

MEMORANDUM

TO: Programs, Projects, and Operations Subcommittee
FROM: Eric Williams, Natural Resources Planner
DATE: March 8, 2019
SUBJECT: LPRCA Water Quality Monitoring Network Funding

As a member of the Lower Platte River Corridor Alliance (LPRCA), the District has been involved with real-time water quality monitoring network sites to provide comprehensive real-time water quality data for the Lower Platte River for a number of years. Past agreements thru the LPRCA have led to three existing monitoring locations; Platte River at Louisville, Salt Creek at Ashland, and Elkhorn River at Waterloo. In 2016, a fourth site was added at the current USGS streamflow station on the Platte River at Leshara to provide real-time water quality data for temperature, turbidity, dissolved oxygen, specific conductance and nitrate/nitrite. The sites are operational approximately March through October with data collected at 15-minute intervals. The data is publically available over the internet in near real time and historical data are available. Additional constituents can be monitored upon request.

Benefits of the three long-term water quality gages include:

- Monitoring in support of the Lower Platte River's Water Quality Management Plan
- Potential to identify the water-quality impacts from management and land use changes in the contributing basin as well as to provide a baseline for future comparisons
- Assessing the stream health for fisheries
- Better characterization of nitrate concentration in the drinking water source of many Nebraskans
- Inform those who use the river for recreating of potential water quality risks
- Development of surrogate estimates to help better quantify loads of non-monitored parameters

Costs for operating these three long-term gages have been shared between the Papio-Missouri River NRD, Lower Platte South NRD, and USGS. The District funding for the next three year period (FY 2020, 2021, and 2022) would be \$ 124,915, the same as the funding from Lower Platte South. The USGS would provide funding in the amount of \$ 48,377 over this same period.

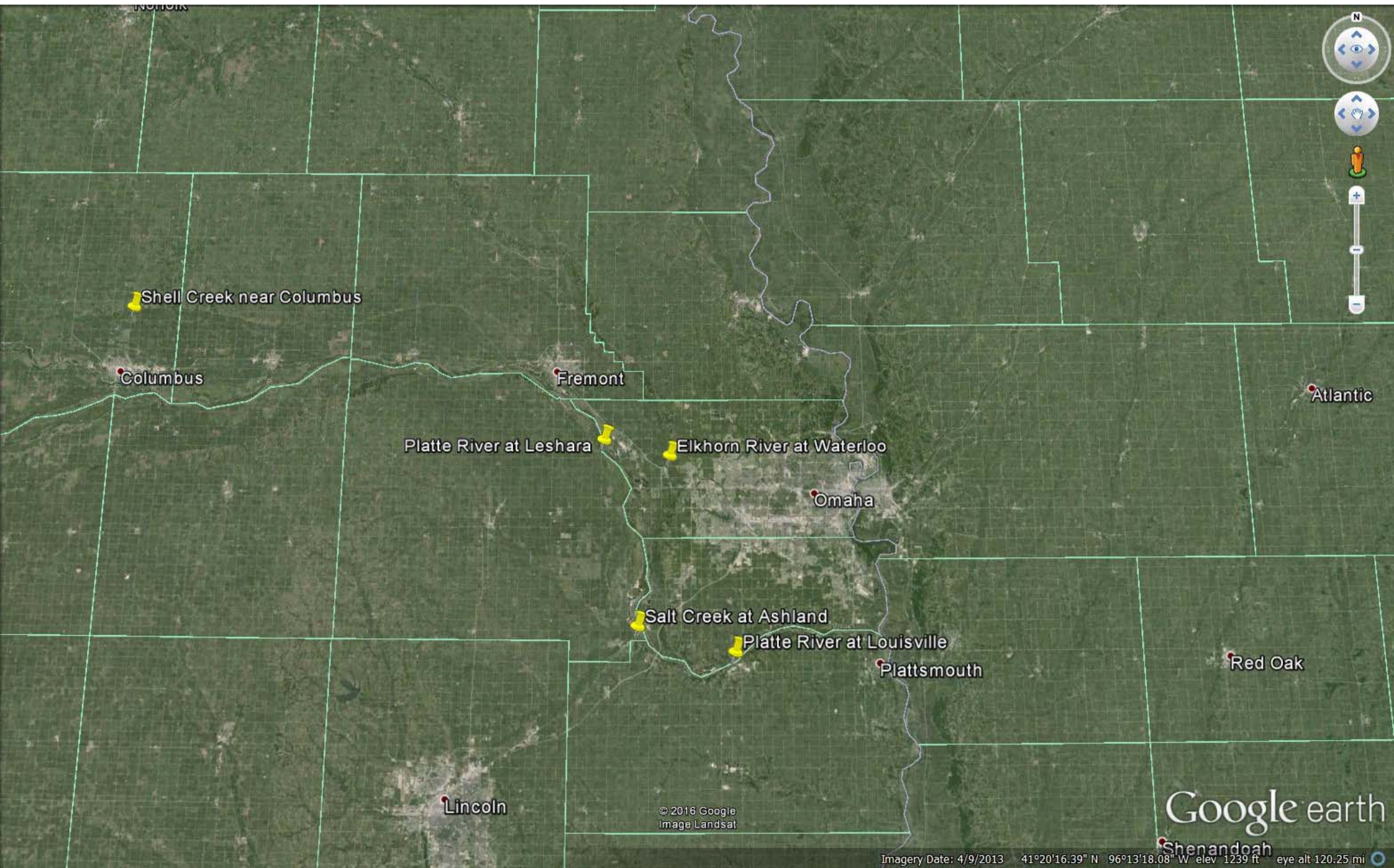
The water quality gage near Leshara provides addition benefits:

