AGREEMENT

FOR

ENGINEERING SERVICES

This AGREEMENT, between the Norman Utilities Authority (OWNER) and Garver, LLC (GARVER);

WITNESSETH

WHEREAS, OWNER intends to perform the PROJECT consisting of modeling efforts related to future processes at the Norman Water Reclamation Facility (WRF) as part of a Bureau of Reclamation WaterSMART Grant and Lake Thunderbird Basin Study.

WHEREAS, OWNER requires engineering services for assistance with reservoir level model development and a model results summary in connection with the PROJECT (the SERVICES); and,

WHEREAS, GARVER is prepared to provide said SERVICES; and.

NOW THEREFORE, in consideration of the promises contained in this AGREEMENT, OWNER and GARVER agree as follows:

ARTICLE 1 - EFFECTIVE DATE

The effective date of this AGREEMENT shall be _____.

ARTICLE 2 - COMPLETION DATE

GARVER shall complete the SERVICES in accordance with Attachment A, Project Schedule.

ARTICLE 3 - GOVERNING LAW

The laws of the state of Oklahoma shall govern this AGREEMENT.

ARTICLE 4 - SERVICES TO BE PERFORMED BY ENGINEER

GARVER shall perform the SERVICES described in Attachment B, Scope of Services.

ARTICLE 5 - COMPENSATION

OWNER shall pay GARVER in accordance with Attachment C, Compensation.

ARTICLE 6 - OWNER'S RESPONSIBILITIES

6.1. OWNER-Furnished Data: Upon request, OWNER will provide to GARVER all data in OWNER's possession relating to GARVER 's SERVICES on the PROJECT. Such data may include operations reports, record drawings, and equipment manuals for the WRF. GARVER will reasonably rely upon the accuracy, timeliness, and completeness of the information provided by OWNER. OWNER's data is provided for temporary use or copying by GARVER.

6.2. Access to Facilities and Property: OWNER will make its facilities accessible to GARVER as required for ENGINEER's performance of its SERVICES

6.3. Timely Review: OWNER will examine GARVER's studies, reports, sketches, drawings, specifications, proposals, and other documents; and transmit OWNER comments or other decisions to GARVER in a timely manner.

6.4. Meetings and Workshops: OWNER will participate in progress meetings and workshops with GARVER or contractor(s) defined in Attachment B, Scope of Services.

6.5. Advertisements, Permits, and Access: Unless otherwise agreed to in the Scope of Services, OWNER will obtain, arrange, and pay for all advertisements for bids; permits and licenses required by local, state, or

federal authorities; and land, easements, rights-of-way, and access necessary for GARVER 's SERVICES or PROJECT construction.

6.6. Hazardous Substances: If hazardous substances in any form are encountered or suspected, GARVER will stop its own work in the affected portions of the PROJECT to permit testing and evaluation. GARVER will, if requested by OWNER, conduct tests to determine the extent of the problem and will perform the necessary studies and recommend necessary remedial measures at an additional fee with contract terms to be negotiated.

ARTICLE 7 - STANDARD OF CARE

GARVER shall exercise the same degree of care skill and diligence in the performance of the SERVICES as is ordinarily possessed and exercised by a professional engineer under similar circumstances. GARVER shall correct the SERVICES that fail to satisfy this standard of care. No warranty, express or implied is included in this AGREEMENT or in any drawing, specifications, report or opinion produced pursuant to this AGREEMENT.

ARTICLE 8 - LIABILITY AND INDEMNIFICATION

8.1 General. Having considered the potential liabilities that may exist during the performance of the SERVICES, the benefits of the PROJECT, GARVER's fee for the SERVICES and in consideration of the promises contained in this AGREEMENT, OWNER and GARVER agree to allocate and limit such liabilities in accordance with this Article.

