PUBLIC WORKS MEMORANDUM
#10-2021

DATE: March 8, 2021

TO: Honorable Mayor Meredith Leighty and City Council Members

THROUGH: Heather Geyer, City Manager

FROM: Kent Kisselman PE, Director of Public Works

SUBJECT: CR-28 – Aquifer Storage and Recovery Feasibility Study Phase II

PURPOSE

To consider CR-28, a resolution to approve a Professional Services Agreement with LRE Water to conduct Phase II of Northglenn's Aquifer Storage and Recovery (ASR) Feasibility Study.

BACKGROUND

Water supply planning for the City, including the 2020 Integrated Water Resources Plan (IWRP), has revealed a current and future gap in Northglenn's water demand and supply and identified that additional water supply storage is one of the key components necessary to fill that gap. The IWRP recommends that in order to fill the supply and demand gap, two new sources of water storage should be considered simultaneously: an expansion of Standley Lake (which is currently being investigated through the Standley Lake Operating Committee) and Aquifer Storage and Recovery.

Investigation of ASR consists of the following project phases:

- ASR Feasibility Study Phase I - *Complete*
- ASR Feasibility Study Phase II
- ASR pilot study (construction and testing of a single ASR well)
- ASR construction and implementation (construction and operation of a series of ASR wells)

In 2020, Northglenn completed the first phase of an ASR feasibility study, which began to investigate the viability of injecting, storing, and recovering treated water into the Denver Basin Aquifers that lie under Northglenn. The ASR Feasibility Study Phase I considered a multitude of factors including hydrogeology, water quality, cost, and permitting, and found that while ASR appears to offer feasible and cost-effective water supply storage for Northglenn, additional investigation is necessary before a pilot well and ASR system can be constructed and operated. Ultimately, a pilot well and ASR system will be necessary to confirm if large-scale ASR is a feasible water supply storage solution for Northglenn.

ASR Feasibility Study Phase II will complete all analysis needed to confirm the feasibility and cost effectiveness of ASR leading up to the construction of a pilot well, and will include the preparation of 90% design of a pilot well, pilot well permit submittal to the Environmental Protection Agency and the Colorado Division of Water Resources, and a bid package for the next phase of this project.

A Request for Proposal (RFP) was issued for this project and four proposals were submitted. Proposed project scope and firm qualifications varied widely among proposals and ultimately LRE Water was selected due to its uniquely applicable experience conducting similar projects for Front Range water providers and because the proposed project scope most completely addressed the project goals identified in the RFP.

BUDGET/TIME IMPLICATIONS
The project proposed by LRE Water is $200,000. Funds are available in the Water Fund, which can be used to support development of new water storage or supply.

Budget Implications	Amount
2021 Budget appropriation	$250,000
LRE Water Consultants contract	($200,000)
Remaining	$50,000

LRE could start work on ASR Feasibility Study Phase II immediately and would be finished by Dec. 31, 2021.

STAFF RECOMMENDATION
Attached is CR-28, a resolution that, if approved, would authorize the Mayor to execute a contract between the City and LRE Water to conduct ASR Feasibility Study Phase II in an amount not to exceed $200,000. Staff recommends approval of CR-28.

STAFF REFERENCE
If Council members have any questions, please contact Kent Kisselman, Director of Public Works, at 303.450.4005 or kkisselman@northglenn.org.

ATTACHMENTS
1. LRE Water ASR Feasibility Study Phase II Proposal
2. ASR Feasibility Study Phase II – bid tab

CR-28 – Aquifer Storage and Recovery Feasibility Study Phase II
Professional Services Agreement

LRE WATER
CONNECTING WATER TO LIFE

City of Northglenn
11701 Community Center Drive
Northglenn, CO 80233
sporcelli@northglenn.com

January 21st, 2021

RE: PROPOSAL FOR THE CITY OF NORTHGLENN AQUIFER STORAGE AND RECOVERY FEASIBILITY STUDY PHASE II (2020-022)

The City of Northglenn's (Northglenn) 2020 Integrated Water Resource Plan (IWRP) identified the need for up to 2,000 acre-feet of additional water storage capacity by 2050. Northglenn has completed the first phase of a study that evaluates the feasibility of implementing aquifer storage and recovery (ASR) to fill its projected water storage gap. Phase II will result in a plan and design sufficient for Northglenn to bid, construct, and operate an ASR well pilot system.

LRE Water (LRE) is currently involved in over 15 ASR projects in four states, including Colorado. Locally, LRE has nine hydrogeologists and is engaged in ASR feasibility studies for Denver Water, Aurora Water, Town of Erie, Castle Rock Water, and City of Greeley. We have amassed an extensive knowledge base on how to successfully integrate ASR into a surface water utility - both from an infrastructure and water quality perspective. The LRE project team (LRE Team) includes our most experienced groundwater and ASR experts, two of which have the unique perspective of developing ASR systems as utility employees, supplemented with staff from partner firms **Plummer** (civil design) and **Corona Environmental** (water quality and treatment).

- **Gary Gin, RG,** is a national expert in ASR well systems and is LRE's ASR Practice Leader. As a hydrologist working for the City of Phoenix, Gary developed an award-winning ASR well system that is capable of recharging 14,000 AF/yr. He has a firm grasp of all aspects of ASR system planning, permitting, piloting, design, construction, operations, system automation, and water quality management.
- **Cortney Brand, PG,** who will serve as Principal In Charge, has 25 years of ASR experience as both a water utility planner and a consultant. He led Denver Water's ASR Pilot Project, developed a Denver Basin ASR system at Colorado Springs Utilities, and currently leads ASR feasibility studies for Aurora Water and the City of Greeley.
- **Dave Colvin, PG, PMP,** is LRE's Groundwater Business Unit Leader and will serve as your Project Manager. Dave has experience with permitting Denver Basin ASR wells for the Town of Castle Rock and recently obtained a Rule Authorization for the City of Greeley. The EPA's UIC program is ever-evolving, and Dave is up-to-date on the current well design and permitting requirements for ASR wells.
- **Chris Corwin, PE,** (Corona) will serve as the Water Quality and Treatment Lead. Chris and Corona specialize in developing innovative water treatment solutions such as those required for ASR. Cortney and Chris are working together on Aurora Water's ASR feasibility study in similar roles.
- **Nathan Martinson, PE,** (Plummer) will lead the Civil Design components of your project, including the ASR well pilot system design. LRE and Plummer routinely partner, and we've collaborated on over 15 projects in the last five years.

LRE is committed to making this project a success for Northglenn. We have completed identical projects for local water providers and bring insights gained from developing and operating ASR systems as utility employees and consultants. We look forward to working with you to upgrade Northglenn's groundwater assets and to integrate ASR into your water supply and storage infrastructure.

Sincerely,

Cortney C. Brand, PG
President/CEO

Dave Colvin, PG, PMP
Groundwater Business Unit Leader

PROPOSAL FORM

City of Northglenn
11701 Community Center Drive
Northglenn, Colorado 80233-8061

PROPOSAL: Pursuant to the "advertisement for proposal" for the above named project, and being familiar with all contractual requirements therefore, the undersigned bidder hereby proposes to furnish all labor, materials, tools, supplies, equipment, transportation, services and all other things necessary for the completion of the contractual work, and perform the work in accordance with the requirements and intent of the contract documents, within the time of completion set forth herein, for, and in consideration of the following prices.

Proposal of LRE Water, Inc. (hereinafter called **BIDDER**) organized and existing under the laws of the State of Colorado doing business as a corporation*. To the **CITY OF NORTHGLENN** (hereinafter called **CITY**). In compliance with your advertisement for bids, **BIDDER** hereby proposes to perform WORK on

Aquifer Storage and Recovery Feasibility Study Phase II - 2020-022

in strict conformance with the **CONTRACT DOCUMENTS**, within the time set forth therein, and at the prices stated below.

By submission of this **BID**, each **BIDDER** certifies, and in case of a joint bidder each party thereto certifies as to his own organization that this **BID** has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this **BID** with any other **BIDDER** or with any competitor.

BIDDER hereby agrees to commence **WORK** under this contract on or before a date to be specified in the

NOTICE TO PROCEED and to fully complete the **PROJECT** as indicated in the General Conditions.

BIDDER acknowledges receipt of the following **ADDENDUM:**

Addendum 1 on January 7, 2021

*Insert "a corporation", "a partnership", or "an individual" as applicable.

Sub-contractors (if any): Work they will perform:

1. Plummer Email: nmartinson@plummer.com

2. Corona Environmental Email: ccorwin@coronaenv.com

3. _____ Email: _____

Please provide a complete and accurate list of at least three references and contact phone numbers:

1. Bob Peters (Denver Water) Phone: 303-628-6570
   Email: robert.peters@denverwater.org

2. Adam Jokerst (City of Greeley) Phone: 970-350-9209
   Email: Adam.Jokerst@greeleygov.com

3. Daniel Kiel (City of Peoria) Phone: 623-773-7982
   Email: Daniel.Kiel@peoriaaz.gov

Respectfully submitted,

Signature

1221 Auraria Parkway, Denver, CO 80204
Address

President / CEO
Title

1/21/2021
Date

(Seal, if Proposal is by a Corporation)

Please see physical copies, we currently do not have a digitized version of our seal.

Attest

License Number
(If Applicable Signature)

303-455-9589
Phone Number

EXECUTIVE SUMMARY

UNDERSTANDING OF NORTHGLENN'S OBJECTIVES

Like many Colorado Front Range water providers, the City of Northglenn (City) has identified a future supply/demand gap driven by increasing population and hydrologic impacts from climate change. This ubiquitous challenge creates a competitive market for new water supplies and increases the value of doing more with existing supplies. In addition, operational flexibility will reduce the risks associated with droughts, wildfire, and hydrologic variability, all of which are expected to increase in the future.

For Northglenn, resilient and adaptive resource management is being driven by its City Council. The City's Sustainability Plan and Council strategic planning goals provide guidance for incorporating innovative water management into the City's larger resources and environmental objectives. The City's Water Resources staff is implementing these directives with a proactive approach to identifying and meeting future water resources needs. Examples of Northglenn's forward-thinking problem solving approach include the 2020 Water Efficiency Plan (WEP) and Integrated Water Resources Plan (IWRP).

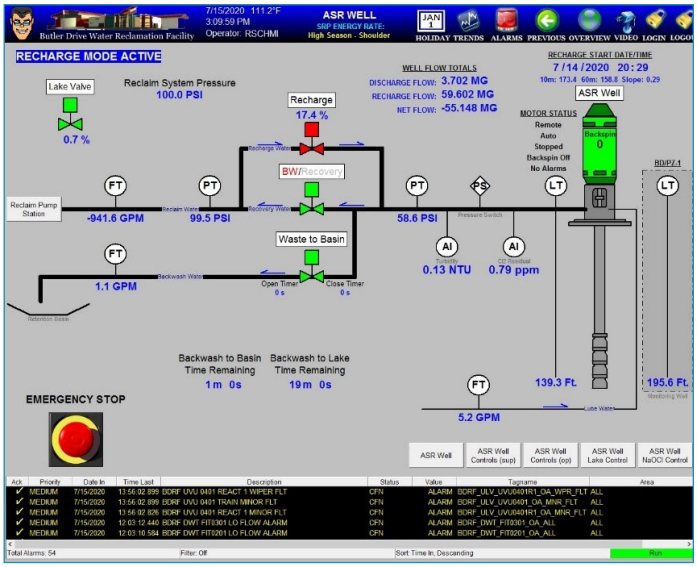
Aquifer storage and recovery (ASR) is an innovative water storage strategy that could close Northglenn's water supply/demand gap, but ASR needs to be developed carefully while integrating it into Northglenn's existing water infrastructure.

The IWRP identified up to a 2,000 acre-foot water storage gap and ASR as a solution for supplementing the City's storage in Standley Lake. ASR is particularly useful for maximizing the use of fully consumable water rights, like the City's transbasin Berthoud Pass Ditch water.

The City's existing groundwater infrastructure consists of five Denver Basin wells completed in the Laramie-Fox Hills and Arapahoe aquifers. The wells were installed in the 1980s and were used infrequently for augmentation and non-potable irrigation. These wells represent an opportunity for collecting feasibility and pilot-scale data. However, their age and minimal use/maintenance could limit the wells' usefulness.

Findings of Phase I work indicate that ASR is feasible and worth evaluating further in a pilot study. The available information needs to be critically reconsidered, and if ASR continues to prove feasible, it could help the City meet future challenges by providing additional storage, operational flexibility, and drought resiliency. A key advantage of ASR will be storage of fully consumable water rights opening up Standley Lake storage for free river/junior water rights during wet years and to provide storage for earlier runoff peaks in the future.

The LRE Team understands that these ASR advantages can only be realized if it can be integrated into the City's existing water system without disruption. We will address the ASR-specific technical challenges while evaluating system integration during the Phase II Feasibility Study.

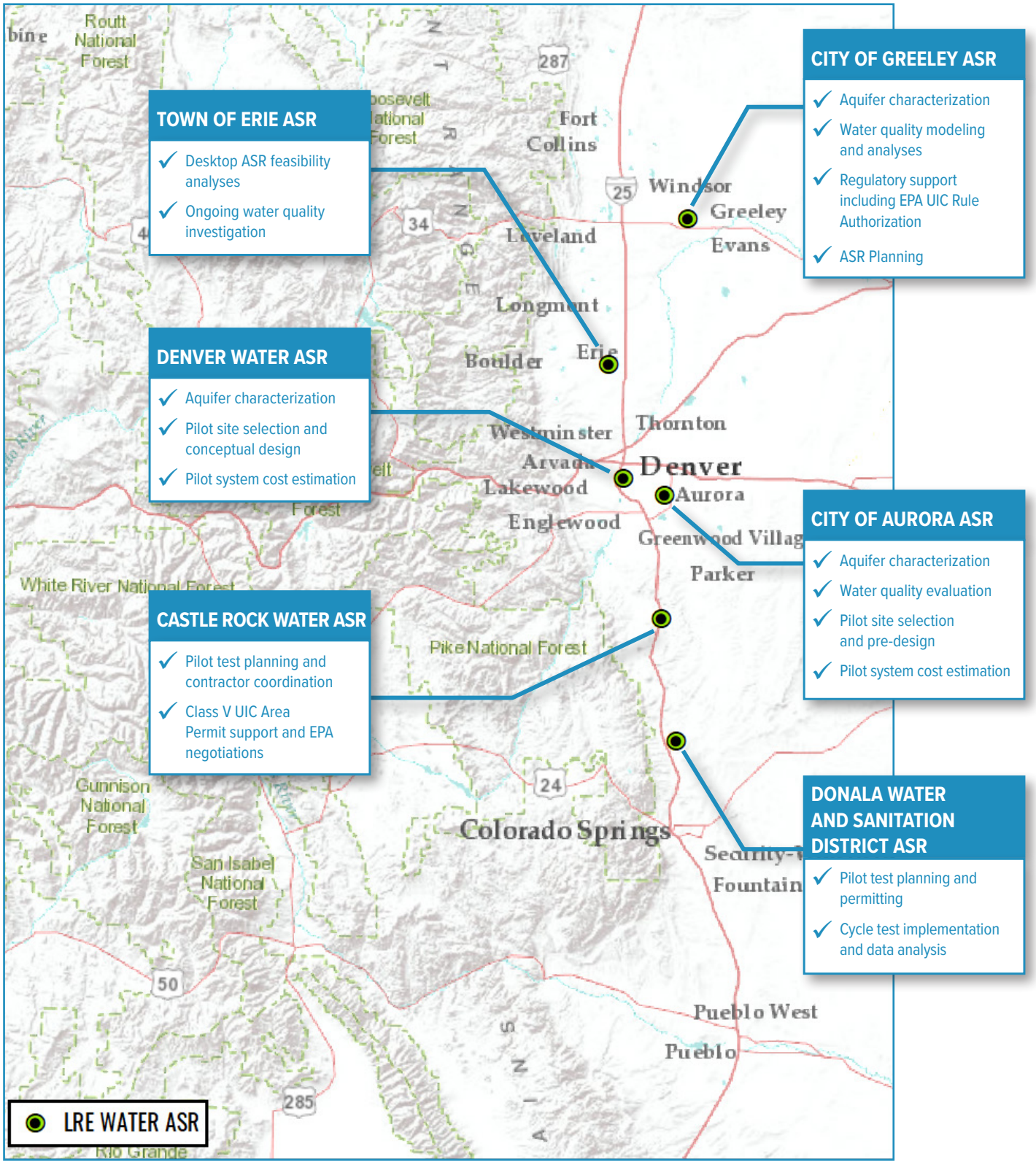


Intuitive ASR Controls Interface

The LRE Water Team has direct experience with rehabilitating groundwater well systems that have declined due to limited use and maintenance. We understand that the challenge is often rooted in operator unfamiliarity and that engineered solutions such as intuitive user interface systems can go a long way to encouraging proper operation and maintenance in the future.

