PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM

Fourth Amendment to the Agreement between the Nebraska Community Foundation, Inc. and EA Engineering, Science, and Technology, Inc. Regarding "Shoemaker Island Flow-Sediment-Mechanical "Proof of Concept" Experiment Implementation Design, Technical Support, Monitoring and Data Analysis"

This Fourth Amendment to the Agreement between the Nebraska Community Foundation, Inc. ("Foundation") of Lincoln, Nebraska, representing all signatories to the Platte River Recovery Implementation Program ("Program"), and EA Engineering, Science, and Technology, Inc. ("Consultant"), a consulting firm with headquarters in Hunt Valley, Maryland, is made and entered into effective on the date of signing below and the final date of this Amendment will be May 1, 2016.

The purpose of this amendment is to:

(1) Expand the Scope of Work to include 2015 professional services as presented in **Exhibit A**.
(2) Increase the project budget from $832,855 to **$1,236,555.** The amended budget will provide the Consultant with an additional **$403,700** (both in approved and available FY 2015 Program budget line item IMRP-5 funds) for the purpose of completing the tasks set forth in **Exhibit A**. This budget increase shall be effective as of the date of this Amendment. The Amendment 4 budget is presented in **Exhibit B**.

Important Amendment notes:

(1) This is the Fourth Amendment to the Agreement. **Exhibit C** includes the Original Agreement, First Amendment, Second Amendment, and Third Amendment.
(2) The Shoemaker Island FSM "Proof of Concept" project is conceived as a three-year modeling, monitoring, and analysis project. The Consultant will provide professional services under this Amendment through May 1, 2016. General work items include continued model development and application, the third and final year of monitoring and data analysis, development of final deliverables and participation in the annual AMP reporting session that will be held in the fall of 2015.
(3) Notice to Proceed for 2015 tasks is granted to the Consultant upon execution of this Amendment.

All other terms of the original Agreement remain in effect as originally written in the Agreement dated August 28, 2012. The following parties agree to the terms of this Amendment and the original Agreement:

For the Consultant:

_____ _____

Dale Schlautman Date
EA Engineering, Science and Technology, Inc.

For the Foundation:

_____ _____

Diane M. Wilson Date
Chief Operating Officer/Chief Financial Officer
Nebraska Community Foundation, Inc.

EXHIBIT A

Exhibit A
SCOPE OF WORK

Platte River Recovery Implementation Program
Shoemaker Island Flow-Sediment-Mechanical "Proof of Concept" Experiment
Implementation Design, Technical Support, Monitoring, and Data Analysis
November 14, 2014

PROJECT DESCRIPTION

EA Engineering, Science, and Technology, Inc. (EA) is contracted by the Platte River Recovery Implementation Program (Program) to conduct a Flow-Sediment-Mechanical (FSM) "Proof of Concept" Experiment at the Shoemaker Island site.

This scope of work is being completed as Contract Amendment 4 to the original contract. The scope of work includes revision of the Experiment Design Plan, monitoring activities for the 2015 field season, data analysis, and reporting.

The Consultant's services under this contract amendment will be provided on a time and expense basis not to exceed the project budget provided in Exhibit B based on the rate schedule provided in the original contract.

SCOPE OF WORK

The services included in this Scope of Work are organized based on the tasks presented in the original RFP and conducted in 2013 and 2014. The Consultant will provide the following services under this Scope of Work.

Task 1 – Kickoff Meeting

A kickoff meeting will be conducted with the ED Office via conference call. The purpose of the meeting will be to provide the schedule for field activities, coordinate changes in access and permission, update landowner contact information, refine project schedule, and discuss any other issues that could impact the project. The kickoff meeting will be attended by Dan Bigbee and Kent Dixon (EA), Smokey Pittman, (GMA), Trent McDonald, and Bonnie Pryor (NHE).

Task 2 – Experiment Design Revisions

The objective of this task is revising the experiment design to update the information for evaluation of the performance of management actions. The experiment design was developed in 2013 and revised in 2014.

2.1 Revise the data (type, spatial and temporal resolution) sets for evaluation and analysis, as necessary.

2.2 Revise the data (type, spatial and temporal resolution) sets that will be collected during the project for model refinement, calibration and verification, as necessary. These data sets may include:

- Data collected prior to 2015 that are required for model development/modification. These data sets will include, at a minimum, topography, vegetation, and grain size.
- Data collected after 2015 that are required for model verification. These data sets will include, at a minimum, topography, vegetation and grain size.

2.3 Design model runs appropriate for testing hypotheses generated during 2013 and 2014.

2.4 A revised Experiment Monitoring and Analysis Plan will be prepared for review and comment by the ED Office.

2.5 ED Office comments will be addressed and incorporated into a Final Experiment Monitoring and Analysis Report.

Task 3 – Model Development and Refinement

The objective of this task is to advance the development of the fixed-bed hydraulic model and mobile-bed sediment transport model developed during FY 2013-2014 to estimate responses of channel morphology and vegetation patterns to potential management actions in the Platte River and make longer term predictions of bed evolution.

3.1 Review data sets collected during 2015 related to model development, application, calibration and verification. Develop model inputs including composite topographic surfaces from LiDAR and ground surveys and flow, sediment and vegetation input files.

3.2 A fixed-bed 2-D model will be developed that includes topographic, grain size and vegetation changes that occur prior to a possible natural high flow event in spring the 2015. The model will be used to estimate water surface elevations, inundation, depth, velocity and shear stress. Peak model shear stress will be compared to scour measurements during the high flow to help evaluate scour potential in the reach. These measurements will be aggregated with scour measurements from SDMF 2013, Fall 2013 and Spring 2014 high flows.

3.3 A 1-D bank erosion model will be applied at selected transects. Calibrated values for vegetated bars developed from Fall 2013 and Spring 2014 high flows will be used to verify the model. An initial evaluation of the integration of the BSTEM model into HEC-RAS will occur. This tool purports to overcome one of the major limitations of the standalone BSTEM version (sediment transport) and evaluate multiple cross-sections simultaneously. If this tool can reproduce equivalent, or better results for lateral erosion, it will provide a more comprehensive evaluation of lateral erosion throughout the entire site than could be achieved with the standalone version of BSTEM evaluated in 2013.

3.4 Model calibration and verification will continue during the 2015 fiscal year to estimate expected changes in bar height, shape and size. A new version of FaSTMECH that eliminates one of the major limitations identified in 2013 will be tested. EFDC model runs, which requires continuous sediment supply as a boundary condition, will not be continued if funding for measurement of this parameter is not funded. Proposed model runs include:

- The relative contributions of peak discharge and duration on bar height and frequency using a constant flow volumes. These results will inform the program whether a longer duration flow at 5,000 cfs is more or less effective than a shorter duration flow at 8,000 cfs. The results will help the program utilize flow efficiently to best meet their high flow geomorphic/habitat objectives.
- Increases and decreases in sediment supply was evaluated in 2013 at 5,000 cfs. This analysis will be expanded to include effects of sediment over a broader range of flows up to 8,000 cfs.
- The effect of grain size on bar height and frequency will be expanded to include finer grain sizes measured in 2014 following the larger, natural floods in Fall 2013.
- The cumulative effects of multiple SDHF will be evaluated to estimate the overall trajectory of the expected response.

These proposed model runs may change based on Program requests or outcomes of the Fall 2013 and Spring 2014 modeling analysis.

The model predictions will be compared to measured data, including:

- water surface elevation
- bar shape, height and frequency
- vegetation persistence or removal on bars
- scour and fill depths on representative surfaces
- location and extent of lateral erosion or deposition

Task 4 – Monitoring (2015)

The objective of this task is to implement the project-scale geomorphology and vegetation monitoring activities and analysis of data collected during the 2015 field season as established during the Experiment Design. Tasks are developed to complement Program learning objectives, Big Questions and Hypotheses as detailed in the proposal and at the October 2012 workshop in Kearney and to build upon the Shoemaker monitoring dataset begun in 2013, 2014 and continued in 2015. These tasks also provide additional calibration and verification data for hydraulic and sediment transport modeling efforts and further contribute to the effort to characterize sediment transport in the Platte River.

4.1 Field preparation will be conducted prior to collection of field data. These activities include: preparation of field maps, review survey control points, review locations of transects and equipment access, ongoing maintenance of water level recorders to monitor river stage during a natural high flow event.

4.2 Install and download stage data from pressure transducers on a monthly interval to ensure equipment is operating properly. It was assumed that the equipment would be installed for a period of five months. The equipment will be removed following the final download.

4.3 Conduct field data collection to document conditions prior to a possible natural high flow event in spring 2015. A data collection effort will be conducted in April or May 2015. The data collection activities will include:

- Topography and bathymetry data will be collected using RTK-GPS survey equipment. The site is an approximately 2.6-mile long reach of the Platte River. Transects were assumed to be spaced approximately 800 feet apart, resulting in 18 transects. Exposed sand bars will be surveyed within the reach.
- Photographic documentation with geo-referenced photo points will be performed.
- Bulk sampling of bed and bar materials will be conducted. It is estimated that 15 bed samples and 15 bar samples will be collected. The samples will be analyzed by a qualified soils laboratory for grain size.
- Vegetation sampling will include collecting the following:
    - A total of 126 vegetative assessment plots located within the reach to provide a statistically valid data set.
    - Each vegetation assessment plot is a 1m x 1m quadrant. Each of the 18 transects have seven assessment plots that were established in 2013. The plots are evenly spaced along the transect after starting at random from the north side. The plots are offset from the transect by five feet to avoid disturbing the vegetation. Plot locations are recorded and located using a sub-foot GPS unit.
    - The stem density and percent cover of cottonwood trees, willows, and common reed will be collected at each plot.
    - The presence of other species (presence/absence) and total percent cover for all vegetation will be recorded at each plot.
    - Photos showing a total percent vegetation and percent sand will be taken at each plot.
    - It is recognized that the vegetation sampling will be conducted in late April/early May and identification of some vegetation characteristics may limited due to variable conditions at this time of the year.
- The vegetation cover for model development will include classifying polygon types based off a desktop review of aerial photography. Field verification of the polygon types will be conducted. Three days of field effort were included for field verification.
- Discharge measurements will be collected in the vicinity of the water stage recorders.

4.4 Suspended sediment, stage/discharge, and turbidity data will be collected in 2015 during the natural spring high flow event. Data collected during "high flows" will support discharge or turbidity-sediment regression analysis and hydraulic-based computations such as Modified Einstein.