- Characterization of the water quality of the Lower Platte River upstream of the Elkhorn River confluence
- Potential to identify the water-quality impacts from management and land use changes in the contributing basin as well as to provide a baseline for future comparisons
- Provide data to assess the stream health for fisheries
- Better characterization of nitrate concentration patterns in the water source that contributes drinking water to many Nebraskans
- Inform those who use the river for recreating

Local costs for the gage at Leshara have been shared among five agencies: P-MRNRD, LPSNRD, LPNNRD, Lincoln Water Systems, and Metropolitan Utility District. Funding is proposed to be provided equally from each of these agencies at a total of \$ 19,685 for the next three year period. USGS will provide funding in the amount of \$ 15,468 over the three year period.

Management is recommending that the District cooperatively fund the water quality monitoring gages at the three long term sites (\$ 124,915) and the Leshara site (\$ 19,685) for a total of \$ 144,636 over the next 3 year period.

- **It is recommended that the Subcommittee recommend to the Board of Directors that the District continue to partner in the LPRCA Water Quality Monitoring Network long-term gauges at Louisville, Ashland, and Waterloo, and partner in the site at Leshara, with a total cost not to exceed \$ 144,636 to be budgeted according to annual costs in District FY 2020, 2021, and 2022.**



© 2016 Google
Image Landsat

Google earth

Imagery Date: 4/9/2013 41°20'16.39" N 96°13'18.08" W elev 1239 ft eye alt 120.25 mi

Long Term USGS Water Quality Gages in the Lower Platte River Corridor

The USGS Nebraska Water Science Center is asking the Papio-Missouri NRD to help extend the water quality monitoring effort in three different locations in the Lower Platte River. This ongoing data collection covers the monitoring of water quality parameters and the reporting of data on the USGS's website. The proposed extension would continue data collection for the 2019, 2020, and 2021 calendar years.

Three gages have recorded continuous water-quality data seasonally since 2007. Readings of water temperature, specific conductance, dissolved oxygen, turbidity, and nitrate are taken every 15 minutes. These measurements provide information for a variety of goals in the Lower Platte River, some of which include:

- Monitoring in support of the Lower Platte River's Water Quality Management Plan
- Potential to identify the water-quality impacts from management and land use changes in the contributing basin as well as to provide a baseline for future comparisons.
- Assessing the stream health for fisheries
- Better characterization of nitrate concentration in the drinking water source of many Nebraskans.
- Inform those who use the river for recreating of potential water quality risks
- Development of surrogate estimates to help better quantify loads of non-monitored parameters.

In addition to the Papio-M NRD's funding, the USGS and Lower Platte South NRD have also been partners and are interested in extending the agreement for continuous water quality monitoring in the Lower Platte River. For this proposed extension, the data collection would continue at the three long term sites that have had continuous monitoring since the fall of 2007. These sites include the Platte River at Louisville, Salt Creek at Ashland, and Elkhorn River at Waterloo.

Seasonal data collection for the current agreement completed in the Fall of 2018 and the current agreement is set to expire on March 30, 2019. The proposed extension would add data collection for the 2019-2021 years and extend the agreement from April 1, 2019 to June 30, 2022. All historic and real-time data are provided on the USGS website.