PROJECT TEAM COORDINATION AND FRONT RANGE ASR EXPERIENCE

The LRE Team has extensive ASR experience throughout Colorado's front range.



TOWN OF ERIE ASR

- ✓ Desktop ASR feasibility analyses
- ✓ Ongoing water quality investigation

CITY OF GREELEY ASR

- ✓ Aquifer characterization
- ✓ Water quality modeling and analyses
- ✓ Regulatory support including EPA UIC Rule Authorization
- ✓ ASR Planning

DENVER WATER ASR

- ✓ Aquifer characterization
- ✓ Pilot site selection and conceptual design
- ✓ Pilot system cost estimation

CITY OF AURORA ASR

- ✓ Aquifer characterization
- ✓ Water quality evaluation
- ✓ Pilot site selection and pre-design
- ✓ Pilot system cost estimation

CASTLE ROCK WATER ASR

- ✓ Pilot test planning and contractor coordination
- ✓ Class V UIC Area Permit support and EPA negotiations

DONALA WATER AND SANITATION DISTRICT ASR

- ✓ Pilot test planning and permitting
- ✓ Cycle test implementation and data analysis

PHASE II SCOPE OF SERVICES

The LRE Team will implement the scope of services specified in the RFP and has identified additional task details described below. Instead of repeating the City's scope, we present our team's key insights and value that we bring to the project.

TASK 1: WORK PLAN

- **KEY INSIGHTS:** We understand that the key goal of this project is to position the City to construct and begin operating an ASR pilot facility in 2022. We will prioritize critical tasks while also identifying "low hanging fruit" that can have a positive impact on getting a pilot system up and running while also benefiting the longer term goal of developing an adaptable full-scale ASR system.

- **LRE TEAM VALUE:** We have assembled a team of experts with direct experience addressing the challenges of implementing ASR while providing the services necessary to re-evaluate feasibility and design of an ASR pilot facility. Our specialists will work closely with City staff to develop a plan to identify feasibility criteria, critically re-evaluate the challenges, and if ASR continues to be feasible, permit and design an ASR pilot facility. In our experience, this type of "crawl, walk, run" approach to ASR development encourages stakeholder understanding and support.

TASK 2: FEASIBILITY ASSESSMENT REVIEW AND COMPLETION

- **KEY INSIGHTS:** The Phase I ASR Feasibility work contains a wealth of valuable information about Northglenn's historical groundwater usage, existing infrastructure condition, and ASR planning considerations.

Some of the Phase 1 topics the LRE Team recommends reconsidering include: The water quality results and their implications for ASR; the utility of existing wells; the permitting plan for pilot- and full-scale ASR operations; and the costs associated with constructing and operating an ASR pilot facility.

- **LRE TEAM VALUE:** Our Team has extensive Denver Basin groundwater experience, has completed several ASR projects with nearly identical scopes, and have identified additional considerations that can improve the project outcome when addressed during feasibility assessment. Our water quality specialists will review the existing data to make sure that it is representative of ASR operational conditions with existing or new wells so that designs can improve ASR integration into the City's existing distribution, treatment and storage.

TASK 3: PERMIT APPLICATION PREPARATION AND SUBMITTAL

- **KEY INSIGHTS:** ASR permitting is often a project component that can unnecessarily delay schedules, increase costs, and/or complicate project implementation. However, when regulator concerns are identified early and merged with other technical project tasks, permitting can be efficient and moved off the critical path. In addition to the DWR and EPA requirements explicitly stated in regulations, the permit writers have specific concerns and intents that need to be addressed to acquire permits in a timely manner.

- **LRE TEAM VALUE:** The LRE Team has recent experience with Class V UIC permitting in Colorado and have worked with EPA permit writers to streamline addressing their top concerns. In addition to DWR recharge extraction rules, the City should consider applying for deemed consent within its service area and obtaining well field terms within existing water rights decrees. These DWR/water rights actions would allow for operational flexibility allowing for injection in one well while recovering water from others. In addition to allowing for recharge recovery in more convenient use locations, it can also be used to manage and improve water quality of recovered water.

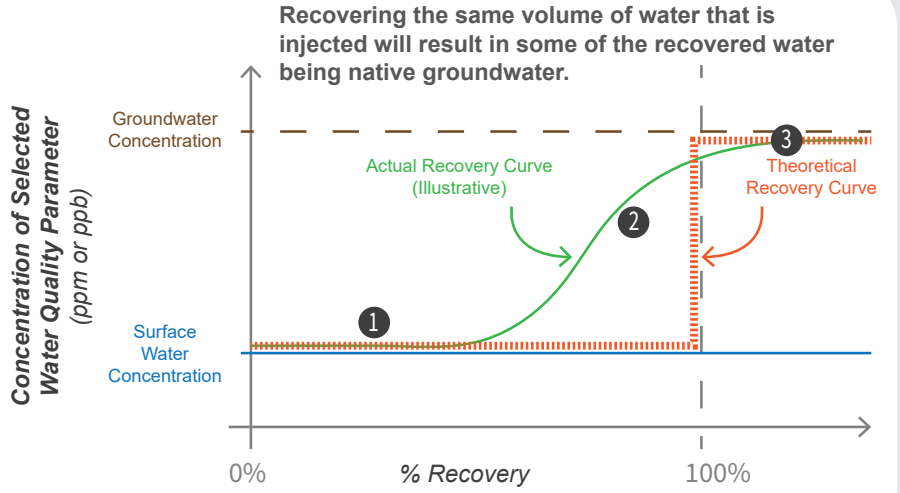
The evolving EPA Class V UIC permitting process has previously been a hurdle for testing and development of ASR in the Front Range. In 2020, LRE Water assisted Castle Rock Water with EPA negotiations to remove unrealistic requirements for their UIC permit. This Area Permit covers the Town area and will allow for future wells and sources of injection water to be added under Rule Authorization. LRE Water recently assisted the City of Greeley with rapidly acquiring an EPA UIC Rule Authorization for 2020 injection cycle testing in a non-tributary aquifer in Northern Colorado.

TASK 4: WATER QUALITY INTEGRATION PLAN

- **KEY INSIGHTS:** The source of the injection water has already been identified as Northglenn's Water Treatment Facility (NWTF). The plant is a 14-MGD conventional treatment plant that treats surface water from Standley Lake and applies free chlorine as a residual disinfectant. The City's use of chlorine versus chloramine is an advantage for the UIC permitting process as the EPA has recently required no or very low detections of chloramine disinfection byproducts. Water quality from Standley Lake can vary significantly due to watershed and in-reservoir processes. Watershed inputs include storms that carry high turbidity and contaminants from overland runoff and annual snowmelt that can affect alkalinity and hardness. In-reservoir processes include algal blooms and stratification, which can affect the dissolved oxygen, presence of iron and manganese, and the filterability of the water.
- The conventional NWTF currently meets drinking water regulations. While the plant has been designed for 14-MGD, it typically only produces 2.5 – 4 MGD. As demand in the system grows, operators at the NWTF may find Standley Lake water more difficult to treat. Other area water utilities using Standley Lake as a drinking water source have been moving away from conventional treatment or using advanced processes to enhance conventional treatment.
- **LRE TEAM VALUE:** For ASR to be successful, it is not enough to meet all drinking water regulations. Producing a consistent quality of injectate water is also important to maintain a stable geochemical equilibrium in the aquifer. We will assess the variability of the proposed injectate water, its geochemical compatibility with the native groundwater, and how the injectate may interact with the aquifer rock matrix. Treatment of the recovered ASR water will be highly dependent on the water quality of the injectate, its potential to change the geochemical equilibrium in the aquifer, and the extent of blending with native water.

During the Task 1 Work Plan development, we will work with City staff to evaluate the value of evaluating ASR water quality issues qualitatively, with additional geochemical modeling, or with laboratory bench scale testing. While these methods all have value, they all have uncertainty in their results, and the water quality assessment performed during pilot testing is most representative of operational conditions.

- The extent of blending and changes due to geochemical processes in the aquifer will also impact the compatibility of the recovered water with the treated surface water. Unintended consequences can occur in the drinking water distribution system, including higher corrosion potential affecting Lead and Copper Rule compliance, carbonate scaling, colored water events, taste and odor complaints, disinfection byproduct formation, and residual maintenance issues.



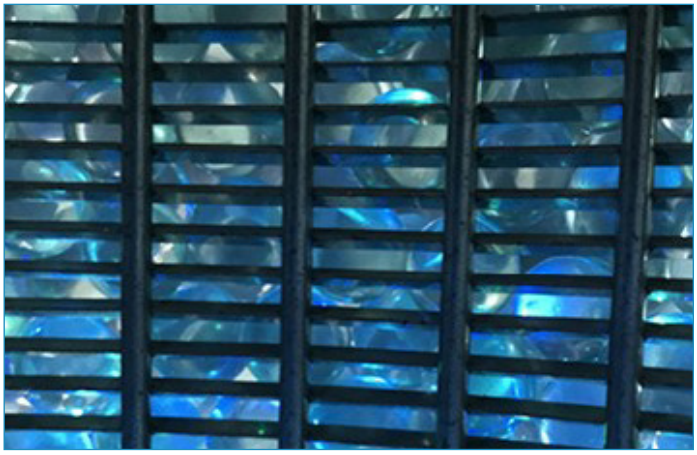
Theoretical versus actual changes in water quality during recovery

1. In the early stages of a recovery cycle, recovered water chemistry exhibits that of the stored water.
2. As the recovery cycle progresses, the proportion of stored water to native groundwater in the recovery stream decreases and recovered water chemistry begins to trend toward that of native groundwater. This behavior does not necessarily represent a physical loss of stored water. Instead, it is a reflection of aquifer system irregularities and differential rates of flow from discrete aquifer zones.
3. In the latter stages of a recovery cycle, particularly as the recovery percentage (recovered volume ÷ recharge volume) approaches and exceeds 100 percent, recovered water chemistry continues to trend toward that of the native groundwater. The thresholds (recovery percentages) where water chemistry begins to exhibit properties of, and eventually approaches, that of the native groundwater are site specific and are a function of local hydrogeologic properties, ASR well construction and maintenance, and operational practices. Identifying these thresholds will be one of the primary objectives of ASR pilot testing.

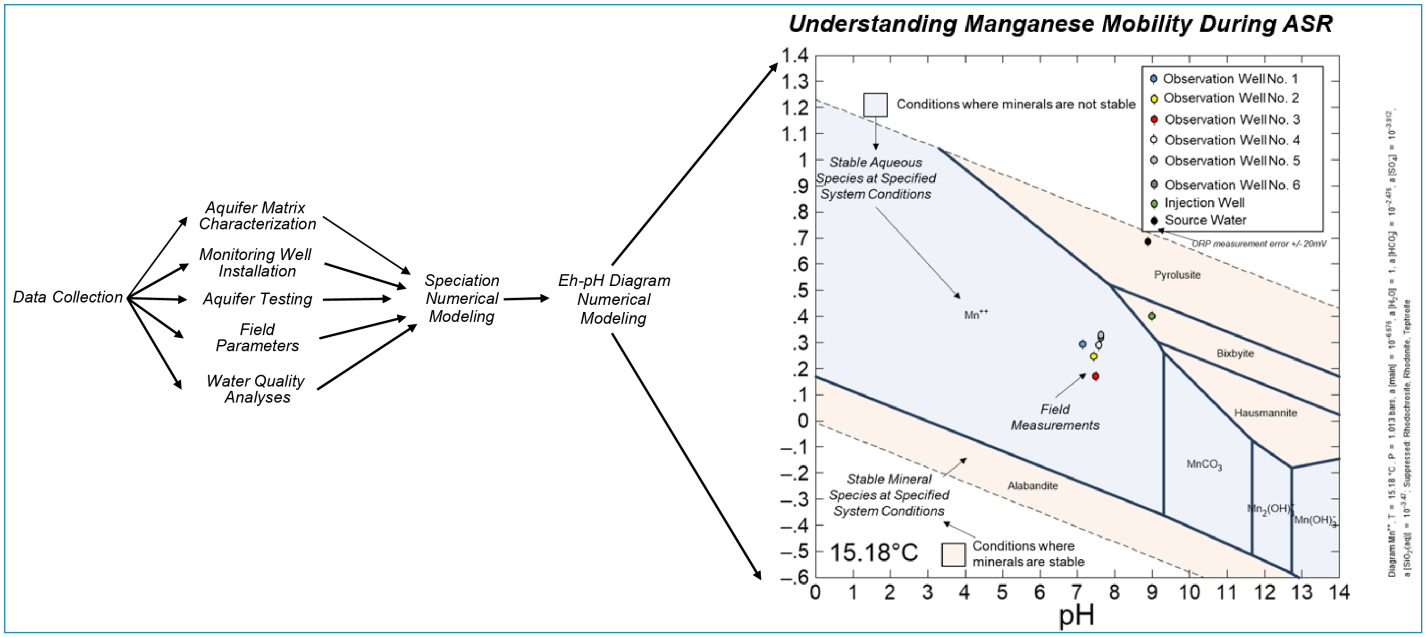
- We will assess several options to maintain compatibility with the treated surface water, including:
  - No Treatment (chlorination): If the recovered water has essentially the same character as the injectate, then only minimal post-recovery treatment will be needed.
  - Blend Raw Waters and Treat at NWTF: If the recovered water partially mixes with native groundwater, then it may be beneficial to blend the recovered water with raw surface water supplies and treat them together to homogenize the water.
  - Recovered Water Treatment: If the recovered water exhibits more the character of the native groundwater, additional treatment may be needed for specific constituents such as hardness, iron, manganese, or other inorganics.

TASK 5: DESIGN OF PILOT ASR WELL

- **KEY INSIGHTS:** The integration of groundwater systems into surface water-dominated infrastructure and operations can be challenging. In addition, the dual-purpose use of wells (injection and recovery) requires additional equipment and operations in comparison to traditional groundwater wells. There are different ASR O&M requirements that can be eased through a design focused on well efficiency, integration into existing systems, and the human interface for operations/maintenance.
- **LRE TEAM VALUE:** Innovation is key to successfully implementing ASR. Several improvements we have incorporated into Denver Basin ASR well designs include the use of glass beads and adaptive well development to improve well efficiency, down hole power generation, and operational data collection and monitoring to guide well maintenance. Our Team also has experience designing, constructing, and training operators on the use of intuitive interface systems that collect, analyze, and visualize important data to optimize ASR operations in systems dominated by conventional surface water infrastructure.



