



Building a Better World  
for All of Us\*

October 11, 2017

RE: Additional Services Agreement  
City of La Crosse, WI  
Ebner Coulee Floodway FIRM Mapping  
SEH No. LACRS 138000 14.00

Mr. Bernard Lenz, PE  
Assistant City Engineer  
City of La Crosse  
400 La Crosse Street  
La Crosse, WI 54601

Dear Mr. Lenz:

Thank you for the opportunity to present this Agreement for Additional Professional Services associated with the Ebner Coulee Flood Insurance Rate Map Update study. Please find our scope of work and task descriptions for the activities that will be conducted by SEH.

## SCOPE OF WORK

### Task 1. Historic Rainfall-Runoff Analysis

SEH will obtain and review daily rainfall data for the City of La Crosse for a period of record of approximately 20 years (2017 records as available and dating back to 1997). For each year in review, SEH will obtain peak daily rainfall total depths and the corresponding hourly rainfall data for each of the largest annual rainfall events up to a maximum of a 48 hour duration event. These historic rainfall events will be summarized and hourly rainfall hyetographs will be developed for all events with hourly data readily available. For rainfall events in which hourly data is not readily available, the total daily rainfall depth will be utilized with an appropriate duration standardized rainfall distribution.

SEH has requested the effective rainfall-runoff model from the Wisconsin Department of Natural Resources (WiDNR) as well as reviewed the HEC-1 model provided. Based on the review of the HEC-1 model, it appears that the runoff hydrograph was computed using the USACE SPILL program (no longer supported) and HEC-1 was only utilized to route and combine the hydrographs. It should be noted that to date we have not made a formal request to FEMA for review of the FEMA library in an effort to obtain additional hydrologic modeling information, but this task may be prudent prior to the preparation of any Letter of Map Revision (LOMR) related submittal. If a LOMR related submittal is desired at this time, the project schedule will require adjustment to allow for receipt of available modeling information from FEMA. It is assumed that any FEMA data request would be submitted either directly by or on behalf of the City, otherwise an additional FEMA data request fee may be necessary and is not currently included in the provided estimated fees.

Given the lack of an executable or reproducible hydrologic model, we propose to perform this analysis with the SEH developed HEC-HMS model utilized to develop runoff hydrographs for the USGS regional regression peak flow rates for the first phase of the project. Initially, we will calibrate the HEC-HMS model in an effort to first match the reported effective discharge rates by modifying the hydrologic characteristics (runoff curve numbers, time of concentration). Once we have a calibrated HEC-HMS model we will model

Engineers | Architects | Planners | Scientists

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the historic rainfall events (up to 20 model runs) to estimate the peak runoff rates for the Ebner Coulee system for each of the events. We will summarize our hydrologic analysis in a letter report with the historic runoff events ranked by the magnitude of peak runoff rates.

**Task 2. Hydraulic Modeling and mapping of Historic Annual Rainfall-Runoff Events**

Utilizing the results from the historic rainfall-runoff analysis, we will input the generated runoff hydrographs into the 1D/2D HEC-RAS model developed during the first phase of the project to estimate the extents of the resulting flooded area for each of the historic events. We will develop figures to depict the expected inundation areas for each of the historic rainfall events.

**Task 3. Summary Technical Letter / Preparation of Review Submittal to the Wisconsin DNR**

SEH will provide a technical letter report summarizing the results of the analyses performed including a letter outlining the analyses performed to date and a request for review and comment by the Wisconsin DNR against their requirements for State overview and concurrence in support of a Letter of Map Revision Submittal.

**Task 4. Discussions with Wisconsin DNR**

This task includes 4 hours of estimated time by the SEH Project Manager/Engineer of Record and 1 hour of staff hydraulic engineer time for discussions with Wisconsin DNR Floodplain staff and potentially the State NFIP Coordinator. These discussions will serve to help estimate the future level of effort, primarily to receive the State's overview and concurrence to support a Letter of Map Revision to formally update the FIRM for the Ebner Coulee area.

**Task 5. Presentation at Floodplain Committee Meeting**

This task is provided for the SEH Project Manager/Engineer of Record to attend and present the results of this analysis at a Flood Task Force Committee Meeting.

**Task 6. Additional As-Requested Services**

This task has been included as a "time and materials" task for any additional tasks as requested by and/or approved by the City Project Manager prior to completion. All time charged to this task will be tracked and commented on to keep the City informed of these expenditures. For the purposes of establishing a budget for this task, we have estimated \$2,800 based on 8 hours of SEH Project Manager/Engineer of Record, 4 hours of lead hydraulic engineer, and 8 hours of staff hydraulic engineer.

**SCHEDULE**

SEH will begin work as soon as authorized by the City with the project schedule as outlined below.

- Completion of Tasks 1-3: 3 weeks from notice to proceed
- Completion of Tasks 4-6: Based on Wisconsin DNR Staff Availability (estimated late 2017)

**ENGINEERING FEES**

Our fees will be based on an hourly not-to-exceed amount of \$18,600, including mileage, equipment, and expenses.

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We appreciate the opportunity to work with the City of La Crosse. If you have any questions, please feel free to contact me at 651.490.2125 or via e-mail at bwoznak@sehinc.com.

Sincerely,

SHORT ELLIOTT HENDRICKSON INC.




Brad Woznak, PE, PH, CFM  
Project Manager

btw

Short Elliott Hendrickson Inc.

By:

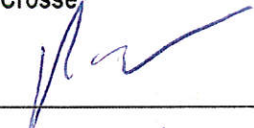
Title:

  
Brad Woznak  
Project Manager

City of La Crosse

By:

Title:

  
Asst. City Engineer



