




LOWER PLATTE SOUTH natural resources district

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AGENDA ITEM #12c

Memorandum

Date: September 11, 2020
To: Each Director
From: Paul Zillig, General Manager 
Subject: Water Resources Subcommittee Meeting – Additional Info.

The Water Resources Subcommittee will meet at 6:15pm (just prior to the Board Meeting) on Wednesday, September 16th at the Lancaster Event Center, 84th & Havelock in Lincoln. Listed below and attached is some additional information on the agenda item.

Consideration of a professional services agreement with LRE Water to review reports, information, studies, and work needed to assist with the review of the Monolith Nebraska Well Permit. – The Water Resources Subcommittee included funds in the budget to hire a consultant to review primarily technical modeling aspects of the Monolith Nebraska well permit application. The Subcommittee has discussed this several months and will consider recommending the Board approve a contract at this time, a copy of the proposed contract is attached along with some additional information on LRE Water staff working on the project. The contract lists the basic anticipated services needed with an estimated cost of \$30,000. The Subcommittee will meet and consider a motion to **recommend the Board of Directors approve the proposal from LRE Water for Hydrogeologic Consulting Services for the Review of Aquifer Pumping Test Analyses, Groundwater Modeling and other work related to the Monolith Nebraska Well Permit application, pending legal counsel review.**

PDZ/pz



September 11, 2020

Mr. Dick Ehrman
Water Resource Specialist
Lower Platte South Natural Resource District
PO Box 83581
3125 Portia Street
Lincoln, NE 68521

RE: Proposal for Hydrogeologic Consulting Services (Revised)
Review of Aquifer Pumping Test Analyses and Groundwater Model
Monolith Project
Hallam, NE

Dear Mr. Ehrman,

LRE Water (LRE) is pleased to provide the Lower Platte South Natural Resource District (LPSNRD) with the following proposal for hydrogeologic consulting services associated with the Monolith project (Project) located in Hallam, Nebraska.

Based on our recent correspondence, LRE understands the objective of our services is to provide assistance to the LPSNRD by providing a third-party review of the hydrogeologic information that will be submitted to the LPSNRD by Monolith's consultants, Olsson Associates (Olsson) and EA Science and Engineering (EA). The groundwater model for Monolith will be completed by Olsson. EA will be a technical reviewer of the Olsson model for Monolith and also be responsible for completing an aquifer pumping test (aquifer test) at the proposed Project site. The Olsson and EA work is being completed for the purpose of evaluating the sustainability of a long-term groundwater source for Monolith, and to meet the LPSNRD's groundwater management permitting requirements.

BACKGROUND AND OBJECTIVES

LRE understands the following:

- The Project may eventually need a well field that can produce 400 to 800 million gallons per year (MGY), or 760 to 1500 gallons per minute (gpm).
- The target aquifer for the well field appears to be the unconsolidated buried sand and gravel aquifer associated the LPSNRD's Crete-Princeton-Adams groundwater reservoir.
- EA has proposed to complete an initial aquifer test with one production well and one observation well. The aquifer test will be conducted by EA by pumping the well at 800 gpm for 72-hours followed by a recovery period. Water levels will be measured in the pumping well and observation well.
- A new groundwater model will be constructed by Olsson and reviewed by EA on behalf of Monolith. LRE assumes the numerical code MODFLOW will be used. The model will be used by Monolith and the LPSNRD to evaluate the potential for the aquifer(s) to provide the Project with a long-term source, in addition to assessing potential impacts to the aquifer, surface waters, and other groundwater users.
- No information is available at this time on the size of Olsson's model domain, boundary conditions, aquifer properties, discretization, or if the model will be run to simulate steady-state or transient conditions.
- Following the completion of the aquifer test and model, and review of this information by the LPSNRD and LRE, additional aquifer tests and modeling may be required to further assess the aquifer, potential impacts, and to meet the LPSNRD's permit requirements. Costs for LRE's assistance on any additional reviews after this initial aquifer test and model review would be out of scope.

