

August 29, 2004

Roger Patterson

Director, Nebraska Department of Natural Resources
301 Centennial Mall South
4th Floor
PO Box 94676
Lincoln, Nebraska 68509-4676

RECEIVED
SEP 1 2004
DEPARTMENT OF
NATURAL RESOURCES

Dear Roger:

The purpose of this letter is to officially request approval of funding for the second and third years of the project entitled "Measurement of Consumptive Use in the Republican River Valley". I sent an e-mail earlier discussing the completion of the funding for the project as described on the attached amended budget. As you will see I propose that we extend the agreement through December 2005 and that the remaining funding of \$24,750 be approved. This is the same as we previously discussed, I simply need an official approval.

Could you have an official letter and any additional paper work sent to:

Nancy Becker
University Grants Coordinator
Office of Sponsored Programs
312 N 14th Street
Alexander West
PO Box 880430
Lincoln, NE 68588-0430
402-472-3601

Thanks for you support.

Sincerely,



Derrel Martin

Professor and Interim Head

Encl.

xc: Nancy Becker, Ardis Burkholder, Belinda Gillam

**Amended Budget for Proposal on
Measurement of Consumptive Use in the Republican River Valley
(WBS 26-6221-0059-001)**

Duration July, 2004 – December, 2005

Table 1. Amended Budget

Item	Year 2 Costs	Year 3 Costs
Personnel:		
Hourly Students (for maintenance, data monitoring)	\$6,000	\$6,000
Equipment:		
ET and Soil Water Measurement:		
Native Range Site at Maddox Site		
Terraced Winter Wheat Site		
Irrigated Corn at the Kahr Site		
Runoff Flumes and Recorders		
Laptop Computer to Download Data		
All Terrain Vehicle to Service Stations		
Equipment Total		
Supplies	\$2,000	\$2,000
Travel		
Trips for Data Downloading and Equipment Maintenance	\$2,500	\$2,500
Travel to Professional Meeting	\$1,500	
Total Direct	\$12,000	\$10,500
Indirect Costs (10% of Direct Costs)	\$1,200	\$1,050
Total Annual Project Cost	\$13,200	\$11,550
Total Project Cost		\$24,750

Karen/Mary

Confidential Attorney Client Privilege

AGREEMENT
Between the
ATTORNEY GENERAL OF NEBRASKA,
The
NEBRASKA DEPARTMENT OF NATURAL RESOURCES
And
THE BOARD OF REGENTS, UNIVERSITY OF NEBRASKA

MEASUREMENT OF CONSUMPTIVE USE
IN THE REPUBLICAN RIVER VALLEY

This consulting agreement, with Attachment identified below, is entered into the 25th day of June, 2002, by the Attorney General of Nebraska (hereinafter referred to as the Attorney General), the Nebraska Department of Natural Resources (hereinafter referred to as NDNR) and the Board of Regents of the University of Nebraska on behalf of one of its agencies, the Institute of Agriculture and Natural Resources (hereinafter referred to as the University) by and through the Biological Systems Engineering Department (hereinafter referred to as the Department).

WHEREAS, the State of Kansas, as Plaintiff, has filed a Bill of Complaint in the United States Supreme Court naming the State of Nebraska and the State of Colorado as Defendants in an Original Action; and

WHEREAS, in preparation for such litigation and/or settlement discussions relative to such litigation, the Attorney General and the NDNR desire to retain the services of the Department to measure the extent to which the following land uses in the Republican River Valley cause the consumptive use of water: native range, irrigated corn, and winter wheat/dry land corn rotation. The work is further described in Attachment #1.

Therefore, it is mutually agreed that:

- (1) **COOPERATION:** The Attorney General, the NDNR and the Department desire to cooperate and collaborate to accomplish the study objectives mutually agreed upon and described in Attachment #1.
- (2) **PERIOD:** The term of this agreement will begin as soon as the agreement is executed by all parties and will continue until June 30, 2003, or as may be extended pursuant to the provisions of Section (10) of this agreement.

- (3) **STATEMENT OF WORK:** The Department agrees to provide the services and products listed in Attachment #1, which shall serve as the scope of services for purposes of the agreement.
- (4) **COMPENSATION:** NDNR, from the funds appropriated by the Legislature for defense of the Kansas v. Nebraska litigation, will compensate the University up to the amount of one hundred eighty five thousand seven hundred and three dollars (\$185,703.00) to support the costs to the University of providing the services and products outlined in Attachment #1.
- (5) **UNIVERSITY CONTRIBUTION:** The Department shall utilize funds provided by the NDNR and such of its own funds for facilities, equipment, materials and personnel as are necessary to provide the services and products outlined in Attachment #1.
- (6) **PRINCIPAL INVESTIGATORS:** Dr. Derrel Martin and Dr. Jose Payero will be the principal co-investigators for the project.
- (7) **RELEASE OF INFORMATION:** Both parties agree that data developed from the project will be provided to the office of the Nebraska Attorney General for review. The data will not be distributed to the public in the form of database information or as scientific information until the Attorney General's office has agreed to its release.
- (8) **LIABILITY:** Each party agrees that it will be responsible for its own acts and the results thereof and shall not be responsible for the acts of the other party or the results thereof. Each party therefore agrees that it will assume all risk and liability to itself, its agents or employees, for any injury to persons or property resulting in a manner from the conduct of its own operations, and the operations of its agents or employees, under this Agreement, and for any loss, cost, damage, or expense resulting at any time from any and all causes due to any act or acts, negligence, or the failure to exercise proper precaution of or by itself or its own agents or its own employees while performing any act or providing any service under and pursuant to this Agreement.
- (9) **PROGRESS PAYMENTS:** Upon receipt of properly documented bills, four quarterly progress payments will be made by NDNR to the University, in the amounts of \$46,425.75 each starting in August 2002. All payments will be subject to a determination by the Attorney and NDNR that the work is being performed in a timely and acceptable manner.
- (10) **MODIFICATION OR TERMINATION:** This agreement may be modified and/or extended provided that such modifications are executed by authorized officials of the NDNR and the University. It may be terminated by either party for any reason upon 60 days notice to the other party or upon 10 days notice in the event of the loss of existing funds or failure to receive future funds necessary to perform in accordance with the terms of this agreement.