- A single, vertical, suspended sediment "box sample" will be collected and stage will be recorded during each weekly data sonde maintenance event. An estimated six to eight full cross section depth integrated samples will also be collected, which may include some sampling during the pre and post monitoring efforts.
- During the natural high flow event depth integrated suspended (DIS) sediment samples will be collected at Cross Section 2.5. Samples would be collected from a cataraft or a John boat. Box samples will be collected concurrent with DIS sediment samples at the turbidity data sonde.
- During the natural high flow event discharge measurements will be taken concurrent with DIS sediment samples at Cross Section 2.5. Measurements will be taken using an acoustic doppler current profiler (ADCP) deployed using a cataraft or a John boat.
- Install two turbidity data sondes at cross section 2.5 and 18 to record water turbidity at 15 minute intervals. Maintain and download turbidity data from the water quality data sondes on a weekly interval to ensure equipment is operating properly. It was assumed that the equipment would be installed for a period of five months. The equipment will be removed following the final download.

4.5 Field data collection during the SDHF event to document bedload (topography), stage, velocity profile and profile monitoring during the experiment will not be conducted in 2015.

4.6 Scour chains will be used to monitor scour and fill during 2015. Up to 20 chains may be installed in addition to the 22 existing chains remaining after the 2014 high flow event. All recoverable scour chains will be re-measured in summer of 2015 and the results surveyed using RTK GPS equipment.

4.7 Conduct field data collection to document conditions following a possible natural high flow event in the summer 2015. A data collection effort will be conducted in July or August 2015. The data collection activities will be the same as the spring 2015 field event. Vegetation assessment plots will be in the same locations as spring 2015 plots.

4.8 Conduct spring 2015 Pre Event tasks to include: establishment of survey benchmarks, localization of five GPS/RTK rovers and base unit, survey of primary and supplemental cross sections and primary cross section monument pins. Conduct supplemental longitudinal profile, water surface profile and topographic/bathymetric survey of the entire Shoemaker reach. This task will only be completed if it is found that higher-resolution data is required for volume change computations and/or hydraulic/sediment transport model calibration. This effort would be conducted in

addition to the topographic survey of the cross sections and exposed bars from previous tasks.

4.9 Conduct summer 2015 Pre Event tasks to include: establishment of survey benchmarks, localization of five GPS/RTK rovers and base unit, survey of primary and supplemental cross sections and primary cross section monument pins. Conduct supplemental longitudinal profile, water surface profile and topographic/bathymetric survey of the entire Shoemaker reach. This effort would be conducted in addition to the topographic survey for cross sections and exposed bars.

Task 5 – Data Analysis (2015)

The objective of this task is to analyze the data collected in the spring and summer 2015 and to provide interpretation of geomorphic data collection by EA and provide additional model input, calibration and verification data.

5.1 Streamflow – Inspection of discharge measurements, development of ratings, computation of discharge record (or scaling USGS/ACOE record at Grand Island)

5.2 Turbidity and suspended sediment analysis of data collected in 2015.

5.3 Bedload (repeat topography) analysis will not be completed in 2015.

5.4 Sediment Budget: overall volume change – Management actions and the 2015 annual hydrograph (magnitude and duration of high flows) will be compared to the total volume change within the reach, modeled predictions and will be evaluated with respect to management actions (e.g sediment load changes due to grading, disking or sediment augmentation).

5.5 Cross section change and scour assessments – Cross section change will be evaluated in Excel, with the following clearly indicated: areas of scour and fill, areas of maximum intermediate scour (scour chain data), substantial textural change (e.g. disked vegetation to bare sand), and relevant stage elevations of different flows over sections.

5.6 Evaluate the products collected in the spring and summer 2015 to support calibration of and comparison with hydraulic and sediment transport models including:

- Selected sediment budget components (volume changes)
- Grain size data from bulk samples
- Bed elevation and/or bed elevation profiles of cross sections
- One or more long profiles surveyed in spring and summer 2012
- Analyze and interpret water surface elevation data as recorded by crest gages and continuous stage recorder.
- Assess the use of continuous stage data to compute continuous discharge versus scaling surrogate hydrographs. Regression analysis of turbidity and discharge-sediment data to compute sediment flux.

5.7 Complete all geomorphic analyses not mentioned above that are included in the Project-Level Monitoring Protocols, such as:

- Relative changes in bar heights versus maximum stage (as recorded by crest gages)
- Changes in grain size distribution
- Assessments of bar areas relative to the management actions and 2014/2015 hydrograph.

5.8 Vegetation change – Vegetation change will be estimated by comparing parameters pre- and post-event from data collected on quadrats placed along cross-channel transects. Vegetation parameters to be analyzed are percent cover and stem density for the three primary species (cottonwood, willow, and common reed), as well as overall percent cover of vegetation. Change in vegetation parameters will be related to hydrologic parameters (e.g., scour, water velocity, etc.) to assess conditions facilitating maximum and minimum change.

Task 6 – Reporting (2015)

The objective of this task is to compile the methodology, results, and analysis for data collected during the 2015 field season into a single document (Annual Summary Report).

6.1 A Draft Annual Summary Report will be prepared for review and comment by the ED Office. The Draft Report will be submitted as an electronic copy through the Program's website. The Draft Report will be submitted in MS Word (narrative only) and PDF format.

6.2 ED Office comments will be addressed and incorporated into a Final Annual Summary Report. The Final Report will be submitted as an electronic copy through the Program's website along with three hard copies with electronic copies on CD. The Final Report will be submitted in MS Word (narrative only) and PDF format.

6.3 Conduct one formal presentation (such as presenting to the GC) in Kearney, NE by the Project Manager.

Task 7 – AMP Reporting Session (2015)

The objective of this task is for presentation of the findings at the following AMP reporting session.

7.1 Participate in the AMP reporting session conducted in March 2015 by Dan Bigbee, Smokey Pittman, and Bonnie Pryor.

Schedule

The proposed schedule for the services provided under contract amendment will begin upon notice to proceed (NTP) and will extend through April 2015 to include the AMP Reporting Session.

EXHIBIT B

Exhibit B

TOTAL COST SUMMARY

Platte River Recovery Implementation Program
Shoemaker FSM "Proof of Concept"
Cost Estimate - Contract Amendment 4 - 2015

	Labor Hours	Labor Cost	Subcontractor	ODC's	Travel	TOTAL	TOTAL (ROUNDED)
Task 1- Kickoff Call	4	$510.00	$2,520.00	$0.00	$0.00	$3,030.00	$3,000.00
Task 2 - Experiment Design	24	$2,640.00	$6,330.00	$149.52	$0.00	$9,119.52	$9,100.00
Task 3.1 - Review of Data Collected and Generation of Input Files, Calibration Files	0	$0.00	$4,200.00	$0.00	$0.00	$4,200.00	$4,200.00
Task 3.2 - Fixed Bed Modeling	0	$0.00	$3,360.00	$0.00	$0.00	$3,360.00	$3,400.00
Task 3.3 - Fixed-Bed Model for BSTEM	0	$0.00	$8,400.00	$0.00	$0.00	$8,400.00	$8,400.00
Task 3.4 - Mobile-Bed Model Development	0	$0.00	$25,000.00	$0.00	$0.00	$25,000.00	$25,000.00
Task 4.1 - Field Preparation	76	$6,852.00	$1,730.00	$408.00	$0.00	$8,990.00	$9,000.00
Task 4.2 - Pressure Transducer Install and O&M	77	$6,171.00	$4,330.00	$963.70	$0.00	$11,464.70	$11,500.00
Task 4.3 - Pre Event - Spring 2015	468	$36,972.00	$21,420.00	$8,349.80	$6,068.42	$72,810.22	$72,800.00
Task 4.4 - Suspended Sediment and Discharge	150	$10,350.00	$22,305.00	$1,947.84	$1,411.26	$36,014.10	$36,000.00
Task 4.5 - Additional Data Collection for Sediment Budget (Inactive)	0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Task 4.6 - Scour Chains	0	$0.00	$1,500.00	$0.00	$0.00	$1,500.00	$1,500.00
Task 4.7 - Post Event - Summer 2015	648	$50,796.00	$14,420.00	$10,812.24	$8,608.69	$84,636.93	$84,600.00
Task 4.8 - Pre Event - Supplemental Topographic/Bathymetric Survey	34	$2,970.00	$2,810.00	$1,222.74	$564.50	$7,567.24	$7,600.00
Task 4.9 - Post Event - Supplemental Topographic/Bathymetric Survey	33	$2,823.00	$2,810.00	$1,222.74	$564.50	$7,420.24	$7,400.00
Task 5 - Data Analysis	264	$27,792.00	$23,000.00	$0.00	$0.00	$50,792.00	$50,800.00
Task 6 - Reporting	186	$22,608.00	$28,580.00	$227.14	$0.00	$51,415.14	$51,400.00
Task 7 - AMP Reporting Session	40	$4,632.00	$13,330.00	$0.00	$0.00	$17,962.00	$18,000.00
TOTAL - AMENDMENT 2	**2,004**	**$175,116.00**	**$186,045.00**	**$25,303.72**	**$17,217.37**	**$403,682.09**	**$403,700.00**

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EXHIBIT C

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM

First Amendment to the Agreement between the Nebraska Community Foundation, Inc. and EA Engineering, Science, and Technology, Inc. Regarding "Shoemaker Island Flow-Sediment-Mechanical "Proof of Concept" Experiment Implementation Design, Technical Support, Monitoring and Data Analysis"

This First Amendment to the Agreement between the Nebraska Community Foundation, Inc. ("Foundation") of Lincoln, Nebraska, representing all signatories to the Platte River Recovery Implementation Program ("Program"), and EA Engineering, Science, and Technology, Inc. ("Consultant"), a consulting firm with headquarters in Hunt Valley, Maryland, is made and entered into effective on the date of signing below and the final date of this Amendment will be May 1, 2014.

The purpose of this amendment is to:

(1) Expand the Scope of Work to include the Task 2 through Task 4 professional services as presented in **Exhibit A**.
(2) Increase the project budget from $24,900 to **$495,200.** The amended budget will provide the Consultant with an additional **$470,300** (both in approved and available FY 2012 Program budget line item IMRP-5 funds and FY 2013 Program budget line item IMRP-5 funds if approved by the Governance Committee) for the purpose of completing the tasks set forth in **Exhibit A**. This budget increase shall be effective as of the date of this Amendment. The Amendment 1 budget is presented in **Exhibit B**. A maximum expenditure of $250,000 is authorized in the remainder of the 2012 fiscal year (same as calendar year). The remaining $245,200 will be obligated as part of the 2013 Program budget and will become available on January 1, 2013 if approved.

Important Amendment notes:

(1) This is the First Amendment to the Agreement. **Exhibit C** includes the Original Agreement.
(2) The Shoemaker Island FSM "Proof of Concept" project is conceived as a three-year modeling, monitoring, and analysis project. The Consultant will provide professional services under this Amendment through May 1, 2014. General work items include model development and application, the first year of monitoring and data analysis, and participation in the annual AMP reporting sessions that will be held in the spring of 2013 and 2014.
(3) This Amendment will obligate remaining existing approved and available FY 2012 Program budget line item IMRP-5 funds totaling **$225,100**. The remaining funds authorized by this Amendment in the amount of **$245,200** will only be utilized if approved by the Governance Committee in the Program FY 2013 budget in December 2012. Notice to Proceed in 2013 will only be given to the Consultant by the Executive Director's Office at that time.