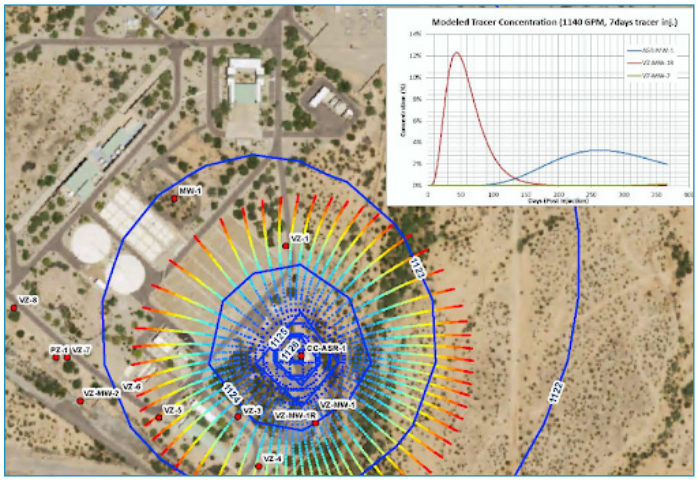
Well design/material innovations such as glass bead filter packs can improve ASR system yield while reducing maintenance requirements.



Data Collection and Geochemical Modeling of Manganese Mobilization

TASK 6: GROUNDWATER CONSULTING SERVICES TO SUPPORT ASR PLANNING

- **KEY INSIGHTS:** Many large water utilities along the Front Range have developed primarily on surface water and do not have in-house expertise to manage and integrate groundwater systems. The unseen, underground nature of groundwater makes some of its values and challenges unique, requiring experts specialized in its management. For many utilities, it isn't cost-effective to have such specialists on staff. In addition to groundwater specifics, ASR integration will require thinking about broader water resource management implications. One example would be planning ASR system operations maximizing storage of fully consumable water rights during wet years, freeing up storage space for other water rights.



Groundwater modeling results showing ASR pilot tracer testing.

- **LRE TEAM VALUE:** Our team includes 9 Denver-based hydrogeologists and 21 across the western part of the country who are specialists in various groundwater sub-disciplines. Our specialists work with our Groundwater Team managers whose broad experience leads to a holistic water resources approach to groundwater system development. Whether the City needs ASR well design/construction/operation support or augmentation recharge optimization, our managers will work closely with City staff, providing a big-picture approach with a team of specialists to address the unique groundwater details.

TASK 7: ASR PILOT SYSTEM BID PACKAGE

- **KEY INSIGHTS:** Through Plummer's work on Northglenn's Bunker Hill project, our team is familiar with the City's contract documents and bidding procedures. We understand the City's expectations on the desired content, review processes, collaboration, and timeframes.
- **LRE TEAM VALUE:** Our team has significant experience with traditional and collaborative delivery methods. A Construction Manager at Risk (CMAR) is being used on the Bunker Hill project and is one of the collaborative delivery methods worth considering for this project. We will work with the City staff to identify their specific needs for each contracting phase, assisting with the best contracting method to minimize Northglenn's risk and cost while optimizing the project quality.

TASK 8: ASR FEASIBILITY STUDY PHASE II REPORT

- **KEY INSIGHTS:** Groundwater's underground existence makes its technical topics inherently difficult to understand. ASR adds complexity that requires understanding of both the details and the big picture. Communication of ASR feasibility typically addresses a wide audience ranging from technically minded operators to the public and their elected officials.
- **LRE TEAM VALUE:** The LRE Team has demonstrated expertise in communicating ASR topics to people at all levels of understanding. Our communication methods include traditional reports/memos, more visual workshop materials/hand outs, and dynamic GIS StoryMap approaches. We will work with Water Resources staff during Task 1 work plan development to identify the best communication formats for the intended audiences. Regardless of the format, we will provide people with the information they need to know to understand and/or make decisions about ASR and its integration into the City's water resources.

LRE Water has been working with the City of Greeley to modernize the public communication regarding their Terry Ranch ASR Project.

PROJECT TEAM

We are excited to present our team for the ASR Feasibility Study Phase II project. Our knowledge of Northglenn's system, preferences, and processes, combined with our collective expertise in the areas of this project, will allow us to meet your needs specifically and efficiently. **In response to availability and commitment from our Project Manager and Principal-in-Charge, Dave and Cortney will each have up to25% availability for the management and implementation of the ASR Feasibility Study Phase II project.** They will oversee the project team below, as well as utilize the nine LRE Water Groundwater team members, as needed, to complete the work.

CORTNEY BRAND, PG
Principal-in-Charge

Cortney has ASR experience across the Front Range that is directly relevant to the ASR Feasibility Phase II scope, including feasibility studies for several municipalities. His local ASR experience also includes working for Colorado Springs Utilities developing their groundwater and ASR systems. More recently, his participation in the ASCE Subcommittee for Managed Aquifer Recharge (MAR) Standards and municipal consulting work gives him insight into regional and national ASR trends.

GARY GIN, RG
ASR Technical Advisor

Gary is uniquely qualified for this ASR Feasibility Study Phase II because he has served as owner/consultant on several large-scale ASR well systems throughout the United States. He brings his utility employee understanding to the team and will work with City staff to confirm the feasibility and cost effectiveness of integrating ASR as an additional resource management storage facility.

JOEL BARBER, PE
Project Hydrogeologist

Joel has a wide variety of groundwater experience, including ASR-focused work overseeing test hole drilling/sampling, aquifer testing, hydrophysical logging, depth specific sampling, water quality analyses, desktop geochemical analyses, and cycle testing.

NATHAN MARTINSON, PE (PLUMMER)
Civil Design & Treatment Subcontractor

Nathan will lead the engineering design for Plummer. Plummer has a wealth of experience providing water systems civil, mechanical, and electrical engineering for Front Range water providers. Nathan and Plummer's experience includes ongoing work with the City on the Bunker Hill lift station.

DAVE COLVIN, PG, PMP
Project Manager | Comprehensive Groundwater Consulting | ASR Permitting

Dave has broad groundwater consulting experience in the Denver Basin and shallow alluvial aquifers of the Front Range. Dave leads the LRE Water Groundwater team and covers a wide variety of groundwater work for municipal clients including: groundwater development, management, and administration; conjunctive use management of surface water and groundwater; and expert witness support for water rights. His recent ASR work includes planning alluvial and Denver Basin projects and EPA coordination/negotiation for a UIC Rule Authorization and Class V Area Permit.

ALLAN FOSTER, EI
Geochemistry/Water Compatibility

Allan specializes in geochemistry and evaluating the interactions between injectate, native groundwater, and the aquifer matrix. He will also be providing groundwater data analysis, including flow, fate and transport modeling, if needed.

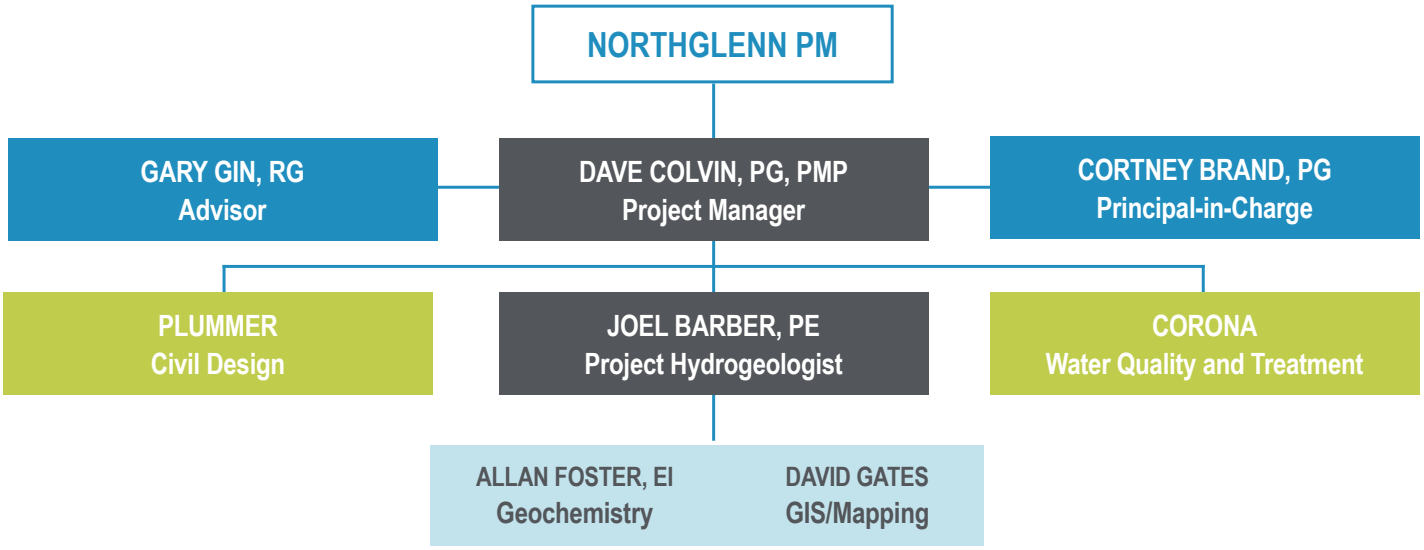
DAVID GATES
GIS Data Management

David provides GIS data management and visualization to effectively communicate complex geologic concepts, including mapping, 3D visualization, and MapStory creation.

CHRIS CORWIN, PHD, PE (CORONA)
Water Quality & Treatment Subcontractor

Chris specializes in addressing unique water quality challenges, including those related to incorporating new water sources into existing treatment and distribution infrastructure. He has led the Corona team in evaluating water quality and advanced treatment technologies for several systems that combine surface water and groundwater sources.

ORGANIZATIONAL CHART



LRE Water, Inc., (1 year under present name, formerly known as Leonard Rice Engineers) has been planning, managing, and developing water resources in Colorado for over 50 years. With 55 employees across 5 offices *(Denver, CO, Glenwood Springs, CO, Phoenix, AZ, Round Rock, TX, Minneapolis, MN)* we specialize in water rights engineering, groundwater development/management, environmental permitting, and water innovation and technology. We are actively involved in surface water and groundwater resource planning efforts throughout the South Platte River basin, including the South Platte Regional Opportunities Water Group (SPROWG). LRE Water provides many Front Range entities with groundwater support and has worked with six municipalities on ASR feasibility, planning, and/or implementation projects.

Nationally, LRE is an industry leader in the field of ASR. We are actively involved in over 15 ASR projects in four states. LRE is uniquely qualified for this assessment because of our breadth and depth in ASR experience. In addition, both Cortney and Gary have served and worked at utilities implementing ASR projects and have client side/operator experience that is both rare in the consulting world and valuable for understanding the City's needs.

Corona Environmental Consulting, LLC was established in 2013 specifically to address the most challenging problems facing the water industry. Each of their team members brings specialized knowledge and experience in addressing water quality challenges for which there may not be obvious solutions. Corona's specific areas of expertise with respect to this project are predicting water quality and variability of the injection water and the treatment need of the recovered water. One of Corona's focus areas is blending of new water sources in the distribution system. Changes in water quality and flow reversal in distribution system pipes can cause corrosion, colored water complaints, and regulatory difficulties.

This project will be supported by their Louisville, Colorado office where seven of our treatment process engineers are located. They have worked with many Front Range water utilities, including Denver Water, City of Aurora, City of Arvada, City and County of Broomfield, and Loveland Water and Power.

Plummer has conducted business with quality and integrity for over 40 years. Founded in 1978 with a vision to uphold environmental stewardship and technical excellence, they are committed to serving their clients with distinction and respect. Today, with more than 160 employees and projects in Colorado, New Mexico, Texas, and Oklahoma, Plummer continues that commitment. Their goal is to provide the City of Northglenn with outstanding civil engineering expertise combined with local experience and knowledge.

Plummer provides a long history of technical innovation and experience with civil engineering for water and wastewater systems including water supply, treatment, storage, and distribution. Their staff are experienced with system analysis, modeling, pumping systems, wells and potable water distribution, treatment of surface water and groundwater, and process and control design and integration. Plummer also has unmatched local experience and knowledge. They have performed over $500 million of water infrastructure improvements for over 500 clients, including Rocky Mountain Region clients.

CLIENT REFERENCES

BOB PETERS (DENVER WATER)

robert.peters@denverwater.org

303-628-6570

LRE has supported Denver Water with a multi-phase ASR pilot project services including planning, permitting, geochemical analysis, site selection, conceptual design and cost estimating for an ASR pilot facility. LRE procured and oversaw Denver Basin exploratory borehole drilling, hydrogeophysical investigation (Nuclear Magnetic Resonance and conventional methods), downhole testing, and geotechnical laboratory analysis. Services have recently included siting of the pilot facility and development of a pilot facility cost estimate and operations plan.

LRE provided excellent services for Denver Water's Aquifer Storage and Recovery investigation. They have a deep pool of experience in the ASR field and executed our project to provide the comprehensive information needed to assess the feasibility of ASR and provided targeted advice to help us determine the next steps in our program."

- BOB PETERS, SENIOR WATER RESOURCE ENGINEER, DENVER WATER

ADAM JOKERST (CITY OF GREELEY)

Adam.Jokerst@greeleygov.com

970-350-9209

LRE is leading a groundwater development and ASR feasibility study in northern Colorado's Upper Laramie aquifer. Site characterization studies and analysis included exploratory borehole drilling/testing, aquifer testing, hydrophysical logging, depth specific sampling, water quality analyses, water compatibility modeling (PHREEQC), injection/recovery cycle testing, and bench-scale testing of surface water-groundwater interactions. LRE evaluated the site data to characterize the source of trace metals in the native water and the risk of mobilization during future storage of treated surface water. LRE also provided permitting services and support for communications with the public and elected officials.

DANIEL KIEL (CITY OF PEORIA)

Daniel.Kiel@peoriaaz.gov

623-773-7982

The City of Peoria has successfully constructed their first ASR well that recharges advanced treated reclaimed water. Initially this ASR well was estimated to recharge 400 gallons per minute (gpm) by another consultant after pilot testing. This estimated recharge rate did not meet their project objective which was to recharge at 900 gpm. LRE was brought in to evaluate the recharge data/analysis and estimated that a recharge rate of 900 gpm can be achieved. LRE's role involved initial design review, automation programming, regulatory reporting, well development, operations and maintenance planning/documentation, water quality evaluation, and staff training.

I've had the recent pleasure to work with LRE's team on our first ASR facility in Peoria. Because we were constructing our first ASR well, we did not have the necessary background/experience to formulate an operation and monitoring program. LRE provided significant technical knowledge to our project team including how to operate ASR wells effectively, how to implement a long term recharge strategy, and how to ensure the long term health of the facility. This included valuable training for our staff, assistance in creating monitoring reports and permitting, and the formation of an operator guidance document. LRE has the necessary tools and experience to provide excellent assistance on any recharge related project."

- DANIEL KIEL, PE, PLANNING & ENGINEERING MANAGER, CITY OF PEORIA

HEATHER JUSTUS (TOWN OF CASTLE ROCK)

HJustus@crgov.com

720-733-6081

LRE is currently supporting Castle Rock with hydrogeologic services during the drilling, construction, and testing of seven wells in the Dawson, Denver and Arapahoe aquifers. Our Denver Basin services have included aquifer storage and recovery (ASR) pilot test planning, permitting (EPA & DWR), water rights, development of water well specifications (with innovations such as glass bead filter packs, magnetic resonance logging, and stainless steel casing/screen), well efficiency analysis, aquifer test analysis, and groundwater modeling for system optimization. LRE has provided additional support to Castle Rock Water including the evaluation and implementation of alluvial vertical well alternatives, horizontal directional drilling (HDD) of well laterals to increase alluvial well field yield, well rehabilitation (jetting, acid treatment) to address well field biofouling, testing and data analysis to optimize equipment and operations, operational modeling, and other general water resources support.

TREVOR JOSEPH (CITY OF ROSEVILLE)

tjoseph@roseville.ca.us

916-746-1708

The City of Roseville has successfully constructed their first four ASR wells that recharges treated surface water in 2018. For recharge seasons 2019 and 2020, all four ASR well met their recharge volumes objectives, however, their recharge efficiency has been steadily declining for two consecutive years. Overall, these ASR wells were clogging and the backwashing routines were not effective in improving the recharge performance. LRE was brought in to assess their four ASR wells and develop a road map on how to improve recharge efficiency for future recharge seasons. LRE's role involved design review of infrastructure, ASR well backwashing trials, programming and operational testing, operator training, and geochemical/corrosion assessments.