8.2 Indemnification and Liability. GARVER agrees to indemnify, and hold harmless the OWNER, its officers, servants, and employees, from and against legal liability for all claims, losses, damage, cost, and expense (including reasonable attorneys' fees and accountants' fees recoverable under applicable law) caused by a negligent act, error, or omission of GARVER in the performance of services under this Agreement. OWNER agrees to indemnify, and hold harmless GARVER, its officers, servants, and employees, from and against legal liability for all claims, losses, damage, cost, and expense (including reasonable attorneys' fees and accountants' fees recoverable under applicable law) caused by a negligent act, error, or omission of the OWNER in the performance of services under this Agreement, provided such indemnification shall be applicable only to the extent sovereign immunity has been waived pursuant to Oklahoma law. GARVER and the OWNER each agree to promptly service notice on the other party of any claims arising hereunder, and shall cooperate in the defense of such claims. The acceptance by OWNER or its representatives of any certification of insurance providing for coverage other than as required in this Agreement to be furnished by GARVER shall in no event be deemed a waiver of any of the provisions of this indemnity provision. None of the foregoing provisions shall deprive the OWNER of any action, right, or remedy otherwise available to OWNER at common law.

8.3 Employee Claims. GARVER shall indemnify OWNER against legal liability for damages arising out of claims by GARVER's employees. OWNER shall indemnify GARVER against legal liability for damages arising out of claims by OWNER's employees.

8.4 Consequential Damages. To the fullest extent permitted by law, GARVER shall not be liable to OWNER for any special, indirect or consequential damages resulting in any way from the performance of the SERVICES.

8.5 Notwithstanding any provision to the contrary herein, to the extent allowed by applicable law, GARVER'S (including its subconsultants, agents, assignees, affiliates and vendors) total aggregate liability under this AGREEMENT shall be limited to two (2) times the amount of compensation actually received by GARVER from OWNER under this AGREEMENT regardless of the cause or action (including negligence).

8.6 Survival. Upon completion of all SERVICES obligations and duties provided for in this AGREEMENT or if this AGREEMENT is terminated for any reason the terms and conditions of this Article shall survive.

ARTICLE 9 - INSURANCE

During the performance of the SERVICES under this AGREEMENT GARVER shall maintain the following insurance:

9.1 Worker's compensation insurance for GARVER's employees as required by Oklahoma Workers Compensation Statutes.

9.2 Comprehensive general liability insurance with a minimum of $125,000 per accident for bodily injury or death and $25,000 per occurrence for property damage.

9.3 Comprehensive automobile liability insurance with a minimum of $125,000 per accident for bodily injury or death and $25,000 for property damage.

9.4 Professional Liability (errors and omissions) insurance with a minimum policy value of $1,000,000.

GARVER shall furnish OWNER certificates of insurance that shall include a provision that such insurance shall not be canceled without at least thirty days written notice to OWNER. All PROJECT contractors shall be required to include OWNER and GARVER as additional insured on their General Liability Insurance policies.

GARVER and OWNER each shall require its insurance carriers to waive all rights of subrogation against the other and its directors, officers, partners, commissioners, officials, agents and employees for damages covered by property insurance during and after the SERVICES. A similar provision shall be incorporated into all contractual arrangements entered into by OWNER and shall protect OWNER and GARVER to the same extent.

ARTICLE 10 - LIMITATIONS OF RESPONSIBILITY

GARVER shall not be responsible for: (1) construction means, methods, techniques, sequences, procedures or safety and security precautions and programs in connection with the PROJECT; (2) the failure of any contractor, subcontractor, vendor or other PROJECT participant, not under contract to GARVER, to fulfill contractual responsibilities to the OWNER or to comply with federal, state or local laws, regulations, and codes; or (3) procuring permits, certificates and licenses required for any construction unless such responsibilities are specifically assigned to GARVER in Attachment B, Scope of Services.

ARTICLE 11 - OPINIONS OF COST AND SCHEDULE

Since GARVER has no control over the cost of labor, materials or equipment furnished by others or over the resources provided by others to meet PROJECT schedules, GARVER's opinion of probable costs and of PROJECT schedules shall be made on the basis of experience and qualifications as a professional engineer utilizing good faith efforts to furnish reliable cost and schedule estimates. GARVER does not guarantee that proposals, bids, or actual PROJECT costs will not vary from GARVER's cost estimates.

ARTICLE 12 - REUSE OF DOCUMENTS

Upon OWNER's request GARVER shall furnish OWNER with deliverables and/or other data on electronic media. All documents, including but not limited to, drawings, specifications and computer software prepared by GARVER pursuant to this AGREEMENT are instruments of Service in respect to the PROJECT. Said documents are not intended or represented to be suitable for reuse by OWNER or others on extensions of the PROJECT or on any other PROJECT. Any modification or reuse of GARVER's deliverables and/or data on any project other the PROJECT without prior written verification or adaptation by GARVER for the specific purpose intended will be at OWNER's sole risk and without liability or legal exposure to GARVER.

