASIS
SPECIFICATIONS AND BID DOCUMENTS	\$7,500	Fee and Expense
PROJECT QUANTITIES AND COST OPINIONS	\$5,000	Fee and Expense
SUBTOTAL CONSTRUCTION DOCUMENT PHASE	\$135,500	
BID AND CONSTRUCTION PHASE SERVICES (INCLUDING MONITORING AND MANAGEMENT)	TBD	NA
REIMBURSABLE EXPENSES	\$1,500	Direct Expense
Total	\$170,500	

*Includes \$5,000 allowance for detailed on-site soil mapping

This work will be performed on a time and materials basis for a total fee not to exceed \$170,500 without prior approval from LCDOT. Our Standard Terms and Conditions are attached. If this agreement is acceptable, please sign below and return this proposal to our office. Upon receipt, we will sign and return a fully executed copy for your records. This proposal is valid for 60 days from the date of this letter. Should you have any questions, please contact the project manager, Jeff Mengler, at 630-585-8020.

Hey and Associates, Inc.

Lake County Division of Transportation

Attest

Attest

Date

Date

Please return this proposal in the return envelope provided.

Haley and Associates, Inc.

April 29, 2013