COSTS AND RATE SCHEDULE

LRE Water has developed an initial distribution of task funding based on an approximate total budget of $200,000. We recommend that City staff and the LRE Team work collaboratively to refine the initial task cost estimates presented below during the initial stages of Task 1 implementation.

TASK	INITIAL COST ESTIMATE
Task 1 - Work Plan	$6,500
Task 2 - Feasibility Assessment Review and Completion	$6,500
Task 3 - Permit Application Preparation and Submittal	$25,000
Task 4 - Water Quality Integration Plan	$50,000
Task 5 - Design of Pilot ASR Well	$35,000
Task 6 - Groundwater Consulting Services to Support ASR Planning	$10,000
Task 7 - ASR Pilot System Bid Package	$50,000
Task 8 - ASR Feasibility Study Phase II Report	$17,000
TOTAL COST	**$200,000**

LRE Team 2021 rate schedules are included in the following pages.

LRE WATER
2021 RATE SCHEDULE

Effective December 26, 2020

	Hourly Rate
Student Intern	$65- $90
Data Processor/Admin Support	$75 - $130
Technician/IT Support	$100 - $135
Staff I Engineer/Hydrologist/Geologist/Scientist	$100 - $135
Staff II Engineer/Hydrologist/Geologist/Scientist	$115 - $145
Staff III Engineer/Hydrologist/Geologist/Scientist	$135 - $170
Project Engineer/Hydrologist/Geologist/Scientist	$155 - $180
Senior Project Engineer/Hydrologist/Geologist/Scientist	$160 - $190
Project Manager	$165 - $200
Senior Project Manager	$170 - $255
Principal, Senior Advisor	$200 - $270

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 airfare, automobile rental, and other travel or per diem costs including mileage billed at the current IRS rate (rounded up to the nearest $0.05). Subconsultants to LRE are billed at cost plus 10 percent.

December, 2020

2021 Rates

CORONA ENVIRONMENTAL CONSULTING

Categories and Rates

Organizational Category	2021 Billing Rate
Partner	$315.00
Principal Professional	$275.00
Supervising Professional	$235.00
Senior Professional	$205.00
Associate Professional	$175.00
Professional	$155.00
Data Analyst	$135.00
Administrator	$105.00

Corona Staff

Person Name	Organizational Category	2021 Billing Rate
Benjamin, Jennifer	Associate Professional	$175.00
Causey, Jake	Supervising Professional	$235.00
Chee, Tod	GSA: Program Manager II	$120.00
Clements, Janet	Supervising Professional	$235.00
Cline, Shonnie	Senior Professional	$205.00
Corwin, Chris	Principal Professional	$275.00
Ergul, Ayhan	Partner	$315.00
Ghosh, Amlan	Supervising Professional	$235.00
Gorman, Craig	Principal Professional	$275.00
Gregory, Brittany	Professional	$155.00
Hada, Karen	Administrator	$105.00
Henderson, Jim	Senior Professional	$205.00
Henrie, Tarrah	Principal Professional	$275.00
Janezic, Jon	Data Analyst	$135.00
Johnson, Sierra	Professional	$155.00
Kaplan, Juliette	Professional	$155.00
Kearns, Margaret	Principal Professional	$275.00
MacArthur, Nathan	Professional	$155.00
Masters, Sheldon	Associate Professional	$175.00
McDonough, Denise	Administrator	$105.00
McKeagney, Adam	Associate Professional	$175.00
McKenna, Libby	Professional	$155.00
Naughton, Annemarie	Administrator	$105.00
Rosen, Jeffrey	Partner	$315.00
Samson, Carleigh	Associate Professional	$175.00
Seidel, Chad	Partner	$315.00
Seguin, Joan	Professional	$155.00
Sheridan, Claire	Professional	$155.00
Smith, Emily	Associate Professional	$175.00
Zichichi, Jessica	Principal Professional	$275.00

ATTACHMENT A

PLUMMER ASSOCIATES, INC.

HOURLY FEE SCHEDULE

2021

Staff Description	Staff Code	2021 Rate
Admin Staff	A1 – A2	$ 90.00
Admin Staff III	A3	$ 95.00
Senior Admin Staff	A4	$ 120.00
Designer/Technician	C1-C2	$ 90.00
Designer/Technician III	C3	$ 115.00
Senior Designer/Technician	C4	$ 135.00
Construction Manager in Training *(CMIT)*	CM1	$ 105.00
Construction Manager in Training II	CM2	$ 125.00
Construction Manager in Training III	CM3	$ 135.00
Construction Manager IV	CM4	$ 145.00
Construction Manager V	CM5	$ 165.00
Construction Manager	CM6	$ 200.00
Senior Construction Manager	CM7	$ 240.00
Principal Construction Manager	CM8	$ 260.00
Resident Project Rep. I	RR1	$ 80.00
Resident Project Rep. II	RR2	$ 110.00
Resident Project Rep. III	RR3	$ 130.00
Lead Resident Project Rep.	RR4	$ 135.00
Field Tech I	LS1	$ 80.00
Field Tech II	LS2	$ 95.00
Survey Specialist I	LS3	$ 105.00
Survey Specialist II	LS4	$ 115.00
Survey Analyst	LS5	$ 135.00
Chief of Parties	LS6	$ 150.00
Engineer/Scientist Intern	ES0	$ 60.00
Engineer-in-Training/Scientist-in-Training	ES1	$ 115.00
Engineer-in-Training/Scientist-in-Training II	ES2	$ 120.00
Engineer-in-Training/Scientist-in-Training III	ES3	$ 130.00
Project Engineer/Scientist	ES4	$ 145.00
Senior Project Engineer/Scientist	ES5	$ 175.00
Project Manager	ES6	$ 215.00
Senior Project Manager	ES7	$ 240.00
Principal I	ES8	$ 305.00
Principal II	ES9	$ 320.00
Electrical Engineer in Training I	EE1	$ 95.00
Electrical Engineer in Training II	EE2	$ 120.00
Electrical Engineer in Training III	EE3	$ 125.00
Electrical Specialist	EE4	$ 145.00
Programmer	EE5	$150.00
Programmer II	EE6	$ 155.00
Senior Electrical Engineer	EE7	$ 280.00

Billing rates may be adjusted by up to 4 percent annually (at the beginning of each calendar year) during the term of this agreement.

A multiplier of 1.15 will be applied to all direct expenses

A technology charge will be billed at $5 per labor hour.

APPENDIX A: RESUMES

CORTNEY BRAND, PG, PMP

Cortney has over 25 years of experience in the water industry, and is a recognized expert in hydrogeology and ASR systems. He has led the planning, permitting, design, and installation and testing of over 50 high-capacity production and ASR wells; and has managed numerous large-scale groundwater supply and modeling investigations. His ASR experience comprises over 15 projects in Colorado and other Western U.S.; some as large as 30-MGD and $250 million in size. He was a member of the ASCE committee that recently published the Managed Aquifer Recharge (MAR) standards.

EDUCATION

M.B.A.
University of Colorado Executive Programs

M.S. Geology
Arizona State University

B.S. Geology
Lafayette College

PROFESSIONAL REGISTRATION

Licensed Geologist:
Arizona #33263
Wyoming #PG-3466

Project Management Professional
#4164430E1

PROFESSIONAL ACTIVITIES

ASCE Subcommittee Member – Managed Aquifer Recharge (MAR) Standards

Metro Roundtable – Voting Member

South Platte Groundwater Technical Subcommittee

PROJECT EXPERIENCE: AQUIFER STORAGE AND RECOVERY SYSTEMS

Cortney has been involved in 15 ASR projects as an Owner, program manager, and consultant in CO, TX, AZ, KS, CA and Canada. He is experienced in all aspects of ASR system planning, permitting, design, construction, piloting, and operations.

ASR Feasibility Investigation, City of Greeley, CO: Cortney is leading a groundwater development and ASR feasibility study in northern Colorado for Greeley to store treated surface water in the Upper Laramie Aquifer. The project includes groundwater modeling, geochemical modeling, aquifer characterization, drilling and testing of exploratory boreholes, aquifer tests, zonal sampling, bench-scale testing, and pilot injection testing. Over 5,000 data points were collected to characterize the groundwater quality and water-rock interactions associated with conducting ASR.

Denver Basin ASR Pilot Project, Denver Water, CO: Cortney led a multi-phase ASR pilot project for Denver Water, which included planning, permitting, geochemistry, site selection, conceptual design and cost estimating for an ASR pilot facility. The most recent phase included drilling and logging of eight exploratory boreholes. He assisted Denver Water in siting of the pilot facility and developed a pilot facility cost estimate and operations plan.

Denver Basin ASR Feasibility Study, Aurora Water, CO: Cortney is leading an ASR feasibility study for Aurora Water to store treated surface water supplies in the Denver Basin underlying Aurora. The study includes a large-scale data collection effort, identification of data gaps, surface water and groundwater sampling, geochemical and water compatibility modeling, pilot facility siting and cost estimate, and preparation of a UIC permit application.

Aquifer Storage and Recovery (ASR) Program, City of Wichita, KS: Cortney served as the Program Manager responsible for implementing all aspects of Wichita's $250 million ASR Program. The Phase II system infrastructure included a 60-MGD river intake, a 30-MGD advanced water treatment plant (MF/UF membranes and AOP), 30 ASR wells, a 138 kV substation, and 40 miles each of power lines and pipelines.

ASR Economic Assessment, Sacramento Suburban Water District, CA: Cortney assisted the SSWD with the evaluation of creating an ASR well system to store and sell recovered water. He created a life-cycle cost model to compare the economics of different ASR well system development scenarios and the potential revenue from selling the recovered water to other utilities.

Denver Basin ASR Program, Colorado Springs Utilities, CO: While at Colorado Springs Utilities, Cortney initiated, permitted, and managed development of a Denver Basin ASR well system. The system utilizes ASR wells to store potable water in the Arapahoe and Denver aquifers.

DAVE COLVIN, PG, PMP

Dave is a Principal Hydrogeologist and Senior Project Manager with over 24 years of experience in groundwater hydrology, water resources, and environmental sciences. He supervises teams of diverse subject matter experts and provides technical leadership to solve today's water resource challenges. Dave also serves as the LRE Groundwater Team Leader responsible for managing staff, resources, projects and schedules for a group of hydrogeologists across the west, Midwest and Texas. His technical expertise subject areas include groundwater governance & management, surface water/groundwater interaction, riverbank filtration (RBF), soil aquifer treatment (SAT), managed aquifer recharge (MAR), aquifer storage and recovery (ASR), aquifer characterization, groundwater modeling, and subsidence caused by groundwater pumping. He conducts and supervises hydrogeologic investigations involving project management, aquifer testing, 3-D geologic modeling, groundwater flow/transport modeling, uncertainty analysis, hydrogeophysics, water rights, expert testimony, environmental geology, and regulatory support.

FEATURED PROGRAM AND PROJECT EXPERIENCE

Town of Castle Rock – Denver Basin Groundwater Support; Douglas County, CO (2015-ongoing): Project Manager providing comprehensive groundwater support. Projects have include Denver Basin aquifer storage and recovery (ASR) planning/permitting (EPA UIC and DWR), bidding services, contractor management, construction oversight, well/pump design, aquifer testing, and groundwater regulatory support.

City of Aurora – ACRE Site ASR Feasibility Investigation; Adams County, CO (2018-ongoing): Project Manager and lead hydrogeologist investigating the feasibility of recharging and storing water in the alluvial aquifer at the Aurora Center for Renewable Energy (ACRE). Tasks included hydrogeophysical surveys, exploratory drilling/test pits, and infiltration testing. The project identified recharge as a viable option for innovative storage and augmentation opportunities.

ASR Feasibility Investigation, City of Greeley, CO. (2019-ongoing): Senior Technical Advisor for a project evaluating the feasibility of new and existing ASR projects in multiple bedrock aquifers. Included evaluation of water quality, aquifer characteristics, well construction/testing and planning information.

Town of Erie – Water Supply Planning Support (2018-ongoing): Lead hydrogeologist and Project Manager providing groundwater support related to water supply planning. Services include aquifer characterization, water quality studies, horizontal directionally drilled well field design, ASR feasibility analysis, and water rights. Prepared Colorado Water Conservation Board and Division of Local Affairs grant applications to obtain project funding. The project will provide a 3,000 GPM expansion of the Town's water supplies.

Denver Water – Aquifer Storage and Recovery (ASR) Pilot Project, City and County of Denver, CO (2016-2018): Groundwater technical and project management for ASR feasibility investigation. Provided Denver Basin aquifer characterization including exploratory borehole drilling, hydrogeophysical investigation (Nuclear Magnetic Resonance and conventional methods), and 3-D geologic modeling.

City of Phoenix – ASR Tracer Test Design; Maricopa County, AZ (2017): Provided MT3D groundwater modeling to assist in aquifer characterization, travel time estimates, and the design of an ASR tracer injection test for feasibility. The testing was in support of the Northeast Phoenix Reclaimed Water Recharge and Recovery Study. The system is intended to create a potable water resource through Indirect Potable Reuse (IPR), provide additional non-potable supplies, and to mitigate land subsidence issues.

EDUCATION

M.S. Environmental Science and Engineering, Colorado School of Mines, 2002

B.S. Geology, Syracuse University 1996

PROFESSIONAL REGISTRATION

Professional Geoscientist
Arizona RG#68926
Idaho #PGL-1453
Texas #11440
Wyoming #PG-3602
Kansas #958

PROJECT MANAGEMENT PROFESSIONAL (PMP) #1749472

EXPERIENCE

2010–Present LRE Water – Denver

PROFESSIONAL ACTIVITIES

AWRA Colorado
2017/2018 Past President
Water Education Colorado
2012 Water Leaders Program
National Groundwater Association
MAR Working Group Member
Colorado Groundwater Association

City of Aurora and Town of Castle Rock – Lost Creek Underground Storage Pilot Project; Lost Creek Designated Basin, CO (2017-2018): Project Manager for aquifer characterization and evaluation of recharge potential for underground water storage pilot project. Obtained grant funding and facilitated multiple stakeholder project planning and implementation. The project identified important field investigation methods and results for storage related aquifer characteristics previously overlooked in desktop studies.

Salt River Project – New River Agua Fria Underground Storage Project; Phoenix, AZ (2013): Project involved optimization and in-channel expansion design for an existing recharge facility. Support included evaluation of operational data and adaptation of an existing MODFLOW model for operational optimization and feasibility testing.

RELEVANT PRESENTATIONS & PUBLICATIONS

Colvin, Dave, 2020. "Moving from Conflict to Collaboration: The Role of MAR in Mitigating Groundwater Pumping Impacts to Surface Water" 17th Biennial Symposium on Managed Aquifer Recharge. Tempe, AZ.

Colvin, Dave, 2020. "Drawing the Line in the Sand between Underground Water Storage and Augmentation Recharge." American Water Resources Association – Colorado Chapter & Colorado Groundwater Association Joint Annual Symposium. Denver, CO

Colvin, Dave, 2019. "Demonstrating Dominion and Control – Moving from Black Magic to Understandable Science." American Groundwater Trust Annual Colorado Groundwater Conference. Denver, CO.

Colvin, Dave, 2019. "Now We Know What We Don't Know: An ASR Regulatory Update". Colorado Groundwater Association September Meeting. Denver, CO.

Colvin, Dave, 2019. "The Evolution of Colorado Underground Water Storage Administration". American Water Resource Association / Colorado Groundwater Association 2019 Joint Annual Symposium. Denver, CO.

Colvin, Dave, 2018. "Technical Considerations for ASR Planning in Colorado's Front Range". American Groundwater Trust Annual Colorado Groundwater Conference. Denver, CO.