ARTICLE 13 - TERMINATION

This AGREEMENT may be terminated by either party upon written notice in the event of substantial failure by the other party to perform in accordance with the terms of this AGREEMENT. The non-performing party shall have fifteen (15) calendar days from the date of the termination notice to cure or to submit a plan for cure acceptable to the other party.

OWNER may terminate or suspend performance of this AGREEMENT for OWNER's convenience upon written notice to GARVER. GARVER shall terminate or suspend performance of the SERVICES on a schedule acceptable to OWNER. If termination or suspension is for OWNER's convenience, OWNER shall pay GARVER for all the

SERVICES performed to date, amount not to exceed the normal fee amount due for the SERVICES rendered and termination or suspension expenses. Upon restart, an equitable adjustment shall be made to GARVER's compensation.

ARTICLE 14 - DELAY IN PERFORMANCE

Neither OWNER nor GARVER shall be considered in default of this AGREEMENT for delays in performance caused by circumstances beyond the reasonable control of the non-performing party. For purposes of this AGREEMENT, such circumstances include, but are not limited to abnormal weather conditions; floods; earthquakes; fire; epidemics; war; riot and other civil disturbances; strikes, work slowdowns and other labor disturbances; sabotage; judicial restraint; and inability to procure permits, licenses, or authorizations from any local, state, or federal agency for any of the supplies, materials, accesses, or SERVICES required to be provided by either OWNER or GARVER under this AGREEMENT. Notwithstanding anything to the contrary herein, if, through no fault of GARVER, schedule or dates are changed, or the orderly and continuous progress of GARVER's services is impaired, or GARVER's services are delayed or suspended, then NUA agrees to negotiate an acceptable equitable adjustment for the time for completion of GARVER's services and the rates and amounts of GARVER's compensation and to incorporate same into the Contract by an approved Contract Amendment.

Should such circumstances occur the non-performing party shall, within a reasonable period after being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of this AGREEMENT.

ARTICLE I5 - COMMUNICATIONS

Any communication required by this AGREEMENT shall be made in writing to the address specified below:

GARVER: Mary Elizabeth Mach, P.E.
Garver LLC
1016 24th Avenue NW
Norman, OK 73069
405-329-2555
MEMach@GarverUSA.com

OWNER: Chris Mattingly, P.E.
Norman Utilities Authority (NUA)
201-C West Gray
P.O. Box 370
Norman OK 73070
405-217-7778
Chris.mattingly@normanok.gov

Nothing contained in this Article shall be construed to restrict the transmission of routine communications between representatives of GARVER and OWNER.

ARTICLE 16 - WAIVER

A waiver by either OWNER or GARVER of any breach of this AGREEMENT shall be in writing. Such a waiver shall not affect the waiving party's rights with respect to any other or further breach.

ARTICLE 17 - SEVERABILITY

The invalidity, illegality, or unenforceability of any provision of this AGREEMENT or the occurrence of any event rendering any portion or provision of this AGREEMENT void shall in no way affect the validity or enforceability of any other portion or provision of this AGREEMENT. Any void provision shall be deemed severed from this AGREEMENT,

and the balance of this AGREEMENT shall be construed and enforced as if this AGREEMENT did not contain the particular portion or provision held to be void. The parties further agree to amend this AGREEMENT to replace any stricken provision with a valid Provision that comes as close as possible to the intent of the stricken provision. The provisions of this Article shall not prevent this entire AGREEMENT from being void should a provision, which is of the essence of this AGREEMENT, be determined void.

ARTICLE 18 - INTEGRATION

This AGREEMENT represents the entire and integrated AGREEMENT between OWNER and GARVER. It supersedes all prior and contemporaneous communications, representations, and agreements, whether oral or written, relating to the subject matter of this AGREEMENT. This AGREEMENT, including its attachments and schedules, may only be changed by a written amendment executed by both parties. The following attachments and schedules are hereby made a part of this AGREEMENT:

Attachment A – Schedule
Attachment B – Scope of Services
Attachment C – Compensation

ARTICLE 19 - SUCCESSORS AND ASSIGNS

OWNER and GARVER each binds itself and its directors, officers, partners, successors, executors, administrators, assigns, and legal representatives to the other party to this AGREEMENT and to the directors, officers, partners, successors, executors, administrators, assigns, and legal representatives of such other party in respect to all provisions of this AGREEMENT.