All other terms of the original Agreement remain in effect as originally written in the Agreement dated August 28, 2012. The following parties agree to the terms of this Amendment and the original Agreement:

For the Consultant:

Dale Schlautman
EA Engineering, Science and Technology, Inc.

12-11-12
Date

For the Foundation:

Diane M. Wilson
Chief Operating Officer/Chief Financial Officer
Nebraska Community Foundation, Inc.

12/11/2012
Date

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EXHIBIT A

Exhibit A
SCOPE OF WORK

Platte River Recovery Implementation Program
Shoemaker Island Flow-Sediment-Mechanical "Proof of Concept" Experiment
Implementation Design, Technical Support, Monitoring, and Data Analysis
23 October 2012

PROJECT DESCRIPTION

EA Engineering, Science, and Technology, Inc. (EA) is contracted by the Platte River Recovery Implementation Program (Program) to conduct a Flow-Sediment-Mechanical (FSM) "Proof of Concept" Experiment at the Shoemaker Island site. Task 1 of the project included completion of the Kickoff Meeting and the Experiment Design Workshop. One of the objectives of Task 1 was to refine the project approach and scope of work for future tasks.

This scope of work is being completed as a Contract Amendment 1 to the original contract. The scope of work includes completion of the Experiment Design Plan, monitoring activities for the 2013 field season, data analysis, and reporting.

The Consultant's services under this contract amendment will be provided on a time and expense basis not to exceed the project budget provided in Exhibit B based on the rate schedule provided in the original contract.

SCOPE OF WORK

The services included in this Scope of Work are organized based on the tasks presented in the original RFP; however, the task numbering sequence is adjusted to continue from the original contract which included Task 1. The Consultant will provide the following services under this Scope of Work.

Task 2 – Experiment Design

The objective of this task is to develop an experiment design that will provide information for evaluation of the performance of management actions. The experiment design is based on the information gathered during Task 1.

2.1 The data (type, spatial and temporal resolution) sets for evaluation and analysis will be identified and defined.

2.2 The data (type, spatial and temporal resolution) sets that will be collected during the project for model development, calibration and verification will be identified and defined. These data sets may include:

- Data collected prior to the SDHF that are required for model development. These data sets will include, at a minimum, topography, vegetation, and grain size.
- Data collected during the SDHF that are required to develop and calibrate the selected model. These data sets will include, at a minimum, water surface elevation measurements, discharge and sediment supply.

- Data that may be collected opportunistically during the SDHF that would be beneficial for model calibration and verification. These data sets may include, but not limited to bedform mapping, velocity and topographic measurements during the SDHF.
- Data collected after the SDHF that are required for model verification. These data sets will include, at a minimum, topography, vegetation and grain size.

2.3 A Draft Experiment Monitoring and Analysis Plan will be prepared for review and comment by the ED Office.

2.4 ED Office comments will be addressed and incorporated into a Final Experiment Monitoring and Analysis Report.

2.5 Technical support for development of a performance evaluation decision tree will be provided.

Task 3 – Model Screening and Development

The objective of this task is to develop a fixed-bed hydraulic model and a mobile-bed sediment transport model to estimate responses of channel morphology and vegetation patterns to potential management actions in the Platte River. The development of a detailed mobile-bed model is dependent on the initial screening process. If the mobile- bed model does not perform sufficiently to contribute to Learning Objectives 1-3 specified in the RFP, a detailed mobile-bed model of the Shoemaker reach will not be developed. Instead, only a fixed-bed hydrodynamic model will be developed. Information related to model development methodology, calibration, results and analysis will be included in the Annual Summary Report.

3.1 Review of data sets collected prior to, during, and after the SDHF release related to model development, application, calibration and verification. Model input, calibration and verification files will be developed.

3.2 Two of the five potential models identified in the RFP will be tested on a sub-reach of the Shoemaker. The models will be selected based on their unique inclusion of geomorphic processes that have been identified in previous studies including lateral erosion and representation and handling of vegetation and vegetated surfaces, and suitable documentation necessary for relatively straightforward model application. The following primary questions will be addressed:

- Does the model build and maintain a reasonable multi-thread channel (i.e. no runaway aggradation, degradation, etc.)?
- Are bar shape and frequency realistic?
- Are predictions of bar shape/frequency significantly different if lateral erosion is included?
- Does the way the model represents vegetation significantly affect predictions of bar shape, frequency, and deposition/erosion?

Any fundamental limitations of the models will be identified including, such as:

- Unreasonable results.
- Grid resolution restrictions required to represent features of interest.
- Excessive run time required.

- Too many bugs or computation errors.
- Insufficient documentation to efficiently develop and apply the model.

If a fundamental limitation is identified prior answering all of the primary questions, evaluation of the model will be ceased at that time to minimize project expenditures in the screening process.

3.3 A fixed-bed hydrodynamic model will be developed for the Shoemaker site to simulate the SDHF event expected to occur in late March. If the model screening processes justifies the development of a mobile-bed model, this Task will cover building the hydrodynamic portion of the expanded mobile-bed model. If the model screening processes does not justify the use of a mobile-bed model, this model may differ from the mobile-bed models screened in the prior task.

The model period will be the SDHF release which is anticipated to have a short ramp up period (~3 days), 3 days of high flow, and a short ramp down period (~3 days). The model will be used to evaluate the performance of management actions by providing information on the areas that are more or less likely to discourage vegetation growth based on bed shear stress and other suitable hydraulic surrogate. The following activities will be completed for model development.

- Data review and development of additional data inputs required for the expanded model.
- Develop, apply and calibrate model for the period of the SDHF release.
- Compare model predictions to measured data. This will include comparisons between measured and predicted water surface elevation, relations between hydraulic parameters (e.g. shear stress, velocity, bed mobility) and scour depth in vegetated areas.
- A spreadsheet type bank erosion model (e.g. BSTEM) will be applied to assess lateral erosion potential and compared to measured data.

3.4 The development of the mobile-bed model will build upon the fixed-bed model previously described, as justified in the model screening process. The model will be used to evaluate the performance of management actions by providing information on the areas that are more or less likely to discourage vegetation growth based on sour depths and bar development. The model predictions will be compared to measured data during the SDHF, such as:

- Hydraulic parameters including water surface elevation and velocity.
- Bar shape, height and frequency.
- Expected vegetation persistence or removal on bars.
- Scour and fill depths on representative surfaces.
- Location and extent of lateral erosion or deposition.
- Effects of hydrograph shape (magnitude or duration), sediment supply and grain size will be run using the sub-reach model developed in Task 3.2 and selected model runs will be run, as needed, with the expanded to mobile-bed model to confirm the predicted response of the system.

Task 4 – Monitoring (2013)

The objective of this task is to implement the project-scale geomorphology and vegetation monitoring activities and analysis of data collected during the 2013 field season as established during the Experiment Design. Tasks are developed to complement Program learning objectives, Big Questions and Hypotheses as detailed in the proposal and at the October workshop in Kearney. Further, these tasks provide specific calibration data for hydraulic and sediment transport modeling efforts and expand greatly on previous attempts to characterize sediment transport in the Platte River. It is anticipate that the Short Duration High Flows (SDHF) event will be in late March 2013.

4.1 Field preparation will be conducted prior to collection of field data. These activities include: preparation of field maps, establishing survey control points, field scouting for refining locations of transects and equipment access, installation of two water level recorders (upstream and downstream) to monitor river stage, installation of water quality sondes to continuously monitor turbidity. It is assumed that the water level recorders and water quality sondes will be provided by the Program.

4.2 Conduct maintenance and download data on a regular two week interval to ensure equipment is operating properly. It was assumed that the equipment would be installed for a period of eight weeks. The equipment will be removed following the final download.

4.3 Conduct field data collection event to document baseline conditions. A data collection event will be conducted prior to SDHF release, so the activities are anticipated to be completed in early March 2013. The data collection activities will include:

- Topography and bathymetry data will be collected using RTK-GPS survey equipment. The site is an approximately 2.6-mile long reach of the Platte River. Transects were assumed to be spaced approximately 800 feet apart, resulting in 18 transects. Exposed sand bars will be surveyed within the reach.
- Photographic documentation with geo-referenced photo points will be performed.
- Bulk sampling of bed and bar materials will be conducted. It is estimated that 20 bed samples and 20 bar samples will be collected. The samples will be analyzed by a qualified soils laboratory for grain size.
- Vegetation sampling will include collecting the following:
    - A total of 126 vegetative assessment plots located within the reach to provide a statistically valid data set.
    - Each vegetation assessment plot will be a 1m x 1m quadrant. Each of the 18 transects will have seven plots that are evenly spaced along the transect after starting at random from the north side. The plots will be offset from the transect by five feet to avoid disturbing the vegetation. Plot locations will be recorded using a sub-foot GPS unit.
    - The stem density and percent cover of cottonwood trees, willows, and common reed will be collected at each plot.
    - The presence of other species (presence/absence) and total percent cover for all vegetation will be recorded at each plot.
    - Photos showing a total percent vegetation and percent sand will be taken at each plot.

  - It is recognized that the baseline vegetation sampling will be conducted in early March and identification of some vegetation characteristics may limited due to variable conditions at this time of the year.

- The vegetation cover for model development will include classifying polygon types based off a desktop review of aerial photography. Field verification of the polygon types will be conducted. Three days of field effort were included for field verification.
- Flow rates, depth distribution, and velocity measurements will be collected in the vicinity of the water stage recorders.
- Sediment transport sampling will be performed by depth integrated sampling at the bridges upstream and downstream of the Shoemaker reach.

4.4 Conduct field data collection during the SDHF event for discharge and suspended sediment monitoring. A truck-based crew will rotate between bridges collecting the following:

- Discharge, depth distribution, and velocity measurements will be collected in the vicinity of the water stage recorders.
- Collect 20 of depth integrated suspended sediment samples.
- Collect 20 single point suspended sediment samples for correlation with depth integrated sampling.
- This task includes all suspended sediment processing and analysis.

4.5 Conduct field data collection during the SDHF event to document bedload (topography), stage, velocity profile and profile monitoring during the experiment. A boat-based crew will work up and down the reach collecting the following:

- Sequential topographic surveys of sub reaches to generate volume changes and compute bedload discharge
- Stage and topography monitoring at monitoring cross sections
- Water surface profile through selected channels (opportunistically)
- Topographic longitudinal profile and transects through selected channels (opportunistically)
- Velocity profiles and discharge measurements at cross sections (opportunistically)

4.6 Scour chains will be used to monitoring scour and fill during the SDHF event. Shortly before the SDHF event, 30 scour chains will be installed. The scour chains will be removed following the SDHF event and the results surveyed using RTK GPS equipment.

