

**GROUNDWATER  
MANAGEMENT  
AREA 8**

**JOINT PLANNING MEETING**

Prairielands Groundwater Conservation District Office  
208 Kimberly Dr.  
Cleburne, Texas 76031

**TUESDAY  
June 27, 2023  
10:00 AM**

**NOTICE OF MEETING  
GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a **Joint Planning meeting at 10:00 A.M. on June 27, 2023** at the **Prairielands Groundwater Conservation District Office** located at **208 Kimberly Dr., Cleburne, Texas 76031**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the March 7, 2023, GMA 8 meeting.
6. Consider and act upon a Memorandum of Agreement between Texas Water Development Board and North Texas Groundwater Conservation District for the GAM Update Project.
7. Consider and act upon a Technical Advisor Committee for the GAM Update Project.
8. Discussion of project to update the Groundwater Availability Model for the Northern Trinity and Woodbine Aquifers.
9. Updates from the TWDB
10. Discussion of possible agenda items and dates for next GMA 8 meeting.
11. Closing comments.
12. Adjourn.

Dated this 1st day of June 2023

Mitchell Sodek, Chair  
Groundwater Management Area 8

*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at [ntgcd@northtexasgcd.org](mailto:ntgcd@northtexasgcd.org), or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

ATTACHMENT 5

**Meeting of the  
Groundwater Management Area 8  
March 7, 2023**

**Minutes**

The Groundwater Management Area 8 (GMA 8) district representatives (referred to herein collectively as “the Committee” for easy reference), which consists of representatives from the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District, held a **Joint Planning Meeting at 10:00 A.M. on Tuesday, March 7, 2023**, at the **Prairielands Groundwater Conservation District Office** located at **208 Kimberly Dr., Cleburne, Texas 76031**.

Groundwater Conservation District Representatives Present:

Central Texas GCD: Mitchell Sodek	Prairielands GCD: Kathy Turner Jones
Clearwater UWCD: Dirk Aaron	Red River GCD: David Gattis
Middle Trinity GCD: Patrick Wagner	Southern Trinity GCD: Scooter Radcliffe
Northern Trinity GCD: Corey Jones	Upper Trinity GCD: Doug Shaw
Post Oak Savannah GCD: Gary Westbrook	

Groundwater Conservation District Representatives Absent:

North Texas GCD  
Saratoga UWCD

**1. Invocation**

Gary Westbrook, Post Oak Savannah GCD, provided the invocation for the meeting.

**2. Call meeting to order and establish quorum**

Chairman Mitchell Sodek, Central Texas GCD, established that a quorum was present and called the GMA 8 meeting to order at 10:01 a.m.

**3. Welcome and introductions.**

Chairman Mitchell Sodek, Central Texas GCD, welcomed TWDB, and USGS.

**4. Public Comments.**

No public comment.

**5. Consider and act upon approval of minutes from the July 26, 2022, GMA 8 meeting**

David Gattis made the motion to approve the July 26, 2022, GMA 8 meeting minutes. Kathy Turner Jones seconded the motion. Motion passed.

**6. Consider and possibly act upon all matters incident and related to a contract and scope of services with Intera Incorporated for Northern Trinity and Woodbine Aquifers Groundwater Availability Model Update.**

Chairman Mitchell Sodek gave an overview of the RFQ and selection process. The GAM Update Committee selected Intera Team as the consultant. The Chairman asks Wade Oliver, Intera, to present an overview of the scope of work for the project. Mr. Oliver provided a presentation of the project scope of work. Discussion was held by the committee. Doug Shaw made the motion to approve the contract and scope of services with Intera. Kathy Turner Jones seconded the motion. Motion passed.

**7. Consider and act upon all matters incident and related to an Interlocal Agreement regarding Groundwater Management Area 8 Funding and Texas Water Development Board participation for Northern Trinity and Woodbine Aquifers Groundwater Availability Model Update.**

Chairman Mitchell Sodek introduce the interlocal agreement for funding the GAM Update project. The GAM Update Committee discussed an equal share for funding the project. Discussion was held on how to fund the project. Mr. Oliver discuss billing for the project, and he expects the project will be billed relatively evenly among the project timeline. Dirk Aaron motion to Consider and act upon all matters incident and related to an Interlocal Agreement regarding Groundwater Management Area 8 Funding for Northern Trinity and Woodbine Aquifers Groundwater Availability Model Update, continece upon each district's board final approval. David Gattis Seconded the Motion. Discussion was held. Motion passed.