Colvin, Dave, 2018. "ASR Panel Discussion: The Revolution of Subsurface Water Storage". American Water Works Association ACE18 Conference. Las Vegas, Nevada.

Colvin, Dave, and Pence, Rachel, 2017. "Using NMR and Hydrogeophysics to Evaluate ASR Feasibility in the Denver Basin". 2017 NGWA Conference on Hydrogeophysics and Deep Groundwater, Denver, CO. (https://ngwa.confex.com/ngwa/hdg2017/webprogram/Paper11286.html)

Colvin, Dave and Loopesko, William, 2014. "Advantages of Alluvial Aquifer Storage Alternatives for Managing Hydrologic Extremes and Future Water Supply Risks." 2014 Upper Colorado River Basin Water Forum, Grand Junction, CO.

Colvin, Dave, 2014. "Groundwater Solutions for Indirect Potable Reuse." 2014 Rocky Mountain Water Reuse Workshop, Golden, CO.

GARY M. GIN, RG

Gary has 22 years of diverse experience in the water industry, including 11 years in consulting and 11 years with the City of Phoenix. Gary specializes in integrated water resource planning, groundwater policy, aquifer storage and recovery (ASR) systems (+8,000 hours of operational experience), analyzing water infrastructure hydraulics, water rights, and program/regulatory management. He leverages his technical expertise and water utility experience to help clients implement their capital programs. Gary is a seasoned project manager with a resume of over 70 projects, some in excess of $158 million.

EDUCATION

M.S. Geology
University of Nevada, Las Vegas
Las Vegas, NV 1996

B.S. Geology (with Distinction)
Sonoma State University
Rohnert Park, CA 1992

PROFESSIONAL REGISTRATIONS

Licensed Geologist: Arizona (39254, 2003) Texas (4937, 2003)

PROFESSIONAL AFFILIATIONS

National Groundwater Association (NGWA)

NGWA Managed Aquifer Recharge Committee Member

American Water Works Association (AWWA)

AWWA A100 Well Standards Committee Member

AZ Water Association

American Groundwater Trust

Groundwater Resources Association of California

FEATURED PROGRAM AND PROJECT EXPERIENCE

Mr. Gin is skilled at leading and implementing large capital well programs, and serving as an owner's advisor in matters of project delivery and designer/contractor procurement.

Program Managment Team, City of Phoenix, Well Installation Program (2018-2022): Mr. Gin is serving as Technical Advisor for Phoenix's Well Installation Program for 7 ASR wells and 3 Production wells. He advises on technical and management related issues throughout design, permitting, construction, testing, and operational phases (optimizing injection capacity for the ASR Wells). Currently, Mr. Gin is responsible for the advance automated programming for these ASR well systems, in which, well data is collected and calculated to measure the efficiency of the well during recharge and backwashing operations. This automated well performance program allow managers and operators to make decisions quickly throughout the recharge season (respond to clogging events). The well-field production capacity goal is 22,000 acre-feet per year and the recharge injection goal is about 18,000 acre-feet per year.

Butler ASR Well: Design, Programming, Development, Permitting & Operational Training, City of Peoria, AZ: Mr. Gin is serving as the City's Program Manager on Peoria's first ASR well (recharging 1.3 MGD of treated reclaimed water). He is focused on improving creating an operator-friendly interface, streamline regulatory reporting, and train operators on how to optimize recharge and backwashing operations. Our services saved Peoria $4.2M. The initial consultant recommended a second ASR well to be drilled and constructed to meet their recharge goals. This recommendation was not warranted.

Sacramento Suburban Water District (SSWD), ASR Economic Assessment, CA: Mr. Gin and the LRE Team developed an Economic Model for SSWD to assess the viability of ASR wells within SSWD's Service Area. This modeling tool provides the ability to determine and evaluate the cost of sale for recovering resources to potential buyers and be profitable.

ASR Well-Field Program Manager, City of Roseville, CA: Mr. Gin is serving as the City's Program Manager on their 4 ASR wells. He is focused on improving operational efficiency, updating operational programming, and tracking geochemical changes during recharge operations. Roseville's ASR wells are consistently clogging after subsequent ASR cycles. LRE is working on developing these ASR wells to be more efficient, which will allow Roseville to recharge larger volumes into the aquifer in a shorter time period. He is also assisting Roseville on planning their future ASR wells (siting, and economics) and providing technical guidance on the design, constructability, and system optimization.

Program Management - Wells Program (2020-2025), City of Glendale AZ: Mr. Gin is serving as Program Manager for the City of Glendale's Wells Program. This program is to develop and advance groundwater management strategies for improving drought resiliency and mitigating against growth in new regions in the City. The Phase 1 goal is to develop, locate, plan, and schedule a Capital Improvement Program for new water supply wells and ASR wells. Phase 2 goal will be developing technical specifications and guidance documents for designing ASR and water supply wells.

Update Groundwater Management Plan, City of Phoenix, AZ: Mr. Gin created $158 million well-field program for the City of Phoenix in 2016. This well-field entails the construction of 11 ASR and 9 water supply wells in 10 years. These wells will be used for drought resiliency (57,000 AF/yr of increased well production & 14,500 AF/yr of increased recharge capacity) and redundancy in the various pressure zones of the distribution system. Mr. Gin also developed the criteria for siting these wells (meeting current & future demands) and had all 21 wells permitted through the Arizona Department of Water Resources (ADWR).

Aquifer Storage and Recovery (ASR) and Water Supply Well Program, City of Phoenix, AZ: Mr. Gin served as the Program Manager and Design Manager responsible for implementing all aspects of Phoenix's Groundwater Management Plan 2006-2016 ($98 million). The program comprised 12 separate projects, including seven ASR wells (10,500 AF/yr of recharge capacity), five water supply wells (16-18 MGD), and several feasibility and exploratory borehole projects. Mr. Gin was the first hydrologist in the United States to test and utilize glass beads as a filter pack media for ASR wells. He has extensive knowledge on filter pack performance under long-term recharge and pumping cycles. Mr. Gin was also instrumental in the creating the programming logic for the automated backwashing program and creating the database management reports that are utilize to report monthly and annual recharge & recovery volumes to the State and County agencies.

JOEL BARBER, PE

Joel is a project hydrogeologist and a Professional Engineer, PE. He offers over 8 years of experience as an engineer working on groundwater modelling, groundwater well field design and construction, groundwater engineering, and mine waste management. He specializes in providing hydrogeologic and engineering consulting including; hydrogeological site characterization, groundwater well construction, aquifer testing, groundwater and surface water engineering. This experience includes hydrogeological and geotechnical field investigations, well installation, groundwater modelling, seepage analyses, vadose zone modelling, water balance analyses, aquifer storage and recovery, and material characterization. Joel has a sound understanding and experienced operational skills of various computer software packages. Software includes GIS, SEEP/W, MODFLOW, MODFLOW-USG, MT3D, VADOSE/W, Python, RockWorks and HYDRUS 1-D.

EDUCATION

M.S., Hydrogeology, 2013
B.S.,Geological Engineering, 2011,
Colorado School of Mines, Golden, Colorado

PROFESSIONAL REGISTRATION

Professional Engineer: Colorado (#0052486), Texas (#133457), Iowa (#P25952)

EXPERIENCE

2016 – Present
LRE Water – Denver

2013 - 2016
MWH Global - Denver

FEATURED PROGRAM AND PROJECT EXPERIENCE

Terry Ranch Due Diligence Hydrogeologic Characterization and ASR Feasibility Evaluation, City of Greeley, CO: Joel was the technical lead for conducting a hydrogeologic characterization of the Upper Laramie aquifer beneath the Terry Ranch to evaluate the feasibility of developing the aquifer as a supply and storage project. Site characterization studies and analysis included test hole drilling and sampling, aquifer testing, hydro- physical logging, depth specific sampling, water quality analysis, desktop geochemical analyses, and cycle testing. LRE evaluated the site data to characterize the source of trace metals in the native water and the risk of trace metal mobilization during the future storage of treated surface water.

Upper Pierre Aquifer ASR Feasibility Investigation, City of Greeley, CO: Joel conducted a desktop study to evaluate the feasibility of ASR in the Upper Pierre Aquifer in northern Colorado. Mr. Barbed evaluated published hydrogeology maps, well logs, geophysical logs, and aquifer test data to evaluate ASR feasibility. We provided estimates of ASR well injection rates and extraction rates and aquifer storage volume in the client's service area.

Denver Water Aquifer Storage and Recovery (ASR) Feasibility Study, Denver Water, CO: Joel oversaw the drilling of 4 Denver Basin test holes including logging of drill cutting and geophysics logging. Assisted in the reduction of geophysics data (resistivity, gamma and NMR) to make recommendations of pilot study location. Oversaw a lab testing program for evaluating aquifer permeability from side wall core samples. Joel developed a 3-D hydrogeologic model the of the Denver Basin in the Denver Water service area based on the test holes as well as published literature.

Box Elder Alluvial Aquifer ASR Feasibility Investigation, The City of Aurora, CO: Joel oversaw a field investigation of a site in the Box Elder alluvial aquifer for ASR feasibility. Field investigations included geomorphology mapping, test pitting, surface infiltration testing, drilling and monitoring well construction, monitoring equipment installation, aquifer testing, and pilot infiltration testing. Joel evaluated the data and determined the site is feasible for ASR, provided recommendations on a hypothetical permanent recharge facility, and provided an ASR pilot plan.

Lost Creek Underground Storage Feasibility Study, The City of Aurora, CO: As the project hydrogeologist Joel oversaw a field investigation and associated aquifer characterization of the Lost Creek Designated Basin aquifer. Field investigations included time-domain and frequency domain electromagnetics, surface resistivity, and Multichannel Analysis of Surface Waves, test hole drilling, down-hole permeability testing, and surface infiltration testing. The site investigation identified critical cementation properties of the aquifer that will directly influence development of an ASR program.

EDUCATION
Bachelor of Science, Civil Engineering, Colorado State University

PROFESSIONAL REGISTRATION
Professional Engineer
Colorado (No. 47166)

NATHAN MARTINSON, PE

Nathan has more than 15 years of experience in engineering and project management; specializing in implementation of traditional and unique design concepts for water and wastewater systems and conveyance, local and state regulatory approval assistance, and enhancement of project team relationships. He has worked on water or wastewater civil infrastructure projects for regional clients including the Town of Frisco, Lone Rock Ranch, City of Greeley, City of Boulder, City and County of Denver, Rock Creek Metropolitan District, and many others. Additionally, he has experience with the City of Northglenn on the Bunker Hill Lift Station Project.

FEATURED PROGRAM AND PROJECT EXPERIENCE

TOWN OF FRISCO WELL #7PRA AND DISTRIBUTION SYSTEM IMPROVEMENTS, FRISCO, CO
Project Manager for Well #7PRA which included installation of a new vertical turbine well pump, well pump building, piping, sampling, and chemical treatment. Scope included a permit application, CDPHE approval, final design, and construction administration services. Design elements included a deep well pump with a VFD; chlorination by injection of sodium hypochlorite; a well house for equipment, piping, valves, and appurtenances; process and control integration into the Town's SCADA system; and on-site generated backup power for emergencies. Nathan serves as Project Manager for all on-call projects with the Town.

LONE ROCK RANCH WATER SYSTEM | Project Manager and Team Lead for the water system project including conceptual design for water systems, each requiring well(s) for water supply, a water treatment system, a water storage tank, and a water distribution system. The general scope of work included preliminary design, a Colorado Department of Health and Environment (CDPHE) Process Design Report submittal required for new water systems, final design, and construction administration services.

CITY AND COUNTY OF DENVER STAPLETON LIFT STATION, DENVER, CO | Project Manager for the 3.5 MGD lift station project with the City and County of Denver. Scope of work included preliminary design, final design, and construction administration services as well as obtaining CDPHE permitting approval by preparation and submission of a Site Location Application and CDPHE Basis of Design Report. The lift station utilizes submersible pumps in a below-grade wet well and a 4,000 linear foot force main. The project also included emergency protection systems, valves, discharge piping, electrical and controls, odor control, heating/ventilation, and a backup system for emergency conditions.

CITY OF BOULDER IBM LIFT STATION, CITY OF BOULDER, CO | Project Engineer for the 2.8 MGD Boulder IBM Lift Station utilizing a design-bid-build approach. Work included an alternatives analysis, design and bidding services, CDPHE approval, and remote alarming and controls. The old wet well was converted into a new self-cleaning wet well. Three submersible screw centrifugal style pumps were installed in the improved and expanded wet well.

NORTHGLENN BUNKER HILL LIFT STATION AND FORCE MAIN, CITY OF NORTHGLENN, CO
Project Manager and Team Lead for the current Bunker Hill Lift Station Project working with the City of Northglenn and W2 Engineers. This project is being delivered through a CMAR delivery method and includes a 1.3 MGD lift station with wet wells, submersible pumps with VFDs, and approximately 900-feet of new 8-inch gravity pipe and 1,500-feet of new force main.

GREELEY ASHCROFT LIFT STATION AND FORCE MAIN, CITY OF GREELEY, CO | Project Manager and Team Lead for the design of a 2.0 MGD self-priming wastewater lift station and approximately 6,500 linear feet of new pipeline for the City of Greeley. Scope includes a flow and capacity analysis and technical memorandum, preliminary design, equipment procurement, CMAR selection and coordination, state regulatory approval, final design, and construction administration services.

Dr. Corwin has over 15 years of experience as a professional engineer and project manager providing the drinking water community with services in advanced treatment process planning for both surface waters and groundwaters. Dr. Corwin has also taught undergraduate and graduate-level courses at the University of Colorado in all areas of Environmental Engineering.

Education

Ph.D., Civil Engineering, University of Colorado Boulder

M.S. Civil Engineering, University of Colorado Boulder

B.S. Civil Engineering, University of Kentucky

Licenses

Registered Professional Engineer – Colorado PE 36222

Relevant Experience

Denver Basin ASR Feasibility Study, City of Aurora, CO: Dr. Corwin is leading the water quality review of the injection water and abstraction water as a subconsultant to Leonard Rice Engineers. The feasibility study considers taking excess water from one of Aurora's three drinking water plants, water reuse plant, or the distribution system as injection water. Considerations for treatment and impact on distribution system after abstraction are also considered.

Integrated Water Masterplan, City of Arvada, CO: Dr. Corwin was the project manager that lead the review of the City of Arvada's two water treatment plants and distribution system. The masterplan consisted of an asset condition assessment, regulatory audit, process audit, reservoir management audit, and an alternatives assessment for water supply expansion.

Lead Reduction Program, Denver Water, CO: Dr. Corwin managed the extensive project undertaken to find an alternative to adding orthophosphate to the drinking water to avoid watershed impacts. Corona produced several Technical Memoranda that supported the variance request that was ultimately approved by the EPA. Corona led the evaluation of pilot data, bench study data, filter testing, and the lead service line inventory.

Water Quality and Supply Implementation Program, SMCMUA, NJ: SMCMUA uses a blend of surface water, groundwater, and purchased water to meet system demand. Dr. Corwin assisted in the treatment evaluations of contaminated groundwater sources which contain PFAS, 1,4 dioxane, MtBE, Hardness, and manganese.

Water Quality Master Plan/Ozone Study, Town of Gilbert, AZ: This project developed a comprehensive water quality master plan for the Town of Gilbert. The Town uses a portfolio of surface and groundwater supplies to meet system demand. Disinfection Byproduct (DBP) formation is of primary concern. Dr. Corwin assisted in evaluating GAC and ozone as treatment strategies.

Desktop Corrosion Control Study, City and County of Broomfield, CO: Dr. Corwin managed the desktop corrosion control study required due to a long-term change in source water quality. The study consisted of the evaluation of water quality from their two water sources.