4.7 Conduct field data collection to document post-SDHF conditions. Since the SDHF event is anticipated to be released around late March 2013, the post-SHDF data collection event is anticipated to be completed around April 2013. The data collection activities will be the same as the pre-experiment field event. Post-event vegetation assessment plots will be in the same locations as baseline plots.

4.8 Conduct supplemental topographic/bathymetric survey of the entire Shoemaker reach prior to the SDHF event. This task will only be completed if it is found that the LiDAR data from November 2012 is not sufficient for model development. This effort would be conducted in addition to the topographic survey of the transects and exposed bars from previous tasks.

4.9 Conduct supplemental topographic/bathymetric survey of the entire Shoemaker reach after the SDHF event. This effort would be conducted in addition to the topographic survey for the transects and exposed bars.

Task 5 – Data Analysis (2013)

The objective of this task is to analyze the data collected during the SDHF event and to provide interpretation of pre and post event geomorphic data collection by EA and provide model input, calibration and verification data.

5.1 Streamflow – Inspection of discharge measurements, development of ratings, computation of discharge record (or scaling USGS/ACOE record at Grand Island)

5.2 Turbidity and Suspended Sediment – Turbidity records for both ends of the reach will be inspected and edited for use in continuous suspended sediment discharge computations. Time stamps will provide pairings with DIS sample concentrations for development of turbidity vs SSC ratings. Full grain size distributions of the suspended sediment will be provided.

5.3 Bedload (repeat topography) – Surfaces will be developed from the topographic survey data collected during the SDHF. The change in volume (total cut) will provide the sediment flux over the time elapsed between the surveys thus yielding the bedload transport rate.

5.4 Sediment Budget: total load and overall volume change – The near-bed suspended load (not measured by DIS or topographic mapping) will be estimated using the methods of Abraham (2010) or McElroy-Mohrig (2009). Summing the three loads (near-bed, suspended and bedload) will provide an estimate of sediment discharge into and out of the reach. This estimate will be compared to the total volume change within the reach, modeled predictions and will be evaluated with respect to management actions (e.g sediment load changes due to disking or sediment augmentation).

5.5 Cross section change and scour assessments – Cross section change will be evaluated in Excel, with the following clearly indicated: areas of scour and fill, areas of maximum intermediate scour (scour chain data), substantial textural change (e.g. disked vegetation to bare sand), and relevant stage elevations of different flows over sections.

5.6 Evaluate the products collected during and after the SDHF to support calibration of and comparison with hydraulic and sediment transport models including:

- All sediment budget components (discharge, sediment loads, volume changes)
- Grain size data from bulk samples
- Bed elevation and/or bed elevation profiles of cross sections during high flow event
- One or more long profiles surveyed during the SDHF

5.7 Complete all geomorphic analyses not mentioned above that are included in the Project-Level Monitoring Protocols, such as:

- Relative changes in bar heights versus maximum stage
- Changes in grain size distribution
- Assessments of bar areas relative to the SDHF

5.8 Vegetation change - Vegetation change will be estimated by comparing parameters pre- and post-event from data collected on quadrats placed along cross-channel transects. Vegetation parameters to be analyzed are percent cover and stem density for the three primary species (cottonwood, willow, and common reed), as well as overall percent cover of vegetation. Change in vegetation parameters will be related to hydrologic parameters (e.g., scour, water velocity, etc.) to assess conditions facilitating maximum and minimum change.

Task 6 – Reporting (2013)

The objective of this task is to compile the methodology, results, and analysis for data collected during the 2013 field season into a single document (Annual Summary Report).

6.1 A Draft Annual Summary Report will be prepared for review and comment by the ED Office. The Draft Report will be submitted as an electronic copy through the Program's website. The Draft Report will be submitted in MS Word (narrative only) and PDF format.

6.2 ED Office comments will be addressed and incorporated into a Final Annual Summary Report. The Final Report will be submitted as an electronic copy through the Program's website along with three hard copies with electronic copies on CD. The Final Report will be submitted in MS Word (narrative only) and PDF format.

6.3 Conduct one formal presentation (such as presenting to the GC) in Kearney, NE by the Project Manager.

Task 7 – AMP Reporting Session (2013)

The objective of this task is for presentation of the findings at the following AMP reporting session.

7.1 Participate in the AMP reporting session conducted in March 2014 by Dan Bigbee, Smokey Pittman, and Bonnie Pryor.

Future Tasks

Future tasks to be completed include monitoring, data analysis, and reporting for additional years of field data collection. The scope of work and project budget for future tasks will be submitted as contract amendments.

Schedule

The proposed schedule for the services provided under contract amendment will begin upon notice to proceed (NTP) and will extend through April 2014 to include the AMP Reporting Session.

EXHIBIT B

Exhibit B

TOTAL COST SUMMARY

Platte River Recovery Implementation Program
Shoemaker FSM "Proof of Concept"
Cost Estimate - Contract Amendment 1

	Labor Hours	Labor Cost	Subcontractor	ODC's	Travel	TOTAL	TOTAL (ROUNDED)
ORIGINAL CONTRACT							
Task 1 - Kickoff Meeting and Experiment Design Workshop	41	$5,625.00	$18,700.00	$168.20	$403.69	$24,896.89	$24,900.00
CONTRACT AMENDMENT 1							
Task 2 - Experiment Design	185	$22,149.00	$19,160.00	$149.52	$0.00	$41,458.52	$41,500.00
Task 3.1 - Review of Data Collected	8	$1,032.00	$14,520.00	$0.00	$0.00	$15,552.00	$15,600.00
Task 3.2 - Model Screening	8	$1,032.00	$18,720.00	$0.00	$0.00	$19,752.00	$19,800.00
Task 3.3 - Fixed-Bed Model Development	8	$1,032.00	$21,600.00	$0.00	$0.00	$22,632.00	$22,600.00
Task 3.4 - Mobile-Bed Model Development	8	$1,032.00	$38,400.00	$0.00	$0.00	$39,432.00	$39,400.00
Task 4.1 - Field Preparation	205	$17,919.00	$0.00	$2,053.48	$403.69	$20,376.17	$20,400.00
Task 4.2 - Weekly O&M	120	$8,424.00	$0.00	$1,865.76	$0.00	$10,289.76	$10,300.00
Task 4.3 - Pre-SDHF Field Event (Baseline)	282	$22,668.00	$8,200.00	$4,557.07	$3,767.74	$39,192.81	$39,200.00
Task 4.4 - Data Collection During SDHF	46	$3,414.00	$27,570.00	$744.66	$605.53	$32,334.19	$32,300.00
Task 4.5 - Additional Data Collection for Sediment Budget	48	$3,672.00	$12,500.00	$1,800.00	$0.00	$17,972.00	$18,000.00
Task 4.6 - Scour Chains	124	$10,056.00	$2,500.00	$1,134.02	$1,345.62	$15,035.64	$15,000.00
Task 4.7 - Post-SDHF Field Event	282	$22,668.00	$0.00	$4,057.07	$3,767.74	$30,492.81	$30,500.00
Task 4.8 - Pre-SDHF Supplemental Topographic/Bathymetric Survey	112	$9,192.00	$4,000.00	$2,184.96	$1,211.06	$16,588.02	$16,600.00
Task 4.9 - Post-SDHF Supplemental Topographic/Bathymetric Survey	112	$9,192.00	$3,500.00	$2,184.96	$1,211.06	$16,088.02	$16,100.00
Task 5 - Data Analysis	264	$24,552.00	$40,020.00	$0.00	$0.00	$64,572.00	$64,600.00
Task 6 - Reporting (2013)	196	$21,216.00	$33,880.00	$227.14	$0.00	$55,323.14	$55,300.00
Task 7 - AMP Reporting Session (2014)	24	$3,096.00	$10,000.00	$0.00	$0.00	$13,096.00	$13,100.00
TOTAL - AMENDMENT 1	**2,032**	**$182,346.00**	**$254,570.00**	**$20,958.64**	**$12,312.44**	**$470,187.08**	**$470,300.00**

EXHIBIT C

EA Engineering, Science, and Technology, Inc.
221 Sun Valley Blvd., Ste. D
Lincoln, NE 68528
TIN# 520991911

Nebraska Community Foundation, Inc.
PO Box 83107
Lincoln, NE 68501-3107
TIN# 47-0769903

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM

Contract between Nebraska Community Foundation, Inc., Platte River Recovery Implementation Program, and EA Engineering, Science, and Technology, Inc.

Shoemaker Island Flow-Sediment-Mechanical "Proof of Concept" Experiment Implementation Design, Technical Support, Monitoring, and Data Analysis

1. **Parties.** This Contract is made and entered into by and between the Nebraska Community Foundation, Inc. ("Foundation") of Lincoln, Nebraska, representing all signatories to the Platte River Recovery Implementation Program ("Program") and EA Science, Engineering, and Technology, Inc. ("Consultant"). The following persons are authorized to represent the parties through this Contract: Diane Wilson of the Foundation, Dr. Jerry Kenny of the Program; and Dale Schlautman of the Consultant.

2. **Purpose of Contract.** The purpose of this Contract is to allow the Foundation, acting as the fiscal agent for the Governance Committee (GC) of the Program, to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Program, and to delegate the Executive Director's Office ("ED Office") through its Executive Director or his designee the authority to administer this Contract.

TERMS AND CONDITIONS

3. **Term of Contract and Required Approvals.** This Contract is effective when all parties have executed it and all required approvals have been granted. The term of this Contract is from September 7, 2012 through December 31, 2016. The services to be performed under this Contract will commence upon receipt of authorization to proceed. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Program, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Program.

4. **Payment.**

A. Reimbursement of Expenses. The Program agrees to pay the Consultant an amount based on the approved budget depicted in Exhibit B and hourly rate and reimbursable expenses price schedules depicted in Exhibit C, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Exhibit A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract for Task 1 shall not exceed twenty four thousand, nine hundred dollars ($24,900). *Detailed scope and fee for Tasks 2 through 4 will be developed as part of Task 1 and this contract will be amended to increase the project budget to accommodate those work items.* Total payment under this Contract will not exceed two hundred and fifty thousand dollars ($250,000) in calendar year 2012.

B. Project Budget. The Project budget for each task included in Exhibit A is as follows:

Task	Estimated Cost
Task 1 – Project Kickoff and Experimental Design Workshop	$24,900
Task 2 – Modeling and Experimental Design	TBD
Task 3 – Monitoring and data Analysis	TBD
Task 4 – Reporting and Performance Evaluation	TBD
TOTAL Project Cost	**$TBD**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Program. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the Program may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Consultant shall send billing reports for services performed for the various tasks outlined in Exhibit A to the ED Office (address included below). The Program's Executive Director, upon receiving the billing report, will approve the bill and submit the bill for payment. The submittal for payment will then be reviewed by the Signatory Parties of the Program who will advise the Foundation of approval. The Foundation will make payment of these funds directly to the Consultant within 30 days of notice of approval by the Signatory Parties. Payments of bills are due within 60 days after the billing date of the Consultant.