I. SCOPE OF SERVICES

Task 1: Obtain and Review Existing Hydrogeologic Information

- LRE will work with LPSNRD to identify, obtain, and review existing hydrogeologic data, reports, studies, etc. that are relevant to the Project, which could be helpful in evaluating the aquifer test data and/or model. Sources may include, but not limited to: LPSNRD, Nemaha NRD, the Nebraska Public Power District, Lower Big



Blue NRD, University of Nebraska Lincoln-Conservation Survey Division, and US Geological Survey.

- LRE will inventory these by providing a very brief explanation of the general information from each source and provide to the LPSNRD. A formal deliverable will not be completed.

Task 2: Review Aquifer Test Analyses

- Obtain the data, analyses, results, and any documentation from the aquifer test that is provided to the LPSNRD by EA. This will include, but limited to the following: geologic and construction logs for the pumping and observation wells; water level and drawdown data for the pre-pumping, pumping, and recovery periods; precipitation and barometric pressure readings; and, pumping rates and total cumulative volume pumped.
- Use the aquifer test analysis software program, AQTESOLV, to analyze the data from the pumping well and the observation well to determine aquifer parameters transmissivity and storativity (T & S). The program will also be used to evaluate aquifer characteristics and boundaries using diagnostic plots and forward modeling to assess long-term drawdown and sustainability.
- Prepare a technical memorandum on the results including a review and comparison to of EA's analyses, and recommendations, if needed, on the need for future aquifer testing.

Task 3: Obtain and Review Conceptual Hydrogeologic and Numerical Models

- Obtain the conceptual hydrogeologic model, associated data, numerical model (MODFLOW) files, and documentation from the information provided to the LPSNRD by Olsson.
- Review the conceptual hydrogeologic model developed by Olsson and EA to determine if aquifer extents and thicknesses; boundary conditions; model input parameters including hydraulic conductivity and storativity; recharge and evapotranspiration; and, streamflow values are reasonable based on existing and published information.
- Obtain the MODFLOW model files to better understand how the model was constructed and discretized based on the conceptual framework, aquifer and non-aquifer properties, and boundary conditions.



- Review the calibration points and results, sensitivity, and uncertainty analyses.
- Prepare and technical memorandum summarize the results from our review including the conclusions from our findings on the conceptual and numerical models. Provide recommendations on how the the model could be improved, if necessary.

II. TIME REQUIRED

At this time, LRE is unaware of the schedule. We can discuss schedule details after the LPSNRD has received or has an idea when the aquifer test and model will be completed and provided to the LPSNRD by Olsson.

Delays caused by major changes in the project plans or by circumstances beyond the control of the LRE could extend the time of completion.

III. PAYMENT

We believe the services described above can be accomplished for \$ 30,000.

The scope described under Part I represents our estimate of the services required based on the information provided. As the project proceeds and additional facts are discovered, it may be necessary to perform additional services and some items described may not be needed. For these reasons, we can provide only an estimate of the time and cost of completing the services. LRE will notify the LPSNRD once we know the size of the model domain and complexity of the model, and if we foresee services exceeding the estimated cost. In addition, if LRE determines from that there are data that could have been included in the Olsson model, and this requires additional data analyses and evaluation by LRE a cost for these services will be provided to LPSNRD before proceeding.

Invoices are submitted monthly for time and expenses incurred. Terms of payment are net 30 days. Overdue accounts are subject to an interest charge of 1.5 percent per month and services will stop whenever payment is overdue more than 75 days.

Payments for our services, like other professional services, are based on the actual time spent on your behalf and are measured by standard hourly rates in effect at the time the services are performed. For those assigned to your team, those rates currently range from \$200–\$265 for principals; \$100–\$250 for engineers and hydrologists; and \$70-\$130 for data processing, technicians and IT support.



Individuals are assigned to a project based on the type of services involved and the experience and expertise of the individual.

Routine expenses such as telephone and copies are included in the rates above. Outside expenses such as laboratory analysis, obtaining aerial photos, or other special services incurred directly in connection with the project are billed at cost plus 5 percent to cover handling and administration. Reimbursable expenses billed at cost include airfares, automobile rental, and other travel or per diem costs for projects more than 100 miles from the office site. Subconsultants to LRE are billed at cost plus 10 percent.