**8. Updates from the TWDB.**

Jean Perez provided an update on TWDB Activities.

**9. Discussion of possible agenda items and dates for next GMA 8 meeting.**

Chairman Mitchell Sodek discuss having an agenda item for TWDB's agreement and technical review committee.

**10. Closing comments.**

**11. Adjourn**

Chairman Mitchell Sodek, Central Texas GCD, declared the meeting adjourned at 11:03 a.m.

The GMA 8 Committee unanimously approved the minutes on this \_\_\_\_\_ day of \_\_\_\_\_, 2023

\_\_\_\_\_  
Recording Secretary

\_\_\_\_\_  
Chairman

ATTACHMENT 8

## MASTER TECHNICAL SERVICES AGREEMENT

THIS AGREEMENT ("Agreement") is made as of 7 March 2023 by **INTERA Incorporated**, ("INTERA") a Texas Corporation, and **North Texas Groundwater Conservation District**, ("Client") a Texas governmental entity. Individually, INTERA and Client are sometimes referred to as a Party and collectively as Parties.

WHEREAS, Client desires INTERA to furnish certain technical, maintenance, construction, installation and/or related services ("Services") and INTERA is willing to do so, subject to the terms and conditions set forth herein.

WHEREAS, in certain situations, Client also desires INTERA to furnish certain equipment, materials and other goods (collectively "Goods") and INTERA is willing to do so, subject to the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the premises and the mutual covenants and agreements hereinafter set forth, the Parties agree as follows:

### ARTICLE 1. SCOPE OF SERVICES

Client desires INTERA to perform the Services and provide the Goods described in the applicable Work Order(s).

### ARTICLE 2. TERM

The term of this Agreement will commence on 7 March 2023 and will continue until 31 December 2025 unless sooner terminated as provided in this Agreement.

### ARTICLE 3. INVOICING AND PAYMENT

For performance of the Services, Client will pay INTERA the compensation specified in each Work Order. This compensation will be invoiced to Client at monthly intervals along with reimbursables and will be due and payable within 30 days following the date of the invoice. In the event that part of an invoice is in dispute, Client agrees to pay the undisputed portion of the invoice according to the payment terms hereunder. If for any reason Client fails to pay INTERA in full within 30 days from the date of an invoice, Client will pay INTERA a late payment charge each month equal to one percent (1%) of any unpaid balance or the highest rate permitted by law, whichever is the lesser. If for any reason Client fails to pay INTERA in full within 60 days from the date of an invoice, INTERA may, at INTERA's sole option, (i) suspend its performance of Services and supply of Goods until all outstanding bills have been paid in full by Client, (ii) terminate this Agreement and any or all Work Orders and/or (iii) engage debt collection services/commence legal proceedings for the collection of unpaid and undisputed invoiced amounts. INTERA shall be entitled to recover, to the extent allowed by law, its costs and expenses, including reasonable attorney's fees, incurred in connection with all actions taken to obtain or enforce payment by Client of Client's obligations under this Agreement. Payment information is included on INTERA's invoice to Client.

### ARTICLE 4. REPRESENTATIVES

INTERA will cooperate with the Client and be subject to the direction and control of Client's designated representative. Client will designate a representative who will be the authorized representative of Client regarding this Agreement and Services and will inform INTERA promptly upon discovery of any aspect of the Services or Goods, which does not meet with Client's approval. INTERA will also designate a representative who will be responsible for the execution of the Services and the provision of Goods and will be the authorized representative of INTERA for this Agreement and each Work Order. Each party may designate a different representative for each Work Order or one representative for all Work Orders.

### ARTICLE 5. RECORDS

For a period of one year after completion of each Work Order under this Agreement, INTERA will, upon written request of the Client, provide reasonable access to necessary supporting records and documentation.

### ARTICLE 6. RELATIONSHIP OF THE PARTIES

6.1. Independent Contractor. INTERA will perform the Services as an independent contractor. INTERA acknowledges and agrees that no employer-employee relationship exists or is intended to be created between INTERA and Client.

6.2. Assumption or Creation of Obligations or Responsibilities. Neither Party will have the right to assume or create obligations or responsibilities of any type in the name of the other Party unless expressly authorized to do so in writing by the Party taking on the obligation.