ARTICLE 20 - NO THIRD PARTY BENEFICARY

Nothing contained in this agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the OWNER or GARVER.

IN WITNESS WHEREOF, OWNER and GARVER have executed this AGREEMENT.

DATED this 27th day of January 20 23.

Garver, LLC – GARVER

ATTEST

By: Mary E Mach

Printed Name: MARY E. MACH

Title: SR. PROJECT MANAGER

Cole Niblett

Project Manager

Norman Utilities Authority- OWNER

APPROVED as to form and legality this _____ day of _____, 20____.

_____
City Attorney

APPROVED by the Trustees of the Norman Utilities Authority this _____ day of _____, 20____.

ATTEST

By: _____ _____

Printed Name: _____ _____

Title: _____ _____

ATTACHMENT A

PROJECT SCHEDULE

ENGINEER shall commence work under this AGREEMENT within ten (10) days of a Notice to Proceed (NTP) and shall complete the work in accordance with the schedule below.

Milestone / Task	Planned Completion (calendar days)
Task 1 – Historic Data Review and Formatting	75 days from Owner NTP
Task 2 – Model Development, Testing, and Validation	150 days from completion of Task 1
Task 3 – Lake Level Forecasting Evaluation	45 days from completion of Task 2
Task 4 –Model Reporting*	60 days from completion of Task 3
**Note: Task 4 Model Reporting includes third-party panel reviews of the project deliverables, which will be dependent upon panel member schedules and other constraints that may increase the duration of this task.*	

ATTACHMENT B

SCOPE OF SERVICES

GENERAL

Generally, the scope of services includes the development of a Predictive Lake Level Optimization Tool (PLOT) for the Lake Thunderbird (Lake) watershed in an Indirect Potable Reuse (IPR) context. The PLOT is intended to be a conceptual tool that can assist the Owner and the Central Oklahoma Master Conservancy District (COMCD) in planning a future lake augmentation system as it relates to the timing and duration of pumping for lake augmentation. Previous Engineering Reports and Master Plans have identified a three-phase design capacity build-out for a Lake Thunderbird IPR system: 5 million gallons per day (MGD), to 10 MGD, and finally to 15 MGD of pumping capacity. The PLOT could identify augmentation strategies that differ from the previously-planned flows, yet provide higher efficiency and return on investment as it relates to lake yield and sustainability.

The modeling efforts will be summarized in a Lake Thunderbird Basin Study report intended to meet the requirements outlined in the United States Bureau of Reclamation (USBR) WaterSMART grant program, a partial funding source of this project. The scope of services is comprised of four (4) tasks, which are summarized in the list below and described in further detail in subsequent sections:

- Task 1 – Historic Data Review and Formatting
- Task 2 – Model Development, Testing, and Validation
- Task 3 – Lake Level Forecasting Evaluation
- Task 4 – Model Reporting

Task 1 – Historic Data Review and Formatting

After Notice to Proceed, Garver will organize a project introduction call with the regional offices of the USBR (Oklahoma City and Austin) and the COMCD to discuss the project and the potential sources of data.
At some point during Task 1, Garver will also attend a meeting with COMCD, NUA and USBR both to learn about COMCD's ongoing grant project regarding Lake Thunderbird historical yields and to give an overview to attendees about this project.

As part of Task 1, Garver and its subcontractor will compile a historical data set summarizing water criteria into and out of the Lake for up to the last five (5) years. Garver and its subconsultant will store, format, process, and cache the data in Garver's subconsultant cloud infrastructure. Data to be collected and compiled include data shown in Table 1.