IV. LIMITATION OF LIABILITY

In recognition of the relative risks and benefits of the project to both LPSNRD and LRE, the risks have been allocated such that LPSNRD agrees, to the fullest extent permitted by law, to limit the liability of LRE and its officers, employees, and sub-consultants, to LPSNRD and all of LPSNRD's contractors and consultants, for any and all claims, losses, costs, damages of any nature whatsoever; or claims expenses from any cause or causes, including attorneys' fees and costs and expert witness fees and costs, so that the total aggregate liability of LRE to LPSNRD shall not exceed the total amount of insurance as required to be provided by LRE in Paragraph VI below. It is intended that this limitation apply to any and all liability or cause of action however alleged or arising, unless otherwise prohibited by law.

V. SPECIAL SERVICES

Services in addition to those described under Part I will be performed or obtained for the client's account upon request and approval at rates currently in effect. Special services may include, but are not limited to, expert testimony, appearances at public meetings, soil investigations, topographic and land surveys, including establishment of boundaries, well drilling, well and aquifer testing, electric logging, water quality sampling and analysis, preparation of construction drawings and specifications, material testing, data management, environmental permitting, and regulatory compliance.



VI.

Insurance

LRE agrees to procure and maintain, at its expense, Workers' Compensation insurance as required by statute; Employer's Liability of \$1,000,000; Automobile Liability Insurance of \$1,000,000 combined single limit for bodily injury and property damage covering all vehicles; Commercial General Liability insurance of \$1,000,000 combined single limit for personal injury and property damage; and Professional Liability insurance of \$1,000,000 per claim, all for protection against claims arising out of performance of services under this Agreement caused by the negligent acts, errors or omissions for which LRE is legally liable. LPSNRD shall be made an additional insured on Commercial General and Automobile Liability insurance policies and certificates of insurance for all types of insurance referred to above will be furnished to LPSNRD prior to the commencement of work on the Agreement. LRE shall waive subrogation on all insurance contracts.

Indemnification

LRE shall indemnify and hold the LPSNRD harmless from any and all liabilities of any kind to the extent caused by the performance of this Agreement except that the LRE shall have no obligation to indemnify or hold LPSNRD harmless for any claim or liability of any kind that result from the negligent act or omission or the intentional misconduct of the LPSNRD, its agents or employees

Disputes

The Parties shall attempt to resolve any dispute, controversy, or claim arising under or relating to this Agreement, or to a material breach, including its interpretation, performance, or termination. The Parties shall without delay continue to perform their respective obligations under this Agreement which are not affected by the dispute. Any Party may invoke the dispute resolution process set forth in this paragraph by giving the other Party written notice of its intent to do so, including a description of the issues subject to the dispute and a proposed resolution thereof. Each Party shall designate, within five (5) working days of the notice a representative who shall attempt to resolve the dispute. If the designated representative cannot resolve the dispute within 30 days of the notice, the Parties may resort to any remedy available under law.

Independent Contractor Status

It is the expressed intent of the Parties that this Agreement shall not create an employer-employee relationship, and LRE, or any employees or other persons



acting on behalf of LRE in the performance of this Agreement, shall be deemed to be independent contractor(s) during the entire term of the Agreement or any renewals thereof. It is agreed between the Parties that the designated staff shall at all times be employees, or subcontractors of LRE for the duration of the Agreement.

Acceptance of this proposal and authorization to proceed with the services can be indicated by signing one copy and returning it to us for our files. The terms of this proposal will be honored for a period of 30 days.

We look forward to discussing this proposal with you and if you have any questions or concerns about the services offered in the proposal please call me at (612) 805-0919.

Thank you for providing us the opportunity to present this proposal to the LPSNRD.

