

Agenda Item: 6.

MEMORANDUM

TO: Programs, Projects and Operations Subcommittee

FROM: Amanda Grint, Water Resources Engineer

SUBJECT: Renewal of USGS Maintenance Agreement for Papio Floodwarning System Gages

DATE: November 3, 2016

In 1993, the District worked with the US Army Corps of Engineers (USACE) to install a flood warning system for the Papillion Creek Watershed. The system was upgraded in 2012, and consists of 22 gage stations. Five stations report rain data and the remaining 17 stations report rain and stream stage data. The attached map shows the location of the gages. The data is reported real time and is available to the public through the National Weather Service (NWS) and USGS web sites. The address of the NWS website is <http://water.weather.gov/ahps2/index.php?wfo=oax>. An agreement is in place with Douglas County, Sarpy County, Washington County and the City of Omaha to share the cost of the system.

The USGS has been providing maintenance for the Papillion Creek system, the operation of the stream gage on Omaha Creek at Homer and the groundwater/surface water interaction gage at Waterloo for the last four years. The attached joint funding agreement for consideration is an annual renewal of the maintenance contract with the USGS for 2017 in the total amount of \$167,865. The USGS cost share is \$16,345 through their cooperative water program. An additional \$17,395 in discretionary funds from their Groundwater Streamflow Information Program were used to offset costs. The 2017 contract includes operation and maintenance of all gages for a District contribution of \$121,520 and an additional District contribution of \$30,000 for upgrading transmission equipment at six sites. In comparison, in 2016 the District contribution was \$119,810, for gage operation and maintenance and \$20,000 to upgrade transmission of four sites. Table 1 of the agreement provides a cost breakdown and includes the gage type and data collected for each site.

The quality data provided by USGS is valuable to NWS to improve forecasting and issuance of flood warnings in the Papio watershed and to the District for operation and monitoring of the Papio flood control systems. Each year the USGS works to record high flows and provide the District and its partners improved data for rating curves (flow vs. stage) at each site. Attached are photos of the USGS gathering data at the Kennard site during a large rain event in August. The NWS, USGS and the District continue to discuss upgrades to the system to better serve the agencies using the data as well as working to make the information more readily available to the public. In 2015, the updates included the server and software. In 2016, six sites were updated with equipment for satellite transmission to phase out the older radio transmission equipment.

Management recommends that the Subcommittee recommend to the Board that the General Manager be authorized to execute a proposed Joint Funding Agreement with the USGS in the amount of \$151,520 in District funds for the operation of the District's floodwarning system for 2017 subject to changes deemed necessary by the General Manager.



United States Department of the Interior
U.S. GEOLOGICAL SURVEY
Nebraska Water Science Center
5231 South 19th Street
Lincoln, NE 68512-1271

November 1, 2016

John Winkler
Papio-Missouri River Natural Resources District
8901 South 154 Street
Omaha, NE 68138


Dear Mr. ~~Winkler~~:

Enclosed are two copies of Joint Funding Agreement No. 17EMNE000200 for the operation of one streamgage at Omaha Creek at Homer; 22 gages (9 stage/discharge/precipitation, 8 stage/precipitation/rating development, and 5 rain-only) in the Papillion Creek watershed; and one groundwater/surface water interaction gage at Waterloo, as listed in the enclosed summary of proposed funding. In addition, this agreement is for new equipment costs for upgrading six stations (5 streamgages and 1 rain-only gage). The total amount of the agreement is \$167,865 or \$16,345 for the U.S. Geological Survey and \$151,520 for the Papio-Missouri River Natural Resources District. Funds in the amount of \$17,395 from the Groundwater Streamflow Information Program (GWSIP), which are not included in the above amounts, have been used as a supplement to or in place of Cooperative Matching Funds. Please sign one copy of the agreement and return it to this office as soon as possible. The second copy is for your records. Work cannot be continued until we receive the signed agreement.

Work performed with funds from this agreement will be conducted on a fixed price basis under the authority of statute 43 USC 36C. Billings will be rendered quarterly. The results of all work under this agreement will be available for publication by the U.S. Geological Survey.

For more information or any questions concerning this agreement, please contact Jason Lambrecht at 402-328-4124.

Sincerely,



Robert B. Swanson, Director
USGS Nebraska Water Science Center

3 Enclosures

DUNS No. 949286512

Form 9-1366
(April 2015)

**U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

JOINT FUNDING AGREEMENT

FOR

WATER RESOURCES INVESTIGATIONS

Customer #: 6000000134
Agreement #: 17EMNE000200
Project #: NR009R9
TIN #: 47-0542469
Fixed Cost Agreement YES

THIS AGREEMENT is entered into as of the, 1st day of October, 2016 by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT, party of the second part.

1. The parties hereto agree that subject to availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation the operation of one streamgage at Omaha Creek at Homer; 22 gages (9 stage/discharge/precipitation, 9 stage/precipitation/rating development, and 5 rain-only) in the Papillion Creek watershed and one groundwater/surface water interaction gage at Waterloo and new equipment costs for upgrading six stations, herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.
2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of \$0.00
 - (a) by the party of the first part during the period

Amount	Date	to	Date
\$16,345.00	October 1, 2016		September 30, 2017
 - (b) by the party of the second part during the period

Amount	Date	to	Date
\$151,520.00	October 1, 2016		September 30, 2017
 - (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of: \$17,395.00

Description of the USGS regional/national program:
Groundwater Streamflow Information Program
 - (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
 - (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.
3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.
4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.
5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.
6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

11/1/2016

9-1366 (Continuation)

Customer #:

6000000134

Agreement #:

17EMNE000200

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.
8. The maps, records, or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records, or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at costs, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records, or reports published by either party shall contain a statement of the cooperative relations between the parties.
9. USGS will issue billings utilizing Department of the Interior Bill for Collection (form DI-1040). Billing documents are to be rendered QUARTERLY. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30 day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983).