DAVID GATES

David Gates joined the LRE Water team in 2019. David is an experienced GIS professional with over 5 years of National Geospatial-Intelligence Agency, defense mapping, and Public Land Survey System land grid data experience. He is dedicated to providing geospatial solutions through GIS mapping, spatial analysis, and geodata expertise. David believes in creating beautiful maps that tell a client's story and provide deeper insight into projects. David specializes in GIS data creation, compilation, and manipulation for analysis and mapping. He provides GIS expertise to LRE colleagues through project specific geodatabase management and workflows.

FEATURED PROGRAM AND PROJECT EXPERIENCE

Cache la Poudre River Watershed – GIS Watershed Analysis: David provided data management, geostatistical, and geographic analysis of watershed risk and resiliency.

Denver Water – South Collection System Watershed Assessment: David created GIS benchmarks and trend indicators for monitoring points in watershed. He also provided mapping, data management, geostatistical, and geographic analysis of basin threats and vulnerabilities.

Lone Rock Ranch Conference and Retreat Facility – Water and Wildlife Assessment Mapping: David was responsible for providing GIS and technical support to provide data management and mapping for site analysis.

Denver Botanic Gardens Sensory Garden, Denver, CO: As a Landscape Designer, David produced project documentation including design, grading plans, construction details, and plant consultation. Coordinated meetings with Denver Botanic Gardens staff, City of Denver's Office of Disability Rights, the Commission for People with Disabilities, donors, and community members to address desirable outcomes and present project development and final designs. He incorporated principles of Universal Design and ADA standards to establish a space for therapeutic programming.

EDUCATION

Master of Landscape Architecture
University of Colorado Denver

B.S., Geography,
Kansas State University

Study Abroad, Env. Science
James Cook University
Queensland, Australia

PROFESSIONAL ACTIVITES

ESRI Young Professionals Network

EXPERIENCE

2019–Present
LRE Water – Denver

2016-2019
The WhiteStar Corporation
GIS Technician II

2014-2016
CACI, Inc.
Cartographic GIS Technician II

ALLAN FOSTER, EI

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 flow modeling, solute transport modeling, geochemical modeling, geophysical inversion, and 3-D conceptual modeling, including MODFLOW-USG, mod-PATH3DU, MT3DMS, USG-TRANSPORT, SEAWAT, PHREEQC, The Geochemist's Workbench, Groundwater Vistas, flopy, R2, R3t, python, R, MATLAB, DOS 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.

FEATURED PROGRAM AND PROJECT EXPERIENCE

Aquifer Storage and Recovery (ASR) Feasibility Assessment – City of Greeley, Colorado (2019 - ongoing): Project team member, data analyst, and geochemical equilibrium numerical modeler. Conducted a preliminary assessment for aquifer storage and recovery feasibility using PHREEQC, The Geochemist's Workbench, and ArcGIS. PHREEQC mixing modeling and bench-scale mixing experiments were conducted to understand geochemical reactions and water quality implications associated with mixing ambient groundwater and selected injected water sources. The Geochemist's Workbench modeling incorporated field data from aquifer testing, and geochemical characterization of the aquifer matrix to understand water quality impacts from reactions associated with injected water and the aquifer matrix.

Water Quality Assessment of Municipal Well Field Expansion – City of Steamboat Springs, Colorado (2019-2020): Project team member, solute transport numerical modeler, and data analyst. Conducted an investigation on produced water quality from an existing system and different expansion alternatives through numerical flow modeling (MODFLOW-USG) and forward solute transport simulations (MODFLOW-USG TRANSPORT). Performed forward solute transport modeling which allowed for the assessment of existing and future water quality from the inclusion of proposed well field expansion systems. The water quality modeling allowed for the optimization of the proposed well field expansion in terms of well design, orientation, location, yield, and water quality as determined through the proxy of using the modeled hydraulic residence times of solutes and percent river water versus native groundwater observed at the well locations.

Multi-Aquifer Mixing Study on Water Quality – Felix Energy, Texas (2019): Project team member, data analyst, and solute transport numerical modeler. Conducted an assessment on predicted future water quality for a well field producing water. MODFLOW-USG and USG-Transport modeling codes were utilized to model solute transport and groundwater mixing from different aquifer sections to understand future water quality implications for the produced water in the well field.

EDUCATION

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

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

PROFESSIONAL REGISTRATION

Engineer in Training:
CO 2020 – (#EI.0076994)

EXPERIENCE

2019 – Present
LRE Water – Denver, CO

2015 –2016
Lytle Water Solutions, Inc. –
Highlands Ranch, CO

PROFESSIONAL ORGANIZATIONS

National Groundwater Association (NGWA)

Colorado Groundwater Association (CGWA)

APPENDIX B:
GENERAL QUALIFICATIONS

GENERAL QUALIFICATIONS

LRE WATER: FIRM INTRODUCTION

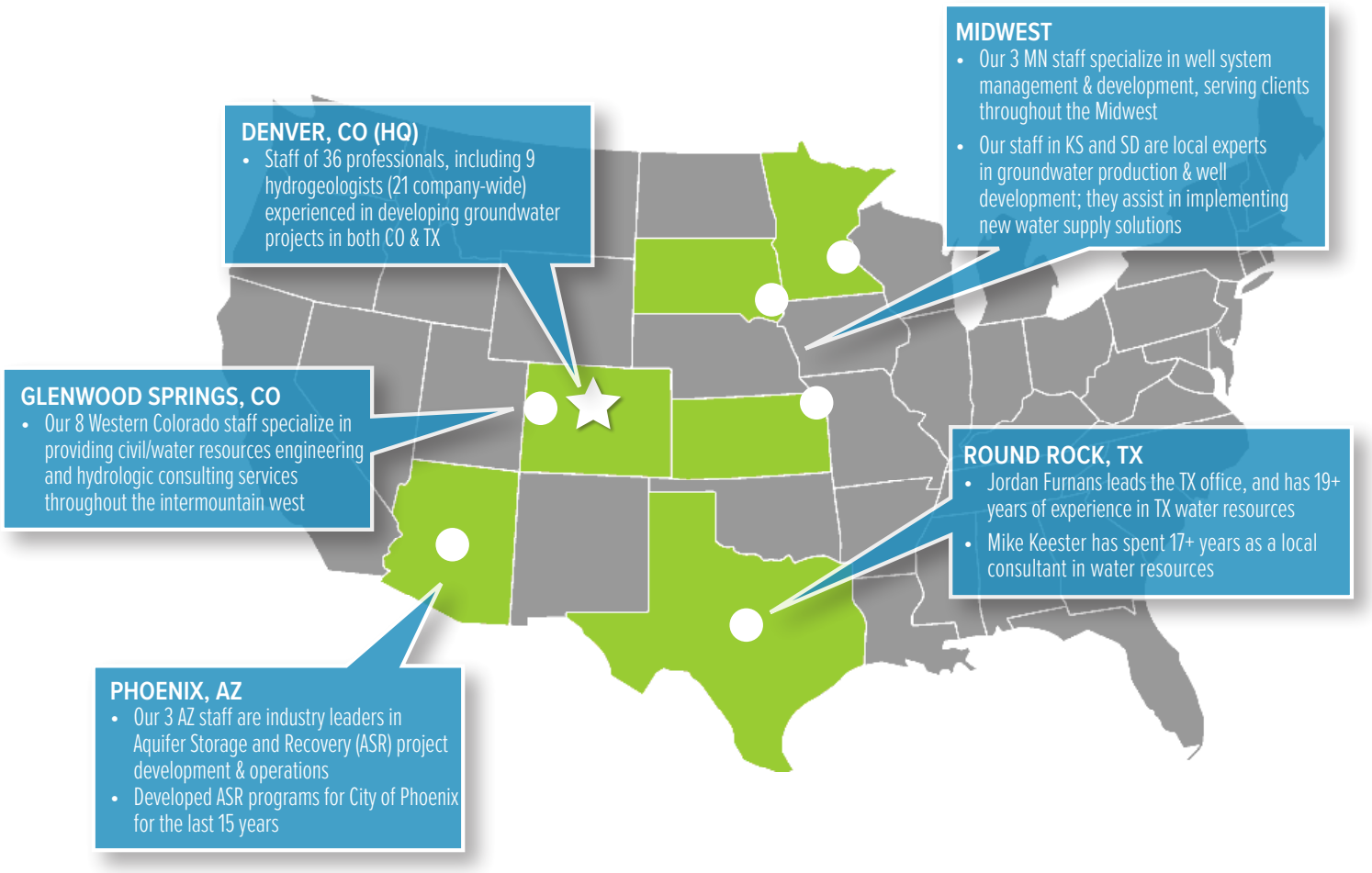
For 50 years, **LRE Water** has provided leadership in engineering and consulting services related to planning, managing, and developing water resources throughout the western US, from Texas to California. It is this unique combination of leadership and technical expertise that our clients rely upon when planning for and managing their most precious resource: **water.**

Formerly known as Leonard Rice Engineers, Inc., **LRE Water** is an interdisciplinary company focused on bringing creative solutions to water issues. Our experts provide engineering and consulting services in the areas of water rights and water supply planning, groundwater, environmental permitting, and water innovation & technology.

SERVICES SNAPSHOT:

- Groundwater, Geology, and Hydrogeology
- Water Resources Planning
- Decision Support Tools and Modeling
- Regulatory Compliance and Environmental Permitting
- Data Visualization and Web-Based Tools
- Data Integration, Modeling, and Technology

OFFICE LOCATIONS AND STAFF



GROUNDWATER EXPERTS

The **LRE Water** Groundwater Team has a long history serving our clients' needs for groundwater resource development and management. Our work focuses primarily on groundwater resources development and evaluation of availability for municipalities, groundwater districts, private industry, and land developments. In addition, our work often includes performing well and well-field design, construction, testing, rehabilitation, and optimization. More recently, our groundwater services have evolved to include innovative groundwater solutions that provide water storage and water quality improvements like ASR, soil aquifer treatment, and riverbank filtration.

In addition to physical availability, **LRE Water** is also experienced with the framework of regulatory availability of groundwater resources. We have worked with clients across the Western US to demonstrate projected demand to comply with permitting requirements. We have also worked to balance projected demands, physical groundwater availability assessments, and regulatory conditions to evaluate potential groundwater availability to a well or well field.

OUR GROUNDWATER SERVICE AREAS INCLUDE:

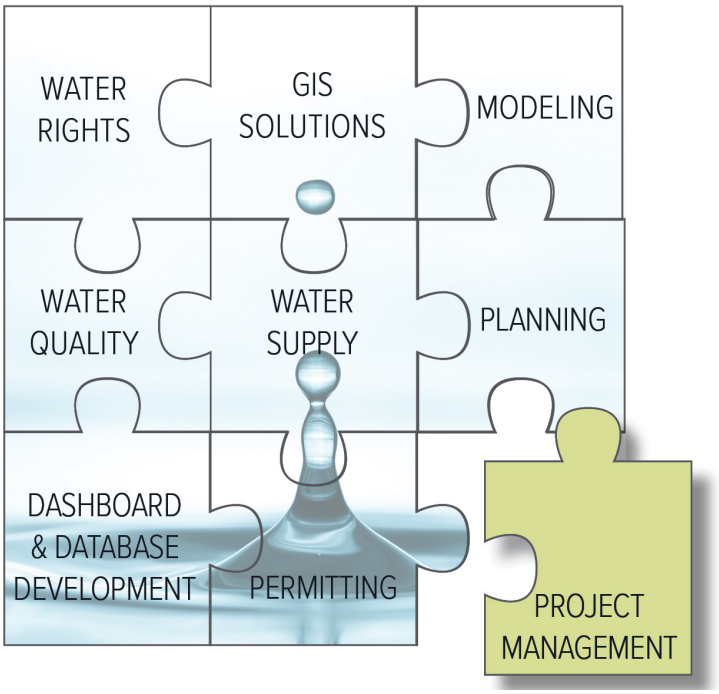
- WELL AND WELL FIELD DESIGN AND REHABILITATION
- GROUNDWATER / SURFACE WATER INTERACTION
- AQUIFER STORAGE AND RECOVERY / MANAGED AQUIFER RECHARGE
- GROUNDWATER SUPPLY DEVELOPMENT AND WELLHEAD PROTECTION
- GROUNDWATER MODELING
- GROUNDWATER RESOURCE EVALUATIONS

THE FULL PICTURE:
TAILORED SOLUTIONS THAT FIT YOUR SPECIFIC NEEDS

Your groundwater needs are unique, and require careful attention and thoughtful solutions. When you work with **LRE Water**, you get the added benefit of an interconnected, small firm with water-related disciplines at your fingertips. You can work with our experts to tailor your service, ensuring your project is covered from all relevant angles.

The benefits of working with **LRE Water** include:

- ✓ Cohesive, in-house resources available to you
- ✓ Local groundwater experts assisting your team
- ✓ Cost-effective solutions specific to your needs
- ✓ Invested, dedicated team of professionals



MEET OUR PRINCIPALS AND FIRM LEADERSHIP

CORTNEY BRAND, PG
President &
Chief Executive Officer

KELLY CLOSE, PE
Technology Team Leader

DAVE COLVIN, PG
Groundwater Team Leader

BILL FRONCZAK, PE, ESQ
Director of
Commercial Water

JORDAN FURNANS, PHD, PE, PG
Vice President -
Texas Operations

GARY GIN, RG
Vice President -
Arizona Operations

BRETT GRACELY, PE, D.WRE
Environmental Management
Team Leader

DAVE HUME, PG
Vice President -
Midwest Operations

ASHLEY MOFFAT, PE
Western Colorado Business
Unit Manager

CAROLYN NOBEL, PHD, PE, PMP
Chief Operating Officer

JANET WILLIAMS, PE
Board Chair

GREG ROUSH, PE
Senior Project Manager

GREGG TEN EYCK, PE
Senior Project Manager

JEREMY WESCOAT
Chief Financial Officer

MARY PRESECAN, PE, PMP
Vice President -
Business Development

ATTACHMENT 2

Northglenn

CITY OF NORTHGLENN
FORMAL BID SUMMARY

BID NUMBER: RFP 2020-022
BID NAME: Aquifer Storage and Recovery Feasibility Study - Phase II
DEPARTMENT: Public Works

	LRE Water Inc.	ATC Group Services LLC	HRS Water Consultants Inc.	McGrane Water Engineering LLC	
	BID RECEIVED	BID RECEIVED	BID RECEIVED	BID RECEIVED	BID RECEIVED
DATE DUE: 01/22/21	DATE: 1/21/21	DATE: 1/21/21	DATE: 1/22/21	DATE: 1/22/21	DATE:
TIME: 10:00 a.m. MST	TIME: 145 P.M.	TIME: 9 A.M.	TIME: 830 A.M.	TIME: 858 A.M.	TIME:
Addendum 1	Yes	Yes	Yes	Yes	
N/A					

Finance Department

City's Clerk's Office

1/22/21
Date

SPONSORED BY: MAYOR LEIGHTY

COUNCILMAN'S RESOLUTION RESOLUTION NO.

No. CR-28 _____
Series of 2021 Series of 2021

A RESOLUTION APPROVING A PROFESSIONAL SERVICES AGREEMENT BETWEEN THE CITY OF NORTHGLENN AND LRE WATER, INC. FOR THE AQUIFER STORAGE AND RECOVERY FEASIBILITY STUDY PHASE II

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF NORTHGLENN, COLORADO, THAT:

Section 1. The Professional Services Agreement between the City of Northglenn and LRE Water, Inc., attached hereto, in an amount not to exceed $200,000.00 for the Aquifer Storage and Recovery Feasibility Study Phase II is hereby approved and the Mayor is authorized to execute same on behalf of the City of Northglenn.

DATED, at Northglenn, Colorado, this _____day of _____, 2021.

MEREDITH LEIGHTY
Mayor

ATTEST:

JOHANNA SMALL, CMC
City Clerk

APPROVED AS TO FORM:

COREY Y. HOFFMANN
City Attorney

AGREEMENT FOR PROFESSIONAL SERVICES

THIS AGREEMENT is made and entered into this _____ day of _____, 20____, by and between the City of Northglenn, State of Colorado (hereinafter referred to as the "City") and LRE Water (hereinafter referred to as "Consultant").