Below are the approximate annual funding levels for the Papio-Missouri NRD, as well as the other agencies. These levels are very similar to the funding levels from the previous three-year agreement. These funds include the data collection at each of the three locations mentioned above.

| | Papio-M NRD | LPS NRD | USGS |
|------------------|-------------|----------|----------|
| Fiscal Year 2019 | \$30,692 | \$30,692 | \$10,902 |
| Fiscal Year 2020 | \$40,808 | \$40,808 | \$15,732 |
| Fiscal Year 2021 | \$43,608 | \$43,608 | \$16,892 |
| Fiscal Year 2022 | \$9,808 | \$9,808 | \$4,854 |

The following is extended billing information for the NRDs use. If the Federal fiscal year is divided out to fit State fiscal years, Papio-Missouri NRD could expect to pay the following for each of its fiscal years:

| Papio-Missouri NRD | |
|-----------------------|----------|
| 7/1/2019 to 6/30/2020 | \$51,096 |
| 7/1/2020 to 6/30/2021 | \$42,208 |
| 7/1/2021 to 6/30/2022 | \$31,612 |

Below is an extended breakdown with expected billing dates and amounts:

| USGS Agreement # | | 13EMNE000250 | | | |
|---------------------------|--------------------|---------------------|------------------|------------------|-----------------|
| Approximate Billing Date | Total Study Amount | Federal Fiscal Year | LPS NRD | Papio-M NRD | USGS |
| 7/1/2019 | \$36,144 | 2019 | \$15,346 | \$15,346 | \$5,451 |
| 9/1/2019 | \$36,144 | 2019 | \$15,346 | \$15,346 | \$5,451 |
| 12/31/2019 | \$24,336 | 2020 | \$10,202 | \$10,202 | \$3,933 |
| 3/31/2020 | \$24,336 | 2020 | \$10,202 | \$10,202 | \$3,933 |
| 6/30/2020 | \$24,336 | 2020 | \$10,202 | \$10,202 | \$3,933 |
| 8/31/2020 | \$24,336 | 2020 | \$10,202 | \$10,202 | \$3,933 |
| 12/31/2020 | \$26,027 | 2021 | \$10,902 | \$10,902 | \$4,223 |
| 3/31/2021 | \$26,027 | 2021 | \$10,902 | \$10,902 | \$4,223 |
| 6/30/2021 | \$26,027 | 2021 | \$10,902 | \$10,902 | \$4,223 |
| 8/31/2021 | \$26,027 | 2021 | \$10,902 | \$10,902 | \$4,223 |
| 12/31/2021 | \$12,234 | 2022 | \$4,904 | \$4,904 | \$2,427 |
| 3/31/2022 | \$12,234 | 2022 | \$4,904 | \$4,904 | \$2,427 |
| Total Study Amount | \$298,208 | | \$124,915 | \$124,915 | \$48,377 |

Project completion date: 6/30/2022

For questions or additional information, contact Matt Moser, (402)328-4184 mmoser@usgs.gov

USGS Water Quality Gage on the Platte River near Leshara

During the initial stages in the development of the Lower Platte River Water Quality Management Plan, it was determined that a data and understanding gap existed regarding water quality in the section of the Platte River upstream of the confluence with the Elkhorn River. In response, a water quality monitor was deployed in April 2016 at the Platte River near Leshara, that provided continuous measurements of nitrate, temperature, turbidity, dissolved oxygen, and specific conductance in the river. The USGS Nebraska Water Science Center, in addition to several cooperators, are interested in extending the agreement for continuous water quality monitoring at the Platte River near Leshara gage.

The benefits of water quality data collected at this site are:

- Collection of data in support of the Lower Platte River's Water Quality Management Plan
- Characterization of the water quality of the Lower Platte River upstream of the Elkhorn River confluence
- Potential to identify the water-quality impacts from management and land use changes in the contributing basin as well as to provide a baseline for future comparisons.
- Provide data to assess the stream health for fisheries
- Better characterization of nitrate concentration patterns in the water source that contributes drinking water to many Nebraskans.
- Inform those who use the river for recreating

The water quality gage at the Platte River Leshara has been a multi-cooperative agreement.

The USGS NEWSC operates the site and publishes the data at an approximate annual cost of \$37,000, and a three year cost of approximately \$113,893.

Funding for the site has been provided from six agencies: Lower Platte South NRD, Lower Platte North NRD, Papio-Missouri NRD, Lincoln Water Systems, M.U.D, and USGS.

The current agreement runs from April 1, 2016 to April 1, 2019. This covers data collection for the 2016-2018 calendar years. A proposed extension to this agreement would cover data collection for 2019-2021. Funding below assumes that all parties would still be interested in operating the gage with the same scope for an additional three years beyond the 2018 data collection year.

| Agreement | | 16EMNE000210 |
|------------------------------|----------|--------------|
| 2019-2021 Monitoring Cost | Partners | USGS |
| \$113,893 | \$98,425 | \$15,468 |

If all five agencies participate at an equal funding level, the cost per agency would be \$19,685. The proposed agreement would run from April 1, 2019 and end around June 30, 2022

For questions or additional information, contact Matt Moser, (402)328-4184 mmoser@usgs.gov