Table 1: Historical data sets

Data	Expected duration/ granularity	Possible sources
Lake inflows (rivers, creeks, WWTPs, other in cubic feet per second (cfs), gallon per minute (gpm), or million gallons per day (MGD))	Last 5 years / daily	USACE, USGS, USBR, COMCD
Lake water level (Elevation in feet)	Last 5 years / daily	USACE, USGS, USBR, COMCD
Lake outflows (city water, industry, dam overflow, other in cfs, gpm, or MGD)	Last 5 years / daily	USACE, NUA, COMCD, USBR, City of Del City, City of Midwest City
Water Temperature (°F or °C)	Last 5 years / daily	USACE, USGS, USBR, COMCD, NUA
Precipitation (in.)	Last 5 years / daily	3rd party services, USACE
Air Temperature (°F or °C)	Last 5 years / daily	3rd party services, USACE
Lake evaporation rate (in. per year)	Last 5 years / daily	USACE, USGS, USBR, COMCD

Note that the possible sources of each parameter are anticipated to be publicly available or provided to Garver by Owner to obtain from local stakeholders and Federal agencies. The underlying mass balance computations built into the model, and their accuracy, are dependent upon the quality of data procured as part of Task 1.

Task 2 – Model Development, Testing, and Validation

Task 2 includes the development of the predictive model PLOT utilizing the information procured in Task 1. Initial efforts in Task 2 include development of near-term and long-term projections of inputs and outputs based on available data and statistics. A statistical analysis on the historical data will be performed to predict the relationships between mass-balance model inputs (e.g., inflows, usage, releases, evaporation, precipitation, etc.) with (1) the combination of previous historical information (e.g., water usage, temperature, precipitation, evaporation, etc.) and (2) forecasted variables (e.g., time of year, precipitation, temperature, sun/cloudiness, wind).

Statistical analysis will identify relationships between time of year and mass-balance model inputs for potential risk-reduction evaluations resulting from lake augmentation. These risk evaluations are anticipated to utilize both long-term historical data sets and potential climatological changes. The results of these statistical analyses will support Owner's efforts to build forecast model(s) to predict the lake's water level and inform augmentation decisions (evaluated further in Task 3).

PLOT will be tested and validated utilizing a test dataset that is withheld from the original data procured as part of Task 1. This test data set will serve as a test platform for refinement/validation of the model's predictive parameters using real inputs from historic data.

Task 3 – Lake Level Forecasting Evaluation

Utilizing PLOT as outlined in Task 2, Task 3 will use PLOT to complete simulations of synthetic data sets for long-term periods. The model evaluations will evaluate potential phasing alternatives for augmentation capacity. IPR treatment and pumping operating costs and lake yield increases will also be evaluated. Finally, risk mitigation associated with different operational strategies for the potential IPR facility will be considered. The evaluation will simulate the operation of the IPR facilities as if the WRF receives a 7-day forecast at the beginning of each week and uses that information for dictating the pumping scheme and water-balance of Lake Thunderbird. The model evaluation will include up to three (3) phasing alternatives as compared to the previously-planned 5 MGD, 10 MGD, and 15 MGD pumping capacities.

The simulated IPR operations data will be utilized to update life-cycle cost models for the IPR conveyance system (completed by Garver in the Engineering Report titled *Lake Thunderbird Augmentation* and dated August 2015, and other reports as necessary) that previously considered a continuous, daily flow for lake augmentation. The data evaluated in Task 3 will estimate the potential cost impacts of a *smart* IPR augmentation program that utilizes machine-learning with large historical and real-time data sets. Garver will prepare a comparison of the original life-cycle costs projected for the IPR conveyance system to IPR conveyance costs estimated from the Task 3 modeling evaluations.

The developed costs will include material procurement and construction of up to three (3) rated capacities of pumping facilities. For the purposes of this study, Garver and Owner will consider these as Rough Order Magnitude (ROM) estimates suitable for budget authorization or control. The expected range of accuracy for this type of estimate is -30 to +50% of the actual project estimate. Life-cycle costs shall include these estimated capital costs, as well as estimated costs associated with operations and maintenance (O&M) over a 20-year useful life. O&M costs will include, but not be limited to, labor, consumables (chemicals, water, electrical), maintenance and repair parts, and applicable recurring costs for modeling/cloud-based services.

Task 4 – Model Reporting

The findings of Task 1-3 will be summarized in a single Lake Thunderbird Basin Study Technical Memorandum (TM). This TM will follow BOR WaterSMART reporting guidelines and Garver will provide a draft TM for Owner review and comment. Two weeks of Owner review and comment time following delivery of the draft submittal is anticipated.