RECITALS:

A. The City requires professional services.

B. Consultant has held itself out to the City as having the requisite expertise and experience to perform the required work for the Project.

NOW, THEREFORE, it is hereby agreed for the consideration hereinafter set forth, that Consultant shall provide to the City, professional consulting services for the Project.

I. SCOPE OF SERVICES

Consultant shall furnish all labor and materials to perform the work and services required for the complete and prompt execution and performance of all duties, obligations, and responsibilities for the Project which are described or reasonably implied from **Exhibit A** which is attached hereto and incorporated herein by this reference.

II. THE CITY'S OBLIGATIONS/CONFIDENTIALITY

The City shall provide Consultant with reports and such other data as may be available to the City and reasonably required by Consultant to perform hereunder. No project information shall be disclosed by Consultant to third parties without prior written consent of the City or pursuant to a lawful court order directing such disclosure. All documents provided by the City to Consultant shall be returned to the City. Consultant is authorized by the City to retain copies of such data and materials at Consultant's expense.

III. OWNERSHIP OF WORK PRODUCT

The City acknowledges that the Consultant's work product is an instrument of professional service. Nevertheless, the products prepared under this Agreement shall become the property of the City upon completion of the work.

IV. COMPENSATION

A. In consideration for the completion of the services specified herein by Consultant, the City shall pay Consultant an amount not to exceed two hundred thousand dollars($200,000). Payment shall be made in accordance with the schedule of charges in Exhibit B which is attached hereto and incorporated herein by this reference. Invoices will be itemized and include hourly breakdown for all personnel and other charges. The maximum fee specified herein shall include all fees and expenses incurred by Consultant in performing all services hereunder.

B. Consultant may submit monthly or periodic statements requesting payment. Such request shall be based upon the amount and value of the work and services performed by Consultant under this Agreement except as otherwise supplemented or accompanied by such supporting data as may be required by the City.

1. All invoices, including Consultant's verified payment request, shall be submitted by Consultant to the City no later than the twenty-fourth (24th) day of each month for payment pursuant to the terms of this Agreement. In the event Consultant fails to submit any invoice on or before the

twenty-fourth (24th) day of any given month, Consultant defers its right to payment pursuant to said late invoice until the twenty-fourth (24th) day of the following month.

2. Progress payments may be claimed on a monthly basis for reimbursable costs actually incurred to date as supported by detailed statements, including hourly breakdowns for all personnel and other charges. The amounts of all such monthly payments shall be paid within thirty (30) days after the timely receipt of invoice as provided by this Agreement.

C. The City has the right to ask for clarification on any Consultant invoice after receipt of the invoice by the City.

D. In the event payment for services rendered has not been made within forty-five (45) days from the receipt of the invoice for any uncontested billing, interest will accrue at the legal rate of interest. In the event payment has not been made within ninety (90) days from the receipt of the invoice for any uncontested billing, Consultant may, after giving seven (7) days written notice and without penalty or liability of any nature, suspend all work on all authorized services specified herein. In the event payment in full is not received within thirty (30) days of giving the seven (7) days written notice, Consultant may terminate this Agreement. Upon receipt of payment in full for services rendered, Consultant will continue with all authorized services.

E. Final payment shall be made within sixty (60) calendar days after all data and reports (which are suitable for reproduction and distribution by the City) required by this Agreement have been turned over to and approved by the City and upon receipt by the City of Consultant's certification that services required herein by Consultant have been fully completed in accordance with this Agreement and all data and reports for the Project.

V. COMMENCEMENT AND COMPLETION OF WORK

Within seven (7) days of receipt from the City of a Notice to Proceed, Consultant shall commence work on all its obligations as set forth in the Scope of Services or that portion of such obligations as is specified in said Notice. Except as may be changed in writing by the City, the Project shall be complete and Consultant shall furnish the City the specified deliverables as provided in Exhibit A.

VI. CHANGES IN SCOPE OF SERVICES

A change in the Scope of Services shall constitute any material change or amendment of services or work which is different from or additional to the Scope of Services specified in Section I of this Agreement. No such change, including any additional compensation, shall be effective, or paid unless authorized by written amendment executed by the City. If Consultant proceeds without such written authorization, then Consultant shall be deemed to have waived any claim for additional compensation, including a claim based on the theory of unjust enrichment, quantum merit or implied contract. Except as expressly provided herein, no agent, employee, or representative of the City shall have the authority to enter into any changes or modifications, either directly or implied by a course of action, relating to the terms and scope of this Agreement.

VII. PROFESSIONAL RESPONSIBILITY

A. Consultant hereby warrants that it is qualified to assume the responsibilities and render the services described herein and has all requisite corporate authority and professional licenses in good standing, required by law.

B. The work performed by Consultant shall be in accordance with generally accepted professional practices and the level of competency presently maintained by other practicing professional firms in the same or similar type of work in the applicable community.

C. Consultant shall be responsible for the professional quality, technical accuracy, timely completion, and the coordination of all designs, drawings, specifications, reports, and other services furnished by Consultant under this Agreement. Consultant shall, without additional compensation, correct or resolve any errors or deficiencies in his designs, drawings, specifications, reports, and other services, which fall below the standard of professional practice, and reimburse the City for construction costs caused by errors and omissions which fall below the standard of professional practice.

D. Approval by the City of drawings, designs, specifications, reports, and incidental work or materials furnished hereunder shall not in any way relieve Consultant of responsibility for technical adequacy of the work. Neither the City's review, approval or acceptance of, nor payment for, any of the services shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement, and Consultant shall be and remain liable in accordance with applicable performance of any of the services furnished under this Agreement.

E. The rights and remedies of the City provided for under this Agreement are in addition to any other rights and remedies provided by law.

VIII. ILLEGAL ALIENS

A. Certification. By entering into this Agreement, Consultant hereby certifies that, at the time of this certification, it does not knowingly employ or contract with an illegal alien who will perform work under the Agreement and that Consultant will participate in either the E-Verify Program administered by the United States Department of Homeland Security and Social Security Administration or the Department Program administered by the Colorado Department of Labor and Employment in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the Agreement.

B. Prohibited Acts. Consultant shall not:

1. Knowingly employ or contract with an illegal alien to perform work under this Agreement; or

2. Enter into a contract with a subcontractor that fails to certify to Consultant that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Agreement.

C. Verification.

1. Consultant has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement through participation in either the E-Verify Program or the Department Program.

2. Consultant shall not use the E-Verify Program or the Department Program procedures to undertake pre-employment screening of job applicants while this Agreement is being performed.

3. If Consultant obtains actual knowledge that a subcontractor performing work under this Agreement knowingly employs or contracts with an illegal alien who is performing work under the Agreement, Consultant shall:

a. Notify the subcontractor and the City within three (3) days that Consultant has actual knowledge that the subcontractor is employing or contracting with an illegal alien who is performing work under the Agreement; and

b. Terminate the subcontract with the subcontractor if within three (3) days of receiving the notice required pursuant to subparagraph (a) hereof, the subcontractor does not stop employing or contracting with the illegal alien who is performing work under the

Agreement; except that Consultant shall not terminate the contract with the subcontractor if during such three (3) days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien who is performing work under the Agreement.

D. Duty to Comply with Investigations. Consultant shall comply with any reasonable request by the Colorado Department of Labor and Employment made in the course of an investigation conducted pursuant to C.R.S. § 8-17.5-102(5)(a) to ensure that Consultant is complying with the terms of this Agreement.

E. If Consultant does not currently employ any employees, Consultant shall sign the NO Employee Affidavit attached hereto.

F. If Consultant wishes to verify the lawful presence of newly hired employees who perform work under the Agreement via the Department Program, Consultant shall sign the Department Program Affidavit attached hereto.

IX. INDEMNIFICATION

A. INDEMNIFICATION – GENERAL: The City cannot and by this Agreement does not agree to indemnify, hold harmless, exonerate or assume the defense of the Consultant or any other person or entity whatsoever, for any purpose whatsoever. Provided that the claims, demands, suits, actions or proceedings of any kind are not the result of professional negligence, the Consultant, to the fullest extent permitted by law, shall defend, indemnify and hold harmless the City, its Council members, officials, officers, directors, agents and employees from any and all claims, demands, suits, actions or proceedings of any kind or nature whatsoever, including worker's compensation claims, in any way resulting from or arising from the services rendered by Consultant, its employees, agents or subconsultants, or others for whom the Consultant is legally liable, under this Agreement; provided, however, that the Consultant need not indemnify or save harmless the City, its Council members, its officers, agents and employees from damages resulting from the negligence of the Council members, officials, officers, directors, agents and employees.

B. INDEMNIFICATION FOR PROFESSIONAL NEGLIGENCE: The Consultant shall, to the fullest extent permitted by law, indemnify and hold harmless the City, its Council members, and any of its officials, officers, directors, and employees from and against damages, liability, losses, costs and expenses, including reasonable attorneys fees, but only to the extent caused by or arising out of the negligent acts, errors or omissions of the Consultant, its employees, agents or subconsultants, or others for whom the Consultant is legally liable, in the performance of professional services under this Agreement. The Consultant is not obligated under this subparagraph IX.B. to indemnify the City for the negligent acts of the City, its Council members, or any of its officials, officers, directors, agents and employees.

C. INDEMNIFICATION – COSTS: Consultant shall, to the fullest extent permitted by law, defend, investigate, handle, respond to, and provide defense for and defend against, any such liability, claims or demands at the sole expense of Consultant or, upon mutual agreement of the parties, agree to pay the City or reimburse the City for the defense costs incurred by the City in connection with any such liability, claims or demands. Consultant shall, to the fullest extent permitted by law, bear all other reasonable costs and expenses related thereto, including court costs and reasonable attorney fees, whether or not any such liability, claims or demands alleged are groundless, false or fraudulent. If it is determined by the final judgment of a court of any competent jurisdiction that such injury, loss or damage was caused in whole or in part by the act, omission or other fault of the City, its Council members, officials, officers, directors, agents and employees, the City shall reimburse Consultant for the portion of the judgment attributable to such act, omission or other fault of the City, its Council members, officials, officers, directors, agents and employees.

D. To the extent this Agreement is subject to C.R.S. § 13-50.5-102(8), Contractor's liability under this provision shall be to the fullest extent of, but shall not exceed, that amount represented by the degree or percentage of negligence or fault attributable to Contractor, any subcontractor of Contractor, or any officer,

employee, representative, or agent of Contractor or of any subcontractor of Contractor. If Contractor is providing architectural, engineering, surveying or other design services under this Agreement, the extent of Contractor's obligation to defend, indemnify and hold harmless the City may be determined only after Contractor's liability or fault has been determined by adjudication, alternative dispute resolution or otherwise resolved by mutual agreement of the Parties, as provided by C.R.S. § 13-50.5-102(8)(c).

X. INSURANCE

A. Consultant agrees to procure and maintain, at its own cost, a policy or policies of insurance sufficient to insure against all liability, claims, demands, and other obligations assumed by Consultant pursuant to Section IX, above. Such insurance shall be in addition to any other insurance requirements imposed by this Agreement or by law. Consultant shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to Section IX, above, by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

B. Consultant shall procure and maintain, and shall cause any subcontractor of Consultant to procure and maintain, the minimum insurance coverages listed below. Such coverages shall be procured and maintained with forms and insurers acceptable to the City. All coverages shall be continuously maintained to cover all liability, claims, demands, and other obligations assumed by Consultant pursuant to Section IX, above. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Worker's Compensation Insurance to cover obligations imposed by applicable laws for any employee engaged in the performance of work under this Contract, and Employer's Liability Insurance with minimum limits of five hundred thousand dollars ($500,000) each incident, five hundred thousand dollars ($500,000) disease - policy limit, and five hundred thousand dollars ($500,000) disease - each employee.

2. Commercial general liability insurance with minimum combined single limits of one million dollars ($1,000,000) each occurrence and two million dollars ($2,000,000) general aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, products, and completed operations. The policy shall contain a severability of interests provision.

3. Professional liability insurance with minimum limits of six hundred thousand dollars ($600,000) each claim and one million dollars ($1,000,000) general aggregate.

C. The policy required by paragraph 2. above shall be endorsed to include the City and the City's officers, employees, and consultants as additional insureds. Every policy required above shall be primary insurance, and any insurance carried by the City, its officers, its employees, or its consultants shall be excess and not contributory insurance to that provided by Consultant. No additional insured endorsement to the policy required by paragraph 1. above shall contain any exclusion for bodily injury or property damage arising from completed operations. Consultant shall be solely responsible for any deductible losses under any policy required above.

D. The certificate of insurance provided for the City shall be completed by Consultant's insurance agent as evidence that policies providing the required coverages, conditions, and minimum limits are in full force and effect, and shall be reviewed and approved by the City prior to commencement of the Agreement. No other form of certificate shall be used. If the City is named as an additional insured on any policy which does not allow for the automatic addition of additional insureds, the Consultant's insurance agent shall also provide a copy of all accompanying endorsements recognizing the City as an additional insured. The certificate shall identify this Agreement and shall provide that the coverages afforded under the policies shall not be cancelled, terminated or materially changed until at least thirty

(30) days prior written notice has been given to the City. The completed certificate of insurance shall be sent to:

City of Northglenn
Attn: Kathy Kvasnicka
11701 Community Center Drive
Northglenn, Colorado 80233-8061

E. Failure on the part of Consultant to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute a material breach of agreement upon which the City may immediately terminate this Agreement, or at its discretion, the City may procure or renew any such policy or any extended reporting period thereto and may pay any and all premiums in connection therewith, and all monies so paid by the City shall be repaid by Consultant to the City upon demand, or the City may offset the cost of the premiums against any monies due to Consultant from the City.

F. The City reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

G. The parties hereto understand and agree that the City, its officers, and its employees, are relying on, and do not waive or intend to waive by any provision of this Agreement, the monetary limitations (presently three hundred fifty thousand dollars ($350,000) per person and nine hundred ninety thousand dollars ($990,000) per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, Colo. Rev. Stat.,§§ 24-10-101, et seq., as from time to time amended, or otherwise available to the City, its officers, or its employees.

XI. NON-ASSIGNABILITY

Neither this Agreement, nor any of the rights or obligations of the parties hereto, shall be assigned by either party without the written consent of the other.

XII. TERMINATION

This Agreement shall terminate at such time as the work in Section I is completed and the requirements of this Agreement are satisfied, or upon the City's providing Consultant with seven (7) days advance written notice, whichever occurs first. In the event the Agreement is terminated by the City's issuance of said written notice of intent to terminate, the City shall pay Consultant for all work previously authorized and completed prior to the date of termination. If, however, Consultant has substantially or materially breached the standards and terms of this Agreement, the City shall have any remedy or right of set-off available at law and equity. If the Agreement is terminated for any reason other than cause prior to completion of the Project, any use of documents by the City thereafter shall be at the City's sole risk, unless otherwise consented to by Consultant.

XIII. CONFLICT OF INTEREST

The Consultant shall disclose any personal or private interest related to property or business within the City. Upon disclosure of any such personal or private interest, the City shall determine if the interest constitutes a conflict of interest. If the City determines that a conflict of interest exists, the City may treat such conflict of interest as a default and terminate this Agreement.

XIV. VENUE

This Agreement shall be governed by the laws of the State of Colorado, and any legal action concerning the provisions hereof shall be brought in the County of Adams, State of Colorado.

XV. INDEPENDENT CONTRACTOR

Consultant is an independent contractor. Notwithstanding any provision appearing in this Agreement, all personnel assigned by Consultant to perform work under the terms of this Agreement shall be, and remain at all times, employees or agents of Consultant for all purposes. Consultant shall make no representation that it is the employee of the City for any purposes.