(11) **ATTACHMENT:** Attachment #1 is hereby incorporated in and made a part of this Agreement the same as if it has been specified herein verbatim.

ATTORNEY GENERAL OF NEBRASKA

By David D. Larson Assistant Attorney General

Date June 10, 2002

NEBRASKA DEPARTMENT OF NATURAL RESOURCES

By Debra K. Patton

Date June 10, 2002

APPROVED

AS TO FORM & CONTENT
BY NDNR LEGAL COUNSEL

[Signature] DATE 6/15/02

THE BOARD OF REGENTS
THE UNIVERSITY OF NEBRASKA

By [Signature]

Date 6/25/02

ATTEST:

By Nancy Becker

Date 6/26/02

By _____

Date _____

Approved 6/21/02
Rylee Wood
General Counsel
Univ. of Neb.

Appendix 1. Proposal for
Measurement of Consumptive Use in the Republican River Valley

by

Derrel Martin and Jose Payero
Department of Biological Systems Engineering
University of Nebraska-Lincoln
Lincoln, NE 68583-0726

Objective

The purpose of the proposed research is to measure the consumptive use by native range, irrigated corn, and a winter-wheat/dryland-corn rotation in the Republican River Valley.

Procedure

Methodology

Equipment will be installed at three sites to measure all components of the soil water balance. Evapotranspiration will be measured with an Eddy-Covariance System. This involves assembly of a tower that measures air temperature and humidity at very high frequencies to determine the amount of water vapor that leaves the measurement site. The system will also measure solar radiation, soil temperature, wind speed and precipitation (both rain and snow). Time domain reflectometry will be used to measure soil water contents throughout a 2-meter soil profile. Data logging equipment will be used to record the amount of water in the soil profile on a daily basis. The lower portion of the soil water measurements will be used to determine the amount of deep percolation. Runoff characteristics at the sites will be determined by monitoring rainfall and changes in soil water content. Runoff will also be monitored with flumes at discharge points for the area surrounding the experimental sites. The amount of irrigation water applied will be measured for the irrigated site. For terraced lands we will measure the soil water content on the upland portion of the terraced area that contributes water to the channel behind the terrace. We will also monitor the soil water content within the channel as well as the depth of water ponded behind the terrace channel.

Locations

Consumptive use will be measured at three sites. Measurements will be made on irrigated

corn at a location near the Kahr Site south of Bloomington. These measurements will be integrated with the other work on return flow at this site. The second site will be near Curtis where terraced land is used for winter wheat production and dryland corn. The site that has been selected is approximately 4 miles west of Curtis and meets the areal extent that is needed for the Eddy Covariance System. The third site will be installed into a native range pasture. The exact location of the site is not know but, Jack Maddox has agreed to allow installation of the system on his property. He has indicated that he has sites that meet the criteria of the project.

Results

Information Developed

We will establish the systems and collect daily data on evapotranspiration, runoff, deep percolation and soil water content. These data will be processed to provide real-time and historical measurements of consumptive use of these systems. The amount of return flow from such sites can also be estimated from these data.

Release of Information

Data developed from the project will be provided to the Assistant Attorney General for review. The data will not be distributed to the public in the form of database information or in scientific publications until the Attorney General's Office has agreed to its release.

Table 1. Budget

Item	Year 1 Costs
Personnel:	
Hourly Students (for maintenance, data monitoring)	\$6,000
Equipment:	
ET and Soil Water Measurement:	
Native Range Site at Maddox Site	\$45,207
Terraced Winter Wheat Site	\$45,207
Irrigated Corn at the Kahr Site	\$45,207
Runoff Flumes and Recorders	\$12,000
Laptop Computer to Download Data	\$3,000
All Terrain Vehicle to Service Stations	\$5,000
Equipment Total	\$155,621
Supplies	\$3,500
Cell Phone Costs	\$700
Travel to Research Sites	
Trips for Equipment Maintenance	\$2,000
Travel to Install Systems	\$1,000
Total Direct	\$168,821
Indirect Costs (10% of Direct Costs)	\$16,882
Project Cost	\$185,703