Following Owner review, Garver will conduct a review workshop at the Owner's location (which may include a mixture of virtual and onsite presence) to discuss the findings and Owner comments. Owner comments will be reviewed and documented in meeting minutes following the workshop, and a final TM incorporating suggested revisions will be delivered following the review workshop.

Upon delivering a final TM to the Owner, Garver will begin coordinating with the National Water Research Institute (NWRI) to develop and coordinate a meeting of a third-party review panel. The primary goal of the panel review will be to review PLOT and develop recommendations for pilot-testing of a cloud-hosted system to run the model autonomously for augmentation. It is anticipated that the panel review meeting will occur at the Owner's location with a mixture of virtual and in-person attendance.

The panel will receive the presentation from Garver and then publish its recommendations for data inputs to the PLOT model and expected performance metrics in a documented report to be published by the NWRI. The NWRI report will then be disseminated to its member water authorities and other water professionals. The NWRI report will also provide guidance on potential applications for the system, including traditional out-of-basin water transfers, conjunctive use of surface and groundwater supplies, IPR augmentation of surface water supplies, use of DPR to offset surface water withdrawals, among others. The future potential pilot program is anticipated to coincide with the construction project for the augmentation pump station at the Norman WRF and is not included in this scope of services.

Project Deliverables

The following will be submitted to the Owner, or others as indicated, by Garver:

- Electronic copies of the historic data set
- Internet access to the cloud-based PLOT tool (for the duration of the contract period)
- Electronic copy of the historical data set, forecast results for each flow scenario, and visualizations of the PLOT tool outputs created for this project subject to the limitations described elsewhere in this Contract.
- Three (3) copies of the Draft TM to Owner
- Three (3) copies of the Final TM to Owner
- Three (3) copies of the Final TM to BOR
- Three (3) copies of the Final TM to NWRI
- Three (3) copies of the Draft NWRI Presentation to Owner
- Three (3) copies of the Final NWRI Presentation to Owner

Extra Work

The following items are not included under this agreement and will be considered as extra work:

1. Design services of any kind
2. Pump or infrastructure sizing outside of those described in this scope of services
3. Rework for the Owner's convenience or due to changed conditions after previous alternate direction and/or approval.
4. Pilot testing or water quality testing.
5. Field work data gathering.
6. Submittals or deliverables in addition to those listed herein.
7. Workshops in addition to those listed herein.
8. Preparation of a Storm Water Pollution Prevention Plan (SWPPP).
9. Bidding Phase Services of any kind.
10. Construction Phase Services of any kind.
11. Construction materials testing.
12. Environmental Handling and Documentation, including wetlands identification or mitigation plans or other work related to environmentally or historically (culturally) significant items.
13. Coordination with FEMA and preparation/submittal of a CLOMR and/or LOMR.
14. Arc Flash analysis or other power system studies.
15. Permitting efforts of any kind.
16. ODEQ permitting fees.
17. Any coordination or cooperation with project team for unrelated COMCD Lake Thunderbird grant except as described herein.

Extra Work will be as directed by the Owner in writing for an additional fee as agreed upon by the Owner and Garver.

ATTACHMENT C

COMPENSATION

The OWNER will compensate ENGINEER on a lump sum basis for the following SERVICES rendered. The lump sum fee is broken down below by task as defined in the Scope of Services:

Task	Total Fee Amount	Less In-Kind Services
Task 1 – Historic Data Review and Formatting	$7,800	
Task 2 – Model Development, Testing, and Validation	$136,950	$24,000
Task 3 – Lake Level Forecasting Evaluation	$37,640	
Task 4 – Model Reporting	$57,228	$19,428
Subtotals	**$239,618**	**$43,428**
Contract Total	**$196,190**	

The ENGINEER may submit interim statements, not to exceed one per month, for partial payment for SERVICES rendered. The statements to OWNER will be by task for the percentage of work actually completed. The OWNER shall make interim payments within 30 calendar days in response to ENGINEER's interim statements.

No budgetary allowance has been established for Additional Services. Additional services must be authorized by amendment of the AGREEMENT. Time and materials billing for ENGINEER'S labor will be at his standard hourly rates. ENGINEER's direct expenses, including subcontractor expenses, will include a multiplier of 1.10.