Sincerely,


LRE WATER



David S. Hume, PG
Vice President Midwest Operations

For: _____
Contracting Agency

By: _____
Authorized Signature/Title



R Gregory Roush, PE
Principal

Date: 9/10/20

DH



LPS NRD – MONOLITH PROJECT SUPPORT

LRE WATER PROJECT TEAM SUMMARY OF PROFESSIONAL EXPERIENCE AND EDUCATION

DAVID S. HUME, PG - Vice President of Midwest Operations | Senior Project Manager



Dave's general roles and responsibilities over nearly a 30-year career have included serving as a project and supervising hydrogeologist, project management, and client development and management for groundwater resource and groundwater supply assessments, and contaminant investigation. This experience has focused on helping municipal, industrial, agricultural, and regional water system clients address and manage their groundwater resource and groundwater sustainability challenges. Experience includes exploring and evaluating groundwater flow systems from simple alluvial systems to complex fractured media through analysis, evaluation, and management of hydrogeologic data; aquifer pumping tests, and groundwater modeling, and providing expert testimony at public hearings.

EDUCATION

M.S., Geology (Hydrogeology emphasis)
University of Toledo
Toledo, OH 1991

B. A., Geology
Wittenberg University
Springfield, OH 1984

MICHAEL C. PLANTE, PG, GISP – Lead Hydrogeologist | GIS



Mike is an experienced hydrogeologist and project manager on numerous groundwater resources and high-capacity well siting projects. Projects include high-capacity well siting, well and well field design, and aquifer testing; evaluation of complex groundwater flow systems; long-term sustainability assessments; groundwater resource evaluations; hydrogeologic assessments for water supply and wellhead protection projects; GIS data development and implementation; 3D visualizations and volumetric calculations; wellhead vulnerability assessments; and, data preparation for groundwater modeling. Mike provides GIS software and project support to internal and external clients, and has implemented GIS on hundreds of projects in various capacities; from simple project maps to complex GIS spatial analysis for, well-siting, and groundwater supply projects.

EDUCATION

Master of Geographic Information Science,
University of Minnesota, Minneapolis, Minnesota 2003

B.S., Geology
University of Minnesota,
Minneapolis, Minnesota 1996

JACOB BAUER, PG - Senior Hydrogeologist | Project Manager



Jacob has 10 years of professional experience as a hydrogeologist specializing in regional and site-specific groundwater modeling, field investigations, groundwater analyses in support of water rights applications, well installation and optimization, stream depletion and yield analyses, augmentation plans involving groundwater recharge, ASR investigations, and mine water management. Jacob frequently integrates MODFLOW simulations with the Python computing language to explore, visualize, and extend the capabilities of both programs to integrate MODFLOW simulations with PEST, Pandas, Flopy, Numpy, and other Python Packages. Jacob has been responsible for complex groundwater modeling and field data collection activities in an extremely wide variety of environments in Colorado, Texas, Nebraska, Kansas, Alaska, Nevada, and the Republic of the Congo.

EDUCATION

M.S. Geological and Environmental Sciences- Hydrogeology
Stanford University
2008

B.S. Geology, Minor in Atmospheric and Oceanic Sciences, *Summa Cum Laude*
University of Colorado
Boulder, Colorado 2005

ALLAN FOSTER, EI - Staff Hydrogeologist II



Allan Foster is a Staff Hydrogeologist with experience in ASR feasibility assessment, applied geophysical methods and data interpretation, well construction and testing, groundwater flow modeling, and contaminant fate and transport modeling. For his work, he utilizes a variety of computer software packages for groundwater modeling, geochemical modeling, geophysical inversion, and 3-D conceptual modeling, including MODFLOW-USG, mod-PATH3DU, MT3DMS, SEAWAT, PHREEQC, Groundwater Vistas, flopy, Python, R2, R3t, and Rockworks. Mr. Foster has worked on projects for both municipal and private clients in addition to working on projects with professors in academia. Mr. Foster is well versed in applied hydrological, geophysical, and numerical methods for solving complex groundwater problems.

EDUCATION

M.Sc., Hydrology
Colorado School of Mines
Golden, Colorado 2019

B.Sc., Geological Engineering
Colorado School of Mines
Golden, Colorado 2017