Billing Point of Contact (Program):
Dr. Jerry F. Kenny, Executive Director
Platte River Recovery Implementation Program
Headwaters Corporation
4111 4th Avenue, Suite 6
Kearney, Nebraska 68845
Phone: (308) 237-5728
Fax: (308) 237-4651
Email: kennyj@headwaterscorp.com

D. **Money Withheld.** When the Program has reasonable grounds for believing that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Program may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Program against such loss. These amounts may be withheld until the cause for the withholding is cured to the Program's satisfaction or this Contract is terminated pursuant to Section 8U. Any amount so withheld may be retained by the Program for such period as it may deem advisable to protect the Program against any loss. This provision is intended solely for the benefit of the Program and no person shall have any right against the Program by reason of the Program's failure or refusal to withhold monies. No interest shall be payable by the Program on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Program.

E. **Withholding of Payment.** If a work element has not been received by the Program by the dates established in Exhibit A, the Program may withhold all payments beginning with the month following that date until such deficiency has been corrected.

F. **Final Completion and Payment.** The final payment shall be made upon acceptance of the final report and receipt of the final billing.

5. **Responsibilities of Consultant.**

A. **Scope of Services.** The Consultant shall perform the specific services required under this Contract in a satisfactory and proper manner as outlined in Exhibit A. If there is any conflict between this Contract and the provisions of the specific requirements of Exhibit A, the specific requirements shall prevail.

B. **Personnel.** All of the services required hereunder will be performed by the Consultant or under its supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized, licensed, or permitted under state law to perform such services, if state law requires such authorization, license, or permit.

C. Subcontracts.

(i) Approval Required for Subcontracts. Any subcontractors and outside associates or consultants required by the Consultant in connection with the services, work performed or rendered under this Contract will be limited to such individuals or firms as were specifically identified in the proposal and agreed to during negotiations or are specifically authorized by the Program during the performance of this Contract. The Consultant shall submit a list of the proposed subcontractors, associates or consultants; the scope and extent of each subcontract; and the dollar amount of each subcontract prior to Contract execution to the Program for approval. During the performance of the Contract, substitutions in or additions to such subcontracts, associates, or consultants will be subject to the prior approval of the Program. The Program approval of subcontractors will not relieve the Consultant from any responsibilities outlined in this Contract. The Consultant shall be responsible for the actions of the subcontractors, associates, and subconsultants.

(ii) Billings for Subcontractors. Billings for subcontractor, associates or subconsultants services will not include any mark up. The subcontract costs will be billed to the Program at the actual costs as billed to the Consultant. Subcontract costs will be documented by attaching subcontractor billings to the Consultant's billing submittals.

(iii) Copies of Subcontracts. The Consultant shall provide to the Program copies of each subcontractor contract immediately following execution with the subcontractor. All subcontracts between the Consultant and a subcontractor shall refer to and conform to the terms of this Contract. However, nothing in this Contract shall be construed as making the Program a party of any subcontract entered between the Consultant and a subcontractor.

D. Requests from the Program. The Consultant shall be responsible and responsive to the Program and the ED Office in their requests and requirements related to the scope of this Contract.

E. Presentation of Data. The Consultant shall select and analyze all data in a systematic and meaningful manner so as to contribute directly in meeting the objectives of the Project, and shall present this information clearly and concisely, in a professional manner.

F. Draft of Final Report. The Consultant shall present the Program a draft of the final report covering all work elements of the Project including maps, charts, conclusions and recommendations prior to the publication of any final report and no later than the date specified in Exhibit A. Draft Reports will be provided to the Program in Microsoft Word format for distribution and review. The Program will respond with written comments to the Consultant as soon as possible. The Consultant will address the comments of the Program in the final report. Final Reports will be provided to the Program in Microsoft Word and PDF format.

G. Project Completion Report. A final project completion report in the form described in Exhibit A shall be submitted to the Program by the date specified in Exhibit A.

H. Reports, Maps, Plans, Models and Documents. One (1) copy of maps, plans, worksheets, logs, field notes and other reference or source documents prepared for or gathered under this Contract, and one (1) copy of each unpublished report prepared under this Contract shall be submitted to the Program. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Program for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to Program in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. All user manuals shall be submitted by the Consultant to Program providing complete documentation of computer programs developed under this Contract. The user manual shall also specify the source code language and the type of computer equipment necessary to operate the program(s). Any programs or computer software generated as a part of this Contract shall be the sole property of the Program.

I. Inspection and Acceptance. All deliverables furnished by the Consultant shall be subject to rigorous review by the Program's ED Office prior to acceptance.

6. **Responsibilities of the Program.**

A. Designated Representative. The Executive Director of the Program shall act as the Program's administrative representative with respect to the Consultant's service to be performed under this Contract and shall have complete authority to transmit instructions, receive information, and interpret and define the Program's policies and decisions with respect to services covered by this Contract.

B. Data to be Furnished to the Consultant. All information, data, reports, and maps as are available to the Program and necessary for the carrying out of the Scope of Services set forth herein shall be furnished to the Consultant without charge and the ED Office shall cooperate with the Consultant in the carrying out of the project.

C. Review Reports. The ED Office shall examine all studies, reports, sketches, opinions of the construction costs, and other documents presented by the Consultant to the Program and shall promptly render in writing the Program's decisions pertaining thereto within the time periods specified in Exhibit A.

D. Provide Criteria. The ED Office shall provide all criteria and full information regarding its requirements for the project.

7. **Special Provisions.**

A. No Finder's Fees. No finder's fee, employment agency fee, or other such fee related to the procurement of this Contract shall be paid by either party.

B. Publication. It is understood that the results of this work may be available to the Consultant for publication and use in connection with related work. Use of this work for publication and related work by the Consultant must be conducted with prior authorization from the Program's Technical Point of Contact.

C. Publicity. Any publicity or media contact associated with the Consultant's services and the result of those services provided under this Contract shall be the sole responsibility of the Program. Media requests of the Consultant should be directed to the Director of Outreach and Operations in the BD Office.

D. Monitor Activities. The Program shall have the right to monitor all Contract related activities of the Consultant and all subcontractors. This shall include, but not be limited to, the right to make site inspections at any time, to bring experts and consultants on site to examine or evaluate completed work or work in progress, and to observe all Consultant personnel in every phase of performance of Contract related work.

D. Kickbacks. The Consultant certifies and warrants that no gratuities, kickbacks or contingency fees were paid in connection with this Contract, nor were any fees, commissions, gifts, or other considerations made contingent upon the award of this Contract. If the Consultant breaches or violates this warranty, the Program may, at its discretion, terminate this Contract without liability to the Program, or deduct from the Contract price or consideration, or otherwise recover, the full amount of any commission, percentage, brokerage, or contingency fee.

E. Office Space, Equipment, and Supplies. The Consultant will supply its own office space, equipment, and supplies.

8. **General Provisions.**

A. Amendments. Any changes, modifications, revisions or amendments to this Contract which are mutually agreed upon by the parties to this Contract shall be incorporated by written instrument, executed and signed by all parties to this Contract.

B. Applicable Law/Venue. The construction, interpretation and enforcement of this Contract shall be governed by the laws of the State of Nebraska. The Courts of the State of Nebraska shall have jurisdiction over this Contract and the parties.

C. **Assignment/Contract Not Used as Collateral.** Neither party shall assign or otherwise transfer any of the rights or delegate any of the duties set forth in this Contract without the prior written consent of the other party. The Consultant shall not use this Contract, or any portion thereof, for collateral for any financial obligation, without the prior written permission of the Program.

D. **Audit/Access to Records.** The Program and any of its representatives shall have access to any books, documents, papers, and records of the Consultant which are pertinent to this Contract. The Consultant shall, immediately upon receiving written instruction from the Program, provide to any independent auditor, accountant, or accounting firm, all books, documents, papers and records of the Consultant which are pertinent to this Contract. The Consultant shall cooperate fully with any such independent auditor, accountant, or accounting firm, during the entire course of any audit authorized by the Program.

E. **Availability of Funds.** Each payment obligation of the Program is conditioned upon the availability of funds and continuation of the Platte River Recovery Implementation Program. If funds are not allocated and available for the continuance of the services performed by the Consultant, the contract may be terminated by the Program at the end of the period for which the funds are available. The Program shall notify the Consultant at the earliest possible time of the services which will or may be affected by a shortage of funds. No penalty shall accrue to the Program in the event this provision is exercised, and the Program shall not be obligated or liable for any future payments due or for any damages as a result of termination under this section. This provision shall not be construed to permit the Program to terminate this Contract to acquire similar services from another party.

F. **Award of Related Contracts.** The Program may undertake or award supplemental or successor contracts for work related to this Contract. The Consultant shall cooperate fully with other contractors and the Program in all such cases.

G. **Certificate of Good Standing.** Consultant shall provide Certificate of Good Standing verifying compliance with the unemployment insurance and workers' compensation programs prior to performing work under this Contract.

H. **Compliance with Law.** The Consultant shall keep informed of and comply with all applicable federal, state and local laws and regulations in the performance of this Contract.

I. **Confidentiality of Information.** All documents, data compilations, reports, computer programs, photographs, and any other work provided to or produced by the Consultant in the performance of this Contract shall be kept confidential by the Consultant unless written permission is granted by the Program for its release.

J. **Conflicts of Interest**

(i) Consultant shall not engage in providing consultation or representation of clients, agencies or firms which may constitute a conflict of interest which results in a disadvantage to the Program or a disclosure which would adversely affect the interests of the Program. Consultant shall notify the Program of any potential or actual conflicts of interest arising during the course of the Consultant's performance under this Contract. This Contract may be terminated in the event a conflict of interest arises. Termination of the Contract will be subject to a mutual settlement of accounts. In the event the contract is terminated under this provision, the Consultant shall take steps to insure that the file, evidence, evaluation and data are provided to the Program or its designee. This does not prohibit or affect the Consultant's ability to engage in consultations, evaluations or representation under agreement with other agencies, firms, facilities, or attorneys so long as no conflict exists.

(ii) A conflict of interest warranting termination of the Contract includes, but is not necessarily limited to, representing a client in a adversarial proceeding against the Platte River Recovery Implementation Program, its signatories, boards, commissions or initiating suits in equity including injunctions, declaratory judgments, writs of prohibition or *quo warranto*.

K. **Entirety of Contract.** This Contract, consisting of *twelve* (12) pages, Exhibit A, consisting of three (3) pages, Exhibit B, consisting of *one (1)* page, and Exhibit C, consisting of *one (1)* page, represents the entire and integrated Contract between the parties and supersedes all prior negotiations, representations, and agreements, whether written or oral.