XVI. NO WAIVER

Delays in enforcement or the waiver of any one or more defaults or breaches of this Agreement by the City shall not constitute a waiver of any of the other terms or obligation of this Agreement.

XVII. ENTIRE AGREEMENT

This Agreement and the attached Exhibits A and B is the entire Agreement between Consultant and the City, superseding all prior oral or written communications. None of the provisions of this Agreement may be amended, modified, or changed, except as specified herein.

XVIII. SUBJECT TO ANNUAL APPROPRIATION

Consistent with Article X, Section 20 of the Colorado Constitution, any financial obligations of the City not to be performed during the current fiscal year are subject to annual appropriation, and thus any obligations of the City hereunder shall extend only to monies currently appropriated.

XIX. NOTICE

Any notice or communication between Consultant and the City which may be required, or which may be given, under the terms of this Agreement shall be in writing, and shall be deemed to have been sufficiently given when directly presented or sent pre-paid, first class United States Mail, addressed as follows:

The City: City of Northglenn
11701 Community Center Drive
Northglenn, Colorado 80233-8061

Consultant: LRE Water
1221 Auraria Pkwy.
Denver, CO 80204

IN WITNESS WHEREOF, the parties hereto each herewith subscribe the same in duplicate.

CITY OF NORTHGLENN, COLORADO

By: _____

ATTEST:

Meredith Leighty
Print Name

Mayor
Title

_____
Johanna Small, CMC Date
City Clerk

_____ Date

APPROVED AS TO FORM:

_____
Corey Y. Hoffmann Date
City Attorney

CONSULTANT:

By: _____

William H. Fronczak
Print Name

Vice President - Risk Management
Title

2/23/21
Date

ATTEST:

By: David C. Colvin

David C. Colvin
Print Name

Groundwater Team Leader 2/23/21
Title Date

EXHIBIT A – SCOPE OF SERVICES

The CONSULTANT will provide the following Aquifer Storage and Recovery (ASR) Feasibility Study – Phase II services.

Task 1 – Work Plan

The CONSULTANT will work with CITY staff to develop a detailed work plan in a project management plan format, including information on the scope, schedule, meetings/workshops and deliverables for subsequent tasks described below. The key goal of this project is to position the CITY to construct and begin operating an ASR pilot facility in 2022. The work plan will prioritize critical tasks while also identifying "low hanging fruit" that can have a positive impact on getting a pilot system up and running while also benefiting the longer-term goal of developing an adaptable full-scale ASR system. The work plan will identify feasibility criteria, critically re-evaluate the challenges, and if ASR continues to be feasible, permit and design an ASR pilot facility.

Project milestones are tentatively scheduled as follows:

- March 2021 – Completion of Work Plan (Task 1)
- September 2021 – Completion of Tasks 2 – 6
- November 2021 – Completion of Bid Package (Task 7) and Feasibility Phase II Report (Task 8)

Task 1 Deliverables

CONSULTANT will provide a baseline work plan document that can be used throughout the project to track progress, decisions, and any changes to scope, schedule, or budget.

Task 1 Assumptions

- CONSULTANT and CITY staff will hold a work plan workshop within two weeks of contract initiation.

Task 2 – Feasibility Assessment Review and Completion

CONSULTANT will review Northglenn's ASR Feasibility Study Phase I deliverables and recommend any additional work to be completed before a pilot study begins. CONSULTANT will develop scope for proposed additional feasibility assessment tasks and will complete those tasks.

The Phase I ASR Feasibility work contains a wealth of valuable information about Northglenn's historical groundwater usage, existing infrastructure condition, and ASR planning considerations. Phase 1 topics to be reconsidered include: the water quality results and their implications for ASR; the utility of existing wells; the permitting plan for pilot- and full-scale ASR operations; and the costs associated with constructing and operating an ASR pilot facility.

CONSULTANT will review the existing data to evaluate whether it is adequate and representative of ASR operational conditions with existing or new wells so that designs can improve ASR integration into the CITY's existing distribution, treatment and storage.

Task 2 Assumptions

- CITY will provide CONSULTANT Phase I and other available ASR related data.

Task 3 – Permit Application Preparation and Submittal

CONSULTANT will prepare and submit permit applications for the Environmental Protection Agency (EPA) and the Colorado Division of Water Resources (DWR) necessary to construct and operate a pilot ASR system. CONSULTANT will evaluate the benefits of applying for deemed consent within CITY's service area and obtaining well field terms within existing water rights decrees. These DWR/water rights actions would allow for operational flexibility allowing for injection in one well while recovering water from others. In addition to allowing for recharge recovery in more convenient use locations, it can also be used to manage and improve water quality of recovered water.

Task 3 Assumptions

- Phase I ASR Feasibility water quality sampling results meet the EPA permit application requirements.
- CONSULTANT will draft DWR and EPA permit applications for CITY's signature and submittal.
- CITY will pay applicable permit application fees.

Task 4 – Water Quality Integration Plan

CONSULTANT will prepare a conceptual design to reliably integrate water from an ASR system in Northglenn's water treatment and distribution system. The integration plan will describe any additional treatment needed after recovery of stored water.

The source of the injection water has been identified as Northglenn's Water Treatment Facility (NWTF). CONSULTANT will assess the variability of the proposed injectate water, its geochemical compatibility with the native groundwater, and how the injectate may interact with the aquifer rock matrix. CONSULTANT will work with CITY staff to evaluate the value of evaluating ASR water quality issues qualitatively, with additional geochemical modeling, or with laboratory bench scale testing. CONSULTANT will assess options to maintain ASR recovered water compatibility with the treated surface water.

Task 4 Assumptions

- CITY staff will provide CONSULTANT with information and data pertinent to existing water treatment and distribution.

Task 5 - Design of Pilot ASR Well

CONSULTANT will complete 90% design of a pilot ASR well system to be located at CITY's Water Treatment Plant as defined by Phase I of Northglenn's ASR Feasibility Study. CONSULTANT will consider Denver Basin ASR well design innovations including the use of glass beads and adaptive well development to improve well efficiency, and operational data collection and monitoring to guide well maintenance. Designs may include intuitive interface

systems that collect, analyze, and visualize important data to optimize ASR operations in systems dominated by conventional surface water infrastructure.

Task 5 Assumptions

- CONSULTANT will provide 60% and 90% designs to CITY for review and comment.

Task 6 – Groundwater Consulting to Support ASR Planning

CONSULTANT will provide additional consulting services beyond the scope of the five previous tasks as necessary to inform ASR planning. These additional services will be identified during project implementation.

Task 7 – ASR Pilot Site Bid Package

CONSULTANT will use the Task 5 90% design documents to prepare a bid package for procurement of a contractor(s) for pilot site construction. CONSULTANT will work with CITY standard contract documents and bidding procedures. During Task 1 Work Plan development, CONSULTANT and CITY staff will identify the desired content, review processes, collaboration, and timeframes. Collaborative and alternative delivery methods will be considered. CONSULTANT will work with the CITY staff to identify their specific needs for each contracting phase, assisting with the most suitable contracting method to minimize risk and cost while optimizing the project quality.

Task 8 – ASR Feasibility Study Phase II Report

CONSULTANT will prepare project deliverables summarizing the findings of each task and documenting the steps taken during permit application preparation and submittal. Deliverable formats and communication methods considered will include traditional reports/memos, more visual workshop materials/handouts, and dynamic GIS StoryMap approaches. CONSULTANT will work with CITY staff during Task 1 work plan development to identify the most appropriate communication formats for the intended audiences. Deliverables will provide stakeholders with the information they need to know to understand and/or make decisions about ASR and its integration into the City's water system.

EXHIBIT B – AMOUNT OF COMPENSATION

The total project budget is $200,000. Table 1 presents an initial estimate of the task budget distribution. Task budget distribution amounts may be refined during Task 1 Work Plan development. The total project budget is final.

Table 1 - Initial Task Budget Estimates

Task	Initial Cost Estimate
Task 1 - Work Plan	$6,500
Task 2 - Feasibility Assessment Review and Completion	$6,500
Task 3 - Permit Application Preparation and Submittal	$25,000
Task 4 - Water Quality Integration Plan	$50,000
Task 5 - Design of Pilot ASR Well	$35,000
Task 6 - Groundwater Consulting Services to Support ASR Planning	$10,000
Task 7 - ASR Pilot System Bid Package	$50,000
Task 8 - ASR Feasibility Study Phase II Report	$17,000
Total Cost	**$200,000**

LRE WATER
2021 RATE SCHEDULE

Effective December 26, 2020

	Hourly Rate
Student Intern	$65- $90
Data Processor/Admin Support	$75 - $130
Technician/IT Support	$100 - $135
Staff I Engineer/Hydrologist/Geologist/Scientist	$100 - $135
Staff II Engineer/Hydrologist/Geologist/Scientist	$115 - $145
Staff III Engineer/Hydrologist/Geologist/Scientist	$135 - $170
Project Engineer/Hydrologist/Geologist/Scientist	$155 - $180
Senior Project Engineer/Hydrologist/Geologist/Scientist	$160 - $190
Project Manager	$165 - $200
Senior Project Manager	$170 - $255
Principal, Senior Advisor	$200 - $270

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 airfare, automobile rental, and other travel or per diem costs including mileage billed at the current IRS rate (rounded up to the nearest $0.05). Subconsultants to LRE are billed at cost plus 10 percent.

2021 Rates

CORONA ENVIRONMENTAL CONSULTING

Categories and Rates

Organizational Category	2021 Billing Rate
Partner	$315.00
Principal Professional	$275.00
Supervising Professional	$235.00
Senior Professional	$205.00
Associate Professional	$175.00
Professional	$155.00
Data Analyst	$135.00
Administrator	$105.00

Corona Staff

Person Name	Organizational Category	2021 Billing Rate
Benjamin, Jennifer	Associate Professional	$175.00
Causey, Jake	Supervising Professional	$235.00
Chee, Tod	GSA: Program Manager II	$120.00
Clements, Janet	Supervising Professional	$235.00
Cline, Shonnie	Senior Professional	$205.00
Corwin, Chris	Principal Professional	$275.00
Ergul, Ayhan	Partner	$315.00
Ghosh, Amlan	Supervising Professional	$235.00
Gorman, Craig	Principal Professional	$275.00
Gregory, Brittany	Professional	$155.00
Hada, Karen	Administrator	$105.00
Henderson, Jim	Senior Professional	$205.00
Henrie, Tarrah	Principal Professional	$275.00
Janezic, Jon	Data Analyst	$135.00
Johnson, Sierra	Professional	$155.00
Kaplan, Juliette	Professional	$155.00
Kearns, Margaret	Principal Professional	$275.00
MacArthur, Nathan	Professional	$155.00
Masters, Sheldon	Associate Professional	$175.00
McDonough, Denise	Administrator	$105.00
McKeagney, Adam	Associate Professional	$175.00
McKenna, Libby	Professional	$155.00
Naughton, Annemarie	Administrator	$105.00
Rosen, Jeffrey	Partner	$315.00
Samson, Carleigh	Associate Professional	$175.00
Seidel, Chad	Partner	$315.00
Seguin, Joan	Professional	$155.00
Sheridan, Claire	Professional	$155.00
Smith, Emily	Associate Professional	$175.00
Zichichi, Jessica	Principal Professional	$275.00

ATTACHMENT A

PLUMMER ASSOCIATES, INC.

HOURLY FEE SCHEDULE

2021

Staff Description	Staff Code	2021 Rate
Admin Staff	A1 – A2	$ 90.00
Admin Staff III	A3	$ 95.00
Senior Admin Staff	A4	$ 120.00
Designer/Technician	C1-C2	$ 90.00
Designer/Technician III	C3	$ 115.00
Senior Designer/Technician	C4	$ 135.00
Construction Manager in Training *(CMIT)*	CM1	$ 105.00
Construction Manager in Training II	CM2	$ 125.00
Construction Manager in Training III	CM3	$ 135.00
Construction Manager IV	CM4	$ 145.00
Construction Manager V	CM5	$ 165.00
Construction Manager	CM6	$ 200.00
Senior Construction Manager	CM7	$ 240.00
Principal Construction Manager	CM8	$ 260.00
Resident Project Rep. I	RR1	$ 80.00
Resident Project Rep. II	RR2	$ 110.00
Resident Project Rep. III	RR3	$ 130.00
Lead Resident Project Rep.	RR4	$ 135.00
Field Tech I	LS1	$ 80.00
Field Tech II	LS2	$ 95.00
Survey Specialist I	LS3	$ 105.00
Survey Specialist II	LS4	$ 115.00
Survey Analyst	LS5	$ 135.00
Chief of Parties	LS6	$ 150.00
Engineer/Scientist Intern	ES0	$ 60.00
Engineer-in-Training/Scientist-in-Training	ES1	$ 115.00
Engineer-in-Training/Scientist-in-Training II	ES2	$ 120.00
Engineer-in-Training/Scientist-in-Training III	ES3	$ 130.00
Project Engineer/Scientist	ES4	$ 145.00
Senior Project Engineer/Scientist	ES5	$ 175.00
Project Manager	ES6	$ 215.00
Senior Project Manager	ES7	$ 240.00
Principal I	ES8	$ 305.00
Principal II	ES9	$ 320.00
Electrical Engineer in Training I	EE1	$ 95.00
Electrical Engineer in Training II	EE2	$ 120.00
Electrical Engineer in Training III	EE3	$ 125.00
Electrical Specialist	EE4	$ 145.00
Programmer	EE5	$150.00
Programmer II	EE6	$ 155.00
Senior Electrical Engineer	EE7	$ 280.00

Billing rates may be adjusted by up to 4 percent annually (at the beginning of each calendar year) during the term of this agreement.

A multiplier of 1.15 will be applied to all direct expenses

A technology charge will be billed at $5 per labor hour.

PROSPECTIVE CONSULTANT'S CERTIFICATE REGARDING EMPLOYING OR CONTRACTING WITH AN ILLEGAL ALIEN

FROM: LRE Water
(Prospective *Consultant*)

TO: City of Northglenn
11701 Community Center Drive
Northglenn, CO 80233

Project Name Aquifer Storage and Recovery Feasibility Study-Phase II

Bid Number 2020-022 Project No. 2021-022

As a prospective Consultant for the above-identified bid, I (we) do hereby certify that, as of the date of this certification, I (we) do not knowingly employ or contract with an illegal alien who will perform work under the Agreement and that I (we) will confirm the employment eligibility of all employees who are newly hired for employment to perform work under the Agreement through participation in either the E- Verify Program administered by the United States Department of Homeland Security and Social Security Administration or the Department Program administered by the Colorado Department of Labor and Employment.

Executed this 23rd day of February, 2021.

Prospective Consultant LRE Water

By:

Title: Vice President - Risk Management

DEPARTMENT PROGRAM AFFIDAVIT

(To be completed if Consultant participates in the Department of Labor Lawful Presence Verification Program)

I, William H. Franczak, as a public contractor under contract with the City of Northglenn (the "City"), hereby affirm that:

1. I have examined or will examine the legal work status of all employees who are newly hired for employment to perform work under this public contract for services ("Contract") with the City within twenty (20) days after such hiring date;

2. I have retained or will retain file copies of all documents required by 8 U.S.C. § 1324a, which verify the employment eligibility and identity of newly hired employees who perform work under this Contract; and

3. I have not and will not alter or falsify the identification documents for my newly hired employees who perform work under this Contract.

Consultant Signature

2/23/21
Date

William H. Franczak
Vice President - Risk Management
CRE Water

STATE OF COLORADO)
) ss.
COUNTY OF Denver)

The foregoing instrument was subscribed, sworn to and acknowledged before me this 23rd day of February, 2021, by William H. Franczak as Vice President - Risk Management of CRE Water.

My commission expires: 11/16/2022

(S E A L)

Notary Public

REBECCA ANN BAILEY
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184044501
MY COMMISSION EXPIRES 11/16/2022