**U.S. Geological Survey
United States
Department of the Interior**

Papio-Missouri River Natural Resources District

USGS Point of Contact

Customer Point of Contact

Name: Jason Lambrecht
Address: 5231 South 19 St Lincoln, NE 68512
Telephone: 402-328-4124
Email: jmlambre@usgs.gov

Name: Marlin Petermann
Address: 8901 South 154 St, Omaha NE 68138
Telephone: 402-444-6222
Email: mpetermann@papiord.org

Signatures and Date

Signature:

Date:

Signature:

Date:



Name: Robert B. Swanson

Name: _____

Title: NEWSC Director

Title: _____

Table 1. Summary of proposed funding for operation of stream gages, rain stations, and one groundwater gage supported by the Papio-Missouri River Natural Resources District and other partners for period October 1, 2016 -- September 30, 2017.

[CR, continuous-record; SR, seasonal-record (Mar. 1-Oct. 31); CMF, USGS, Cooperative matching funds; PMR NRD, Papio-Missouri River Natural Resources District; GWSIP, Groundwater Streamflow Information Program; RT, real-time (satellite telemetry); USGS, U.S. Geological Survey; Q, Discharge; ST, Stage; PR, Rain; RD, Stage-Discharge Rating Development; WL, Water Level; WT, Water Temperature]

USGS Station number	PMR NRD Station Number	Station name	USGS CMF	PMR NRD	USGS GWSIP	Total	Gage type(s)	Data to be published	Footnote
06601000		Omaha Creek at Homer	\$0	\$8,725	\$6,165	\$14,890	RT CR - 12 month: Q, ST	Annual daily Q and ST for Oct. 1-Sept. 30.	a
413403096135001	1	Rain gage near Orum	\$260	\$1,295		\$1,555	RT SR - 8 month (Mar. 1 - Oct. 31): PR	Rain data collected, not published.	
06610705	2	Big Papillion Creek near Blair	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610710	3	Big Papillion Creek near Kennard	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610720	4	Big Papillion Creek near Bennington	\$1,655	\$8,705		\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Mar. 1 - Oct. 31. Rain data collected, not published.	
06610732	5	Big Papillion Creek at Fort Street at Omaha	\$0	\$5,940	\$4,420	\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Mar. 1 - Oct. 31. Rain data collected, not published.	a
411504096071601	6	Rain Gage at Boys Town at Omaha	\$260	\$1,295		\$1,555	RT SR - 8 month (Mar. 1 - Oct. 31): PR	Rain data collected, not published.	
06610740	7	Big Papillion Creek at Pacific St at Omaha	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610742	9	Thomas Creek near Bennington	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610750	10	Little Papillion Creek near Irvington	\$0	\$8,090	\$2,270	\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Mar. 1 - Oct. 31. Rain data collected, not published.	a
06610760	11	Cole Creek at Blondo Street at Omaha	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610765	12	Little Papillion Creek at Ak-Sar-Ben at Omaha	\$1,655	\$8,705		\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Mar. 1 - Oct. 31. Rain data collected, not published.	
06610770	8	Big Papillion Creek at Q Street at Omaha	\$1,655	\$8,705		\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Nov. 1 - Oct. 31. Rain data collected, not published.	
06610773	13	West Papillion Creek at Elkhorn	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610780	14	West Papillion Creek at Pacific St at Omaha	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610785	15	West Papillion Creek at Millard	\$1,655	\$8,705		\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Mar. 1 - Oct. 31. Rain data collected, not published.	
06610786	16	South Papillion Creek near Gretna	\$685	\$3,590		\$4,275	RT SR - 8 month (Mar. 1 - Oct. 31): ST, PR, RD	ST for Mar. 1 - Oct. 31. Rain data collected, not published. Three measurements of discharge for rating development.	
06610788	17	South Papillion Creek at Chalco	\$1,655	\$8,705		\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Mar. 1 - Oct. 31. Rain data collected, not published.	
06610793	18	(West) Papillion Creek at Papillion	\$0	\$8,090	\$2,270	\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Mar. 1 - Oct. 31. Rain data collected, not published.	a
06610795	19	Papillion Creek at Fort Crook	\$0	\$8,090	\$2,270	\$10,360	RT SR - 8 month (Mar. 1 - Oct. 31): Q, ST, PR	Daily Q and ST for Nov. 1 - Oct. 31. Rain data collected, not published.	a
411232095584201	20	Rain Gage at Hitchcock Park at Omaha	\$260	\$1,295		\$1,555	RT SR - 8 month (Mar. 1 - Oct. 31): PR	Rain data collected, not published.	
411701095570601	21	Rain Gage at city Maintenance Shop at Omaha	\$260	\$1,295		\$1,555	RT SR - 8 month (Mar. 1 - Oct. 31): PR	Rain data collected, not published.	
411857095545301	22	Rain Gage at Eppley fire Station at Omaha	\$260	\$1,295		\$1,555	RT SR - 8 month (Mar. 1 - Oct. 31): PR	Rain data collected, not published.	
411736096170201		015N 10E 3CDDA1 Waterloo groundwater gage	\$1,290	\$3,865		\$5,155	RT CR - 12 month: WL, WT	Groundwater/surface water interaction gage	
Funding partner totals			\$16,345	\$121,520	\$17,395	\$155,260			

a USGS GWSIP funds used in place of CMF as match with PM NRD

PAPILLION CREEK WATERSHED

Douglas, Sarpy, and Washington Counties, Nebraska

THE FLOOD CONTROL PLAN

Legend

 FLOOD WARNING GAGE