### ARTICLE 7. SUBCONTRACTOR AND SUPPLIERS

INTERA will have the right to retain subcontractors and suppliers to assist INTERA in the performance of the Services and the provision of Goods under each Work Order.

### ARTICLE 8. CONFIDENTIALITY AND RIGHTS IN DATA

8.1. Maintenance of Confidentiality. Information disclosed by one Party to the other Party during the performance of a Work Order may include the confidential or proprietary information of the disclosing Party and that Party's agents, subcontractors or suppliers. In the event such information is

expressly identified as proprietary or confidential prior to or at the time of disclosure, the Party receiving such information will keep it in confidence and will not furnish or otherwise disclose it to any third party during or after completion of the applicable Services for a period of three years. Neither Party will be obligated to maintain the confidentiality of any information designated by the other Party as confidential or proprietary if the information:

8.1.1. Was in the receiving Party's possession or was known to the receiving Party prior to its receipt from the other Party and the receiving Party was under no prior legal obligation to protect such information;

8.1.2. Is independently developed by the receiving Party without the utilization of the confidential or proprietary information;

8.1.3. Is or becomes public knowledge without the fault of the receiving Party;

8.1.4. Becomes available to the receiving Party from a source other than the disclosing Party where the receiving Party is not under any legal obligation to protect such information; or

8.1.5. The information is disclosed pursuant to a governmental or legal requirement.

8.2. Provision of Information to INTERA. Client will promptly furnish INTERA with all information necessary for INTERA to perform the Services and supply the Goods. INTERA and its Subcontractors will be entitled to rely upon such information and upon information from generally acceptable reputable sources without independent verification in the performance of the Services or supplying of Goods.

8.3. Intellectual Property. INTERA will have the full title and all rights in and to (including the sole right to obtain patents on) any inventions made or conceived as a result of the performance of the Services. INTERA hereby grants to Client a royalty-free, nonexclusive license for Client to make, have made and use any such invention made or conceived as a result of the performance of the Services or supply of the Goods. All computer programs, applications, methods, mechanized design practices, layouts, and systems developed by INTERA during the term of an applicable Work Order or owned by INTERA on the effective date of this Agreement, will remain the exclusive property of INTERA. Except as otherwise provided in this Article 8, all reports, data, drawings, plans, specifications and other items delivered by INTERA (hereinafter referred to as "Reports") to Client under a Work Order will become the property of Client; however, INTERA is entitled to retain a file copy and utilize such Reports and the material in those Reports in the scope of INTERA's work and/or services for itself and others.

8.4. Report Reuse. Reports delivered by INTERA under a Work Order issued under this Agreement are not intended or represented to be suitable for reuse by Client of others for purposes other than those described in that Work Order, nor are they intended to be used by Client in other materials other than in their complete form. Any such reuse without written verification or modification by INTERA will be at Client's sole risk and without liability or legal exposure to INTERA, and Client shall indemnify and hold harmless INTERA from all claims, damages, losses and expenses including attorney's fees arising out of or resulting therefrom.

### ARTICLE 9. TERMINATION

9.1. Client's Right to Terminate. Client may terminate i) one or more Work Orders or ii) this Agreement and All Work Orders upon 30 days prior written notice to INTERA, but such termination will not relieve Client of its obligation to pay INTERA for expenses incurred, Services performed and Goods provided up to the date of termination and all reasonable expenses, which INTERA incurs related to the termination.

9.2. INTERA's Right to Terminate. INTERA may terminate i) one or more Work Orders or ii) this Agreement and All Work Orders upon 30 days prior written notice to Client, but such termination will not relieve INTERA of its

## MASTER TECHNICAL SERVICES AGREEMENT

obligation to provide Client with a copy of all Reports prepared up to the date of termination of the Agreement.

### ARTICLE 10. INDEMNIFICATION, WARRANTY AND LIMITATION OF LIABILITY

10.1. INTERA's Indemnification of Client. INTERA will indemnify and hold harmless Client, its officers, employees, and agents (the "Client Indemnified Parties") from losses (including, but not limited to, reasonable attorneys' fees and expenses) of the Client Indemnified Parties to the extent caused by the 1) negligent acts or omissions of INTERA, 2) reckless acts or omissions of INTERA, 3) intentional misconduct of INTERA, 4) material misrepresentations of INTERA, 5) material breaches of contract or warranty by INTERA and 6) infringement of United States patents, copyrights and trademarks by INTERA.