L. **Force Majeure.** Neither party shall be liable for failure to perform under this Contract if such failure to perform arises out of causes beyond the control and without the fault or negligence of the nonperforming party. Such causes may include, but are not limited to, acts of God or the public enemy, fires, floods, epidemics, quarantine restrictions, freight embargoes, and unusually severe weather. This provision shall become effective only if the party failing to perform immediately notifies the other party of the extent and nature of the problem, limits delay in performance to that required by the event, and takes all reasonable steps to minimize delays. This provision shall not be effective unless the failure to perform is beyond the control and without the fault or negligence of the nonperforming party.

M. **Indemnification.** The Consultant shall indemnify and hold harmless the Foundation, the Program, the ED Office, and their officers, agents, employees, successors and assignees from any and all claims, lawsuits, losses and liability arising out of Consultant's failure to perform any of Consultant's duties and obligations hereunder or in connection with the negligent performance of Consultant's duties or obligations, including but not limited to any claims, lawsuits, losses or liability arising out of Consultant's malpractice.

N. **Independent Contractor.** The Consultant shall function as an independent contractor for the purposes of this Contract, and shall not be considered an employee of the Program,

Foundation or ED Office for any purpose. The Consultant shall assume sole responsibility for any debts or liabilities that may be incurred by the Consultant in fulfilling the terms of this Contract, and shall be solely responsible for the payment of all federal, state and local taxes which may accrue because of this Contract. Nothing in this Contract shall be interpreted as authorizing the Consultant or its agents and/or employees to act as an agent or representative for or on behalf of the Foundation or the Program, or to incur any obligation of any kind on the behalf of the Foundation or the Program. The Consultant agrees that no health/hospitalization benefits, workers' compensation and/or similar benefits available to Foundation or Program employees will inure to the benefit of the Consultant or the Consultant's agents and/or employees as a result of this Contract.

O. Notices. All notices arising out of, or from, the provisions of this contract shall be in writing and given to the parties at the address provided under this Contract, either by regular mail, facsimile, e-mail, or delivery in person.

P. Notice and Approval of Proposed Sale or Transfer of the Consultant. The Consultant shall provide the Program with the earliest possible advance notice of any proposed sale or transfer or any proposed merger or consolidation of the assets of the Consultant. Such notice shall be provided in accordance with the notice provision of this Contract.

Q. Ownership of Documents/Work Product/Materials. All documents, reports, records, field notes, data, samples, specimens, and materials of any kind resulting from performance of this Contract are at all times the property of the Program.

R. Patent or Copyright Protection. The Consultant recognizes that certain proprietary matters or techniques may be subject to patent, trademark, copyright, license or other similar restrictions, and warrants that no work performed by the Consultant or its subcontractors will violate any such restriction.

S. Proof of Insurance. The Consultant shall not commence work under this Contract until the Consultant has obtained the following insurance coverages and provided the corresponding certificates of insurance:

(i) Commercial General Liability Insurance. Consultant shall provide coverage during the entire term of the Contract against claims arising out of bodily injury, death, damage to or destruction of the property of others, including loss of use thereof, and including products and completed operations in an amount not less than Five Hundred Thousand Dollars ($500,000.00) per claimant and One Million Dollars ($1,000,000.00) per occurrence.

(ii) Business Automobile Liability Insurance. Consultant shall maintain, during the entire term of the Contract, automobile liability insurance in an amount not less than Five Hundred Thousand Dollars ($500,000.00) per occurrence. Coverage will include bodily injury and property damage covering all vehicles, including hired vehicles, owned and non-owned vehicles

(iii) Workers' Compensation or Employers' Liability Insurance. The Consultant shall provide proof of workers' compensation coverage Consultant's insurance shall include "Stop Gap" coverage in an amount not less than Five Hundred Thousand Dollars ($500,000.00) per employee for each accident and disease.

(iv) Professional Liability or Errors and Omissions Liability Insurance. The Consultant shall provide proof of professional liability insurance or errors and omissions liability insurance to protect the Foundation, Program and ED Office from any and all claims arising from the Consultant's alleged or real professional errors, omissions or mistakes in the performance of professional duties in an amount not less than One Million Dollars ($1,000,000.00) per claim.

T. **Taxes.** The Consultant shall pay all taxes and other such amounts required by federal, state and local law, including but not limited to federal and social security taxes, workers' compensation, unemployment insurance and sales taxes.

U. **Termination of Contract.** This Contract may be terminated, without cause, by the Program upon fifteen (15) days written notice. This Contract may be terminated immediately for cause if the Consultant fails to perform in accordance with the terms of this Contract.

V. **Third Party Beneficiary Rights.** The parties do not intend to create in any other individual or entity the status of third party beneficiary, and this Contract shall not be construed so as to create such status. The rights, duties and obligations contained in this Contract shall operate only between the parties to this Contract, and shall inure solely to the benefit of the parties to this Contract. The provisions of this Contract are intended only to assist the parties in determining and performing their obligations under this Contract.

W. **Time is of the Essence.** Time is of the essence in all provisions of the Contract.

X. **Titles Not Controlling.** Titles of paragraphs are for reference only, and shall not be used to construe the language in this Contract.

Y. **Waiver.** The waiver of any breach of any term or condition in this Contract shall not be deemed a waiver of any prior or subsequent breach.

9. **Contacts.**

Administrative Point of Contact (Foundation):
Diane M. Wilson
Chief Financial and Administrative Officer
Nebraska Community Foundation
PO Box 83107
Lincoln, Nebraska 68501-3107
Phone: (402) 323-7330
Fax: (402) 323-7349
Email: dwilson@nebcommfound.org

Admin. Point of Contact (Program):
Dr. Jerry F. Kenny, Executive Director
Platte River Recovery Implementation Prog.
Headwaters Corporation
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Fax: (308) 237-4651
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Technical Point of Contact (Program):
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Headwaters Corporation
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Media Point of Contact (Program):
Dr. Bridget Barron, Director of Outreach
Platte River Recovery Implementation Prog.
Headwaters Corporation
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Fax: (308) 237-4651
Email: barronb@headwaterscorp.com

Administrative Point of Contact (Consultant):
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Phone: (402) 476-3766
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Email: dschlautman@eaeast.com

Technical Point of Contact (Consultant):
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Phone: (402) 476-3766
Fax: (402) 476-7825
Email: dschlautman@eaeast.com

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10. **Signatures.** By signing this Contract, the parties certify that they have read and understood it, that they agree to be bound by the terms of the Contract, that they have the authority to sign it.

NEBRASKA COMMUNITY FOUNDATION

Diane M. Wilson
Chief Financial and Administrative Officer

9/11/2012
Date

EA Engineering, Science, and Technology, Inc.

Dale Schlautman

9/10/12
Date

EXHIBIT "A"
SCOPE OF SERVICES

A. PROJECT DESCRIPTION

1. Location: The study area is the Program's Shoemaker Island habitat complex located in the Wood River to Alda bridge segment. Monitoring will be confined to the channel and near-channel areas in this reach.

2. Purpose: The purpose of this project is to procure technical services in support of the development and implementation of an FSM "Proof of Concept" management experiment at the Program's Shoemaker Island Complex. The scope of services includes 2-dimensional hydraulic and sediment transport model development and calibration, statistical analysis for experimental design, annual implementation and effectiveness monitoring, and synthesis and analysis of monitoring data in support of performance evaluation.

3. History: The Platte River Recovery Implementation Program (Program) was initiated on January 1, 2007 between Nebraska, Wyoming, Colorado, and the Department of Interior to address endangered species issues in the central and lower Platte River basin. The Program's Adaptive Management Plan outlines a process for reducing uncertainties associated with the effectiveness of the proposed management strategies to provide benefits to the Program's target bird species. One of those management strategies is the Flow-Sediment-Mechanical strategy. This project is intended to address key uncertainties about the ability of the FSM management strategy to create and/or maintain target species habitat.

B. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month. The progress report will also show the percentage of the job completed by task and the percentage of budget spent. The progress report will also include a billing projection for the upcoming month for the purpose of Program reimbursement request planning.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the

progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Program for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Program in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Program providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Program's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

* Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

* Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Program and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

* Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed

in the State of Nebraska or other state if appropriate to location of project site. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Nebraska. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Nebraska. At a minimum, the reproducible original to be submitted as part of the deliverables required herein must utilize an original seal(s) and original signature(s).

4. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall, to the extent feasible, be assembled into one file rather than separate files for text, tables, graphics, etc. This digital report shall be contained on a CD(s) or DVD(s), and shall be in both Word and Adobe Acrobat format. Any plates, figures, etc. not suitable for Word shall be in AutoCAD, ArcGIS, Adobe Acrobat, or compatible format. Other formats may be used if approved in advance by the ED Office. The final documents will also be provided fully assembled into one file, in a complete "internet ready" digital format to facilitate their distribution via the Office website.

5. Project Access

The ED Office shall be responsible for obtaining access as required for project tasks.

6. Stand-By Time

The Program will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

C. SCOPE OF SERVICES

See Attachment A.

ATTACHMENT "A"
SCOPE OF SERVICES

Exhibit A
SCOPE OF WORK

Platte River Recovery Implementation Program
Shoemaker Island Flow-Sediment-Mechanical "Proof of Concept" Experiment
Implementation Design, Technical Support, Monitoring, and Data Analysis
29 August 2012

PROJECT DESCRIPTION

In 2011, the Program began implementation of a FSM "Proof of Concept" management experiment at the Elm Creek Complex near Elm Creek, Nebraska. That reach was chosen as the first "Proof of Concept" site because flows are consolidated by the Kearney Canal Diversion and the presence of the diversion in the middle of the reach produces a range of hydraulic and sediment transport conditions. The Program has completed the first year of activities associated with that project, including development of monitoring protocols, 2-dimensional modeling, and pre/post runoff monitoring. Analysis of the first year of monitoring data has also been completed and the Program is working with the contractor to finalize the first year monitoring report and implementation design document for that project. While the first year of the management experiment at the Elm Creek Complex provided very useful data, there has been some concern that the presence of the diversion, as well as the general sediment deficit in the reach, may limit the Program's ability to apply learning at this location to other reaches. The Shoemaker Island FSM "Proof of Concept" project will provide another replicate of this management experiment in a reach that is in sediment balance and is not impacted by water development or transportation infrastructure.

The Shoemaker Island Complex includes an approximately 2.6-mile long reach of Platte River channel extending from approximately 1.5 miles downstream of the Highway 11 bridge to approximately one mile upstream of Alda Road. The Program owns the north bank and associated accretion lands in this reach. The south bank is in Private ownership and the Program has obtained permission to implement research and monitoring on their accretion lands. The complex is located in the downstream portion of the Associated Habitat reach where the channel is in sediment balance. Because of this, the Shoemaker Island Complex has been chosen for implementation of second replicate of a "Proof of Concept" management experiment to evaluate the performance of the FSM management actions in creating and/or maintaining channel characteristics that are consistent with the Program's management objectives.