10.2. Client's Indemnification of INTERA. Client will indemnify and hold harmless INTERA, its officers, employees, agents, subcontractors and suppliers (the "INTERA Indemnified Parties") from losses (including, but not limited to reasonable attorneys' fees and expenses) of the INTERA Indemnified Parties to the extent caused by the 1) negligent acts or omissions of Client, 2) reckless acts or omissions of Client, 3) intentional misconduct of Client, 4) material misrepresentations of Client, 5) material breaches of contract or warranty by Client and 6) infringement of United States patents, copyrights and trademarks by Client.

10.3. INTERA's Warranty and Limitation of Liability. INTERA warrants that the Services will be performed, within the limits prescribed by Client, with professional thoroughness and competence. Notwithstanding anything to the contrary herein, INTERA's total cumulative liability for claims of any kind whether based in contract, tort (including negligence and strict liability), under any warranty, indemnification or otherwise, for any loss or damage arising out of or related to this Agreement, any Work Order or the performance of the Services or supply of Goods under this Agreement and any Work Order, will in no case exceed the compensation paid to INTERA by Client for the Services under the applicable Work Order.

### ARTICLE 11. INSURANCE

11.1. Insurance Coverage. Prior to commencing with the Services and at all times during the term of a Work Order, INTERA will provide and maintain in full force and effect, insurance of the types and with limits not less than those specified as follows:

11.1.1. Workers' Compensation Insurance in accordance with the statutory requirements of the State having jurisdiction over employees who are engaged in the Scope of Services, and Employer's Liability insurance of One Million Dollars (\$1,000,000) each accident; disease-each employee; and disease-policy limit.

11.1.2. Commercial General Liability Insurance with a per occurrence limit of One Million Dollars (\$1,000,000). This policy will include Contractual Liability coverage. This insurance will cover bodily injury to or death of persons, and/or loss of or damage to property.

11.1.3. Automobile (owned, non-owned or hired) Insurance with an each accident limit of One Million Dollars (\$1,000,000) for bodily injury and property damage liability.

11.1.4. Professional Errors and Omissions Insurance of One Million Dollars (\$1,000,000) for each occurrence per claim and in the aggregate.

11.2. Insurance Terms and Conditions. All insurance policies provided and maintained by INTERA will be underwritten by insurers which are rated "A VII" or higher by the most current edition of *Best's Key Rating Guide*, and which are authorized to write insurance in the state or states in which the Services are performed or where the Goods are provided.

### ARTICLE 12. DISPUTE RESOLUTION

12.1. Negotiation. The Parties will attempt in good faith to resolve any dispute arising out of or relating to this Agreement or a Work Order promptly by negotiation between executives who have authority to settle the controversy. Any Party may give the other Party written notice of any dispute not resolved in the normal course of business. Within ten days after delivery of the notice, the receiving Party will submit to the other a written response. The notice and response will include (a) a statement of that Party's position and a summary of arguments supporting that position, and (b) the name and title of the executive who will represent that Party and of any other person who will accompany the executive in negotiations. Within 20 days after delivery of the initial notice, the executives of both Parties will meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary, to attempt to resolve the dispute. All reasonable

requests for information made by one Party to the other will be honored. All negotiations pursuant to this clause are confidential and will be treated as compromise and settlement negotiations for purposes of applicable rules of evidence.

12.2. Mediation. If the dispute has not been resolved by negotiation as provided above within 30 days after delivery of the initial notice of negotiation, or if the Parties fail to meet within 20 days, the Parties will endeavor to settle the dispute by mediation under the International Institute for Conflict Prevention & Resolution ("CPR") Mediation Procedure in effect on the date of this Agreement, provided, however, that if one Party fails to participate in the negotiation as provided above, the other Party can initiate mediation prior to the expiration of the 30 days. Unless otherwise agreed, the Parties will select a mediator from the CPR Panel of Distinguished Neutrals.

12.3. Litigation. Any dispute arising out of or relating to this Agreement or a Work Order, including the breach, termination or validity thereof, which has not been resolved by mediation as provided above within 50 days after delivery of the initial notice of negotiation will be finally resolved by litigation.

12.4. The Client agrees to the joinder of any Subcontractor hired by INTERA to any proceeding under this Agreement that involves or may involve a Subcontractor's Services.

### ARTICLE 13. NOTICES

Any notice, request, demand or other communication related to this Agreement or Work Order will be in writing and will be considered duly made three calendar days after the date of deposit in the U.S. Mail, by certified mail, return receipt requested, postage prepaid, addressed to the applicable Party at the following address or when delivered, if delivered by hand or transmitted by telecopy to the other Party at the following addresses or facsimile numbers:

If to INTERA: INTERA Incorporated  
Attn: George Westbury, Director of Contracts  
9600 Great Hills Trail, Suite 300W  
Austin, TX 78759

Telephone: 512.425.2000  
Email: gwestbury@intera.com

If to Client: North Texas Groundwater Conservation District  
Attn: Paul Sigle  
5100 Airport Dr.  
Denison, TX 75020  
Telephone: 855.426.4433  
Email: p.sigle@northtexasgcd.org

Either Party may change its address or numbers for receiving notices by giving written notice of the change to the other Party.

### ARTICLE 14. MISCELLANEOUS

14.1. Title to Goods. Title to and risk of loss of or damage to Goods will pass to Client upon delivery of the Good to Client.

14.2. Force Majeure. Neither Party will be considered in default in the performance of its obligations hereunder to the extent that the performance of any such obligation is prevented or delayed by any cause, which is beyond the reasonable control of and could not have been anticipated by the affected Party, including, but not limited to, acts of God, storms, floods, fire, strikes, boycotts, other labor disputes, riots, thefts, accidents, acts or failures to act by the other Party; and acts or failures to act by any non-Party government or government agency; provided, however, that any obligation to make payment hereunder will not be extended for any reason. Upon the occurrence of a situation as described above, the time for performance by either Party to this Agreement of its obligations will be extended by a period of time equal to the time lost because of such situation; provided, however, that prompt notice of such a situation will be provided to the other Party and reasonable efforts will be used to mitigate the adverse impact of such a situation.

14.3. Responsibility for Taxes. Client will be responsible for and will pay any taxes due to any agency arising out of or under this Agreement or a Work Order or the Services and Goods provided except for those taxes levied upon the net income, gross receipts, real, or personal property of INTERA.

14.4. Assignment. Neither this Agreement and any Work Orders nor any rights or obligations under this Agreement and any Work Orders will be assigned or otherwise transferred by a Party without the prior written consent of the other Party except that INTERA may assign all or a portion of this the Services or Goods under a Work Order to a subcontractor or supplier without the prior written consent of the Client.

14.5. Waiver. The failure of either Party to exercise any right under this Agreement or any Work Order or to take any action permitted will not be

**MASTER TECHNICAL SERVICES AGREEMENT**

deemed a waiver of any right in the event of a subsequent breach of a like or different nature.

14.6. Entire Agreement. The terms and conditions set forth in this Agreement and a signed Work Order are intended by both Parties to constitute the final and complete statement of their agreement with respect to the subject matter of this Agreement and Work Order(s), and all prior proposals, communications, negotiations, agreements, understandings and representations relating the subject matter of this Agreement and Work Order(s) are hereby superseded. No modification or amendment of this Agreement or Work Order(s) will be effective unless the same is in writing and signed by both Parties.

14.7. Third Party Beneficiaries. Except as expressly provided to the contrary in this Agreement or Work Order(s) this Agreement does not and is not intended to confer any rights or remedies upon any person other than the Parties.

14.8. Law and Venue. This Agreement and Work Order(s) will be governed by and interpreted in accordance with the laws of the State of Texas and exclusive venue shall be in a court of competent jurisdiction in Travis County, Texas.

14.9. Severability. The invalidity or unenforceability of any provision of this Agreement and any Work Order will not affect the validity or enforceability of any other provision of this Agreement or Work Order(s), each of which will remain in full force and effect.

14.10. Captions. The Articles and Section captions in this Agreement are for convenience of reference only, do not constitute part of this Agreement and will not be deemed to limit or otherwise affect any of the provisions in the Agreement. Similarly, any captions in a Work Order are also for convenience and reference only, do not constitute part of the Work Order and will not be

deemed to limit or otherwise affect any of the provisions in the Work Order.

14.11. Construction. The Parties to this Agreement and any Work Order participated jointly in the negotiation and drafting of this Agreement and any Work Order. Therefore, in the event any ambiguity or question of intent or interpretation arises, this Agreement and any Work Order will be construed as if drafted jointly by the Parties and no presumption or burden of proof will arise favoring or disfavoring any Party by virtue of authorship of any of the provisions of this Agreement or any Work Order.