EA Engineering, Science, and Technology, Inc. (EA) has been selected as the Consultant for this project. The Consultant's services will be provided on a time and expense basis not to exceed the project budget provided in Exhibit B based on the rate schedule provided in Exhibit C.

SCOPE OF WORK

The initial services included in this Scope of Work are organized based on a portion of Task 1 in the RFP. Additional services will be added for future tasks after the completion of Task 1. The Consultant will provide the following services under this Scope of Work.

Task 1 – Kickoff Meeting and Experiment Design Workshop

1) EA will conduct a kickoff meeting with the ED Office via conference call. The purpose of the meeting will be to provide the schedule for field activities, coordinate changes in access and permission, update landowner contact information, refine project schedule, establish points of contact, and discuss any other issues that could impact the project. The kickoff meeting will be attended by Dan Bigbee and Dale Schlautman (EA), Smokey Pittman, (GMA), Trent McDonald and Shay Howlin (WEST), and Bonnie Pryor (NHE).
2) EA will review the HEC model prior to the Experiment Design Workshop. The HEC model will be used to run boundary conditions and for calibration of the 2D model. This will help develop costs for the initial modeling effort and will assist in determining additional data collection needs.
3) EA will perform a brief review of the draft report of the Elm Creek project prior to the Experiment Design Workshop.
4) An Experiment Design Workshop will be conducted with the ED Office. The purpose of the work session will be to refine the objectives of the experiment, provide background on lessons-learned related to the Elm Creek Experiment, identify key areas for future research, and discuss ideas for improving upon past work. The workshop will be held in Kearney, NE and will be attended by Dan Bigbee and Dale Schlautman in person. Smokey Pittman, Trent McDonald, and Bonnie Pryor will also be attending in person. Additional key staff including Jeff Anderson, Cort Pryor, Graham Matthews and Shay Howlin will attend via conference call or GoToMeeting. It is anticipated that the Workshop will be four hours in length. EA will prepare and distribute minutes.
5) In conjunction with the workshop, the EA Team members will conduct a site visit in cooperation with the ED Office to observe first-hand general site conditions, examine site locations of key interest, and collect any preliminary data.

Future Tasks

One of the objectives of Task 1 is to refined the project approach and scope of work. Future tasks to be completed include experiment design, monitoring and data analysis and report and performance evaluation. The scope of work and project budget for future tasks will be submitted as contract amendments.

Schedule

The proposed schedule was prepared based on the notice to proceed (NTP) date as described below.

Task	Date
Notice To Proceed	10 September 2012
Kickoff Site Conference Call	19 September 19 2012
Experiment Design Workshop	3 October 2012

EXHIBIT "B"
BUDGET

TOTAL COST SUMMARY

Platte River Recovery Implementation Program
Shoemaker FSM "Proof of Concept"
Cost Estimate

	Labor Hours	Labor Cost	Subcontractor	ODC's	Travel	TOTAL	TOTAL (ROUNDED)
Task 1 - Kickoff Meeting and Experiment Design Workshop	41	$5,625.00	$18,700.00	$168.20	$403.69	$24,896.89	$24,900.00
TOTALS	41	$5,625.00	$18,700.00	$168.20	$403.69	$24,896.89	$24,900.00

EXHIBIT "C"
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2012

Exhibit C

Platte River Recovery Implementation Program
Shoemaker FSM "Proof of Concept"
Cost Estimate
TABLE B - SUMMARY OF ESTIMATED COSTS

(1) Direct Labor	Class Code	Hours	Rate	Cost	
Principal-In-Charge		0	$180.00	$0.00	
Senior Technical Review		0	$165.00	$0.00	
Project Manager		25	$129.00	$3,225.00	
Senior Engineer		16	$150.00	$2,400.00	
Mid-level Engineer		0	$105.00	$0.00	
Junior Engineer		0	$81.00	$0.00	
Construction Manager		0	$75.00	$0.00	
Engineering/Field Technician		0	$45.00	$0.00	
Senior Geologist		0	$150.00	$0.00	
Mid-level Geologist		0	$93.00	$0.00	
Junior Geologist		0	$66.00	$0.00	
Senior Scientist		0	$150.00	$0.00	
Mid-level Scientist		0	$93.00	$0.00	
Junior Scientist		0	$66.00	$0.00	
CADD/GIS		0	$81.00	$0.00	
Drafter		0	$57.00	$0.00	
Administrative Assistant		0	$48.00	$0.00	
Clerical Support		0	$48.00	$0.00	
Subtotal Direct Labor and Multipliers					$5,625.00

(3) Subcontractors	Units	No. of Units	Rate	Cost	
GMA	LS	4900	$1.00	$4,900.00	
Northern Hydrology	LS	6200	$1.00	$6,200.00	
WEST	LS	7600	$1.00	$7,600.00	
Subcontractor 4	LS	0	$1.00	$0.00	
Subtotal Subcontractors		18700		$18,700.00	
G & A @ 0.00%				$0.00	
Subtotal Subcontractors and G & A					$18,700.00

(3) Usage and Other Costs	Units	No. of Units	Rate	Cost	
Bond/Vellum Plots/Copies - B&W	sq ft	0	$0.32	$0.00	
Bond/Vellum Plots/Copies - Color	sq ft	0	$2.64	$0.00	
Photo Quality Plots/Copies - Color	sq ft	0	$3.81	$0.00	
Report Preparation Materials	inch	1	$24.92	$12.46	
Level, Tripod, Rod	day	0	$32.53	$0.00	
Magellan/Garmin Handheld GPS	day	0	$31.80	$0.00	
Trimble GPS GeoXT	day	0	$89.93	$0.00	
RTK GPS	day	0	$350.00	$0.00	
Vehicle Usage (1/2 Ton Pickup)	day	1	$70.74	$70.74	
Vehicle Usage (1/2 Ton Pickup)	week	0	$282.96	$0.00	
Vehicle Usage (Pickup)	mile	250	$0.34	$85.00	
Mini-Rae Survey Mode PID	day	0	$95.40	$0.00	
Turbidity Meter	day	0	$44.52	$0.00	
Water Level Meter-SonEnst 101/QED	day	0	$31.80	$0.00	
D.O. Meter (non-recording) YSI 85	day	0	$30.35	$0.00	
YSI-556	day	0	$89.93	$0.00	
Peristaltic Pump	day	0	$44.52	$0.00	
Walkie Talkie	day	0	$12.72	$0.00	
Jon Boat w Motor	day	0	$105.93	$0.00	
Row Boat (12')	day	0	$63.61	$0.00	
Shipping	ea	0	$1.00	$0.00	
Supplies	ea	0	$1.00	$0.00	
[Blank]	day	0	$0.00	$0.00	
Subtotal Usage and Other Costs		252		$168.20	
Subtotal ODC's					$168.20

(4) Travel	Units	No. of Units	Rate	Cost	
Airfare	R/T	0	$500.00	$0.00	
Per Diem	day	3	$123.00	$369.00	
Rental Car	day	0	$50.00	$0.00	
Mileage (POV)	mile	0	$0.51	$0.00	
Subtotal Travel		3		$369.00	
G & A @ 9.40%				$34.69	
Subtotal Travel and G & A					$403.69

TOTAL ESTIMATED PROJECT COSTS $24,896.89

PRRIP – ED OFFICE MEMORANDUM

TO: FINANCE COMMITTEE

FROM: EXECUTIVE DIRECTOR'S OFFICE

SUBJECT: SHOEMAKER ISLAND FSM CONTRACT AMENDMENT

DATE: MAY 14, 2014

CC:

In 2012, the Program retained EA Engineering Science and Technology, Inc. (EA) to implement the second replicate of the Program's Flow-Sediment-Mechanical (FSM) proof of concept project at the Shoemaker Island habitat complex. Data collection began prior to the spring short-duration medium flow (SDMF) release in April of 2013 and will conclude in 2015. Specific project tasks include monitoring of channel topography, vegetation and sediment transport, development of two-dimensional hydrodynamic and sediment models, and data analysis and interpretation to infer the ability of the FSM management strategy to create and maintain target species habitat.

One of the priority data collection tasks in 2013 was collection of suspended and bed load sediment transport measurements during the SDMF release. That data was to be used in the development and calibration of a two-dimensional mobile bed hydrodynamic and sediment transport model for the Shoemaker Island reach. During the2013 event, EA was able to collect the specified suspended and bed load samples in the Shoemaker reach. However, the turbidity probe at the downstream end of the reach was vandalized and all continuous monitoring data was lost. This limited the ability of the project team to expand the discrete suspended sediment monitoring data into a suspended sediment rating curve for the SDMF event based on the observed relationships between suspended sediment concentrations and turbidity.

The 2014 suspended sediment and turbidity monitoring data will be used to refine the suspended sediment transport relationship for the Shoemaker Island reach and address some of the uncertainties that exist because of the incomplete 2013 dataset. The additional monitoring has been envisioned as a one-year effort with the results being integrated into the larger ongoing three-year monitoring and modeling effort. Overall project data collection will continue into 2015 with final modeling and analysis results presented to the Program early in 2016.

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM

Third Amendment to the Agreement between the Nebraska Community Foundation, Inc. and EA Engineering, Science, and Technology, Inc. Regarding "Shoemaker Island Flow-Sediment-Mechanical "Proof of Concept" Experiment Implementation Design, Technical Support, Monitoring and Data Analysis"

This Third Amendment to the Agreement between the Nebraska Community Foundation, Inc. ("Foundation") of Lincoln, Nebraska, representing all signatories to the Platte River Recovery Implementation Program ("Program"), and EA Engineering, Science, and Technology, Inc. ("Consultant"), a consulting firm with headquarters in Hunt Valley, Maryland, is made and entered into effective on the date of signing below and the final date of this Amendment will be May 1, 2015.

The purpose of this amendment is to:

(1) Expand the Scope of Work to include additional 2014 professional services as presented in **Exhibit A**. The Scope of Work includes time and materials for collection and analysis of additional discharge data and suspended sediment concentrations during the 2014 field season. More specifically, the scope includes:

a. two trips to the Shoemaker study site to collect simultaneous suspended sediment and discharge measurements during the summer when the river is wadeable,
b. one trip to collect suspended sediment samples during the summer when the river is wadeable,
c. one trip to collect suspended sediment samples from the Wood River bridge during the annual runoff event,
d. analysis of all suspended sediment data that is collected, and
e. installation and maintenance of a turbidity probe at the Shoemaker site during the 2014 field season.

These data are needed to address uncertainties in suspended sediment concentration and total sediment transport through Shoemaker Island reach under a range of discharges. The data will be used to improve the predictive capacity of the mobile-bed hydrodynamic and sediment transport model of the reach, which will facilitate a more thorough analysis of physical process relationships in the portion of the Associated Habitat Reach that is in sediment balance.

(2) Increase the project budget from $814,300 to **$832,855.** The amended budget will provide the Consultant with an additional **$18,555** (both in approved and available FY 2014 Program budget line item IMRP-2 funds) for the purpose of completing the tasks set forth in **Exhibit A**. This budget increase shall be effective as of the date of this Amendment. The Amendment 3 budget is presented in **Exhibit B**.

Important Amendment notes:

(1) This is the Third Amendment to the Agreement. **Exhibit C** includes the Original Agreement and amendments.
(2) The Shoemaker Island FSM "Proof of Concept" project is conceived as a three-year modeling, monitoring, and analysis project. The Consultant will provide professional services under this Amendment through May 1, 2015. General work items include additional discharge and sediment transport measurements to reduce uncertainties associated with sediment transport modeling.
(3) Notice to Proceed for tasks is granted to the Consultant upon execution of this Amendment.

All other terms of the original Agreement remain in effect as originally written in the Agreement dated August 28, 2012. The following parties agree to the terms of this Amendment and the original Agreement:

For the Consultant:

H. Lee Bucher 6/3/2014

~~Dale Schlautman~~ H. Lee Bucher — Date

EA Engineering, Science and Technology, Inc.

For the Foundation:

D M Wilson 6/03/2014

Diane M. Wilson — Date

Chief Operating Officer/Chief Financial Officer

Nebraska Community Foundation, Inc.

EXHIBIT A

Justification for additional Suspended Sediment Data: Shoemaker 2014

1. Apparent disparity between Concentration at the Wood River Rd. Bridge and Concentrations at the Project Boundary during 2013 SDMF
    a. 2013 data collection efforts indicated lower concentrations at Shoemaker than were measured at Wood River Rd. This could be due to different transport characteristics at the two sites, measurement error, or un-measured temporal changes. Synoptic measurements at both sites will:
        i. Reduce uncertainty in 2013 SDMF and fall flood sediment load computations.
        ii. Determine the appropriate sampling location and model boundary. If the concentrations are different between the two locations, either the sample location or model boundary must change. Moving the model boundary upstream to Wood River Rd. (~ 2 miles upstream) will require additional data collection (topography and roughness) and more time required for modeling. Moving the sampling location to the current model boundary (near XS 1) will require collection of measurements from a boat during high flows (or collecting samples from Wood River Rd. and correcting to XS1 using observed relation). Both of these options will require more effort. This sampling effort will confirm whether one of these relocation modifications is necessary.
        iii. If possible, a single vertical suspended sediment (SS) sample will be collected with each full cross section sample at XS1. The 2013 data showed good correlations between single vertical and full cross section concentrations at Wood River Rd. and S. Alda Rd. Thus, if the entire cross section is un-wadeable, a single-vertical may provide a reasonable surrogate of full cross section concentration.
        iv. If 2014 high flow SS samples are collected at Wood River Rd. (when XS1 is un-wadeable), synoptic sampling will facilitate correcting samples (using the observed relation between Wood River Rd. and XS1) to the appropriate, estimated value. If synoptic sampling shows concentrations to be the same at Wood River Rd. and XS1, no corrections will be required.
        v. The proposed effort provides for the direct measurement and prediction (turbidity or discharge as the independent variable) of continuous suspended sediment concentration (SSC) during wadeable flows. For un-wadeable flows, the proposed effort provides four methods of estimating peak flow concentrations: (1) single vertical correction at XS1; (2) correction (or direct use) of Wood River Rd. concentrations; (3) turbidity prediction; (4) discharge prediction. This 4-way focus on the estimated values for the highest flows will greatly reduce uncertainty in suspended and total load computations.

2. Spring 2014 Flood Modeling
    a. Available high flow SS data from the 2013 fall flood show poor relations with discharge (figure below), thus discharge is a poor predictor of concentration at Shoemaker. Especially above 4,000 cfs.
    b. 2014 suspended samples, distributed across the spectrum of flow magnitude and paired with continuous turbidity, will facilitate a much more accurate estimate of the 2014 sediment load transported during the study period (May-July) and substantially improved boundary conditions for the mobile-bed model for target SDHF (5,000-8,000 cfs).

Breakdown of effort associated with each Task

Phase 1 – Stage/Discharge and Suspended Sediment Concentration - Wadeable

The effort for this task includes collecting stage/discharge readings and collection of SS samples on two separate trips after the May event and before the July event when the Platte River is wadeable. EA's effort includes one long day per trip for collection of discharge and SS samples. Effort is included for GMA to analyze and interpret the SS samples.

Phase 2 – Suspended Sediment Concentration – Wadeable

The effort for this task includes collecting SS samples in one trip after the May event and before the July event when the Platte River is wadeable. EA's effort includes one long day for collection of SS samples near XS1. Effort is included for GMA to analyze and interpret the SS samples.

Phase 3 – Suspended Sediment Concentration – NON-Wadeable

The effort for this task includes collecting SS samples in one trip after the May event and before the July event. EA's effort includes one long day for collection of SS samples from the bridge at Wood River Rd. and at a single vertical near the XS1 gage when the Platte River is not wadeable. Effort is included for GMA to analyze and interpret the SS samples.

Phase 4 – Suspended Sediment Concentration Analytical Analysis During May and July Field Work

Effort is included for GMA to analyze and interpret the SS samples. No additional time is included for the collection of samples.

Phase 5 – Sonde Maintenance

The effort for this task includes the operation and maintenance of the water quality sonde near XS 1 for a total of five trips. The original scope includes downloading of data from the pressure transducers once per month. As part of that effort, EA will also perform operation and maintenance of the sondes as necessary to minimize effort.

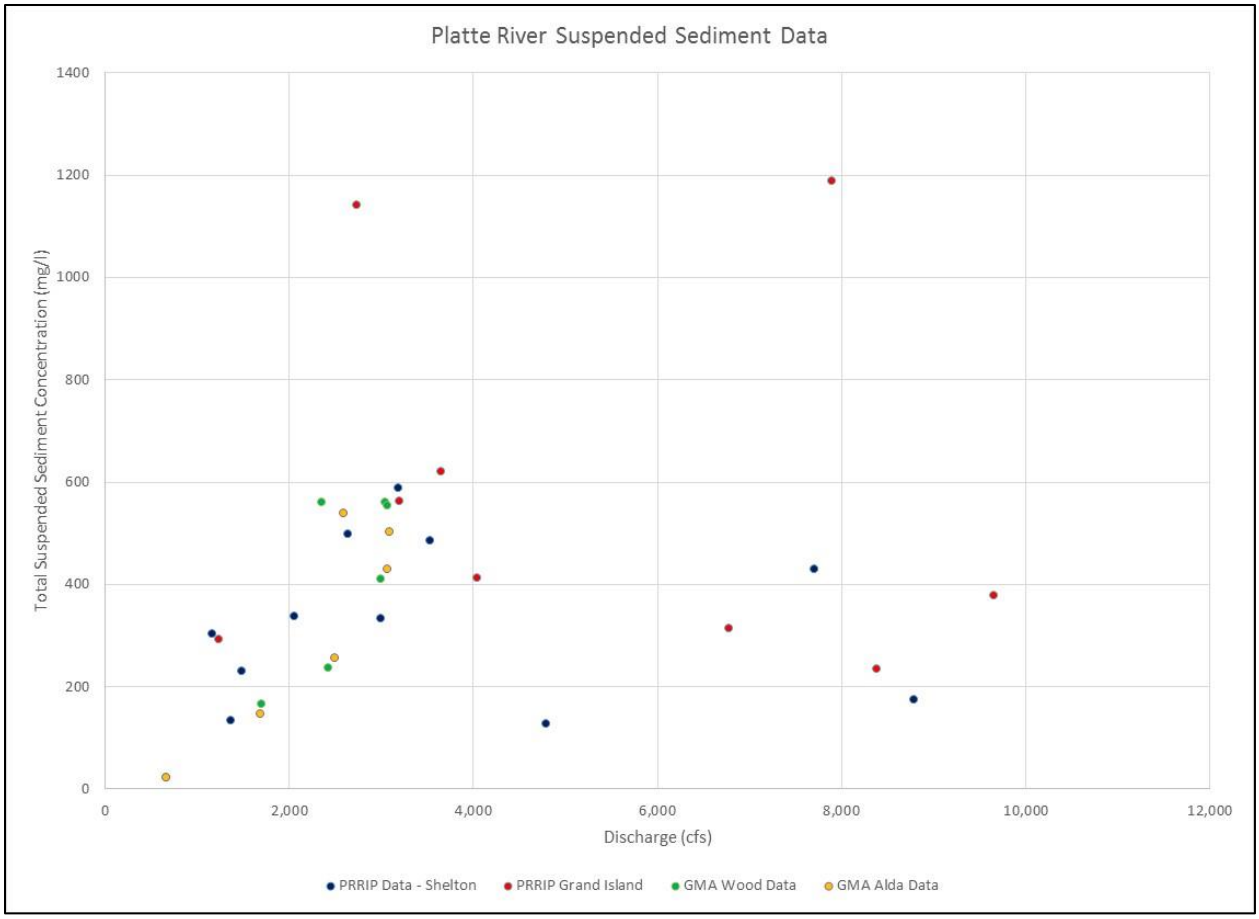
Platte River Suspended Sediment Data
Total Suspended Sediment Concentration (mg/l)
1400
1200
1000
800
600
400
200
0
0
2,000
4,000
6,000
8,000
10,000
12,000
Discharge (cfs)
PRRIP Data - Shelton
PRRIP Grand Island
GMA Wood Data
GMA Alda Data

EXHIBIT B

TOTAL COST SUMMARY

PRRIP
Shoemaker FSM
Cost Estimate for Additional Data Collection

	Labor Hours	Labor Cost	Subcontractor	ODC's	Travel	Subtotal	# of Events	TOTAL
Phase 1 - Stage - Discharge SSC Wadeable	22	$1,804.00	$500.00	$811.24	$0.00	$3,115.24	2	$6,230.48
Phase 2 - Suspended Sediment Wadeable	14	$1,148.00	$500.00	$1,338.74	$0.00	$2,986.74	1	$2,986.74
Phase 3 - Suspended Sediment - NON-Wadeable	16	$1,312.00	$1,000.00	$1,338.74	$0.00	$3,650.74	1	$3,650.74
Phase 4 - SSC Analytical During May and July Field Work	0	$0.00	$1,000.00	$1,680.00	$0.00	$2,680.00	1	$2,680.00
Phase 5 - Sonde Maintenance	5	$340.00	$0.00	$261.24	$0.00	$601.24	5	$3,006.20
TOTALS	**57**	**$4,604.00**	**$3,000.00**	**$5,429.96**	**$0.00**	**$13,033.96**	-	$18,554.16