14.12. Counterparts. This Agreement and any Work Order may be executed in the original, by facsimile, by e-mail or by electronic signature in any number of counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

14.13. Professional Materials. INTERA may use these Services and Client's name in its promotional and professional materials. INTERA will not disclose information that is identified by Client as confidential or proprietary according to Article 8.

14.14. Survival. The provisions of Articles 5, 8, 10 and 12 and Sections 14.3, 14.8 and 14.13 of this Agreement will survive the termination or cancellation of this Agreement and the completion of the Scope of Services under any Work Order.

14.15. Priority. To the extent of conflict between the terms of a signed Work Order and the signed Agreement, the terms of the signed Work Order shall govern.

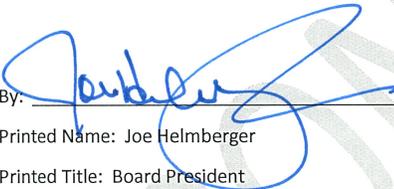
14.16. Attachments. The following attachments are made a part of this Agreement for all purposes:

- Attachment A - Master Rate Schedule
- Attachment B - Work Order Form

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representatives as of the date first above written.

**North Texas Groundwater Conservation District**

**INTERA Incorporated**

By:   
Printed Name: Joe Helmberger  
Printed Title: Board President

By:   
Printed Name: Wade Oliver  
Printed Title: Director

Project ID: \_\_\_\_\_

# MASTER TECHNICAL SERVICES AGREEMENT

## ATTACHMENT A: MASTER RATE SCHEDULE

### INTERA Labor Hourly Billing Rates

Labor Category	Rate (\$USD/hr.)
Principal Engineer/Scientist I	\$280
Principal Engineer/Scientist II	\$250
Principal Engineer/Scientist III	\$235
Senior Engineer/Scientist I	\$220
Senior Engineer/Scientist II	\$200
Senior Engineer Scientist III	\$185
Senior Engineer/Scientist IV	\$175
Engineer/Scientist I	\$165
Engineer/Scientist II	\$155
Engineer/Scientist III	\$135
Engineer/Scientist IV	\$125
Engineer/Scientist Intern	\$85
Senior Technician	\$140
Technician	\$85
Senior Technical Editor	\$140
Technical Editor	\$95
Senior CAD/Graphics Specialist	\$120
CAD/Graphics Specialist	\$95
Project Associate	\$88

There is a 15% mark up on other direct costs such as subcontractors, vendors, travel, and equipment. Mileage is reimbursed at the current IRS standard mileage rate.

# MASTER TECHNICAL SERVICES AGREEMENT

## WORK ORDER FORM

CLIENT: North Texas Groundwater Conservation District

PROJECT or CONTRACT ID: \_\_\_\_\_

WORK ORDER NO: 1

### 1.0 SCOPE OF SERVICES

The first task will be to convert the NTWGAM from MODFLOW-NWT to MODFLOW 6. This is a critical first step in the scope of work because it needs to be demonstrated that MODFLOW 6 can reliably reproduce the results of the 2014 NTWGAM. If the solutions between MODFLOW-NWT and MODFLOW 6 are not baselined, we run the risk of propagating errors in the updated model unrelated to the purposefully implemented modifications to the underlying model. The first subtask of Task A will be migrating the existing NTWGAM packages to MODFLOW 6 format. INTERA has converted many models to MODFLOW 6 over the last two years. We have developed scripts to support this process with error checking logic. To test the conversion and to identify any systematic differences between the codes, we will run the 2014 NTWGAM calibration simulation and the current GMA 8 MAG run. The end of this process represents a significant milestone, and we will meet with GMA 8 to provide a detailed analysis of the comparison of the two simulation codes.

Once we have demonstrated the successful conversion of the current NTWGAM to MODFLOW 6, we will meet with GMA 8 to discuss the objectives of the updated model with emphasis on correcting known errors, adding additional data collected by the GCDs, and improving functionality for groundwater management. For efficiency, this meeting can be combined with the model conversion meeting at the end of Task A. We will have already met with TWDB to discuss their interests in the update of the NTWGAM. Because of the importance of TWDB accepting the updated model, we will request that technical staff from TWDB attend any key model update meetings with GMA 8. Some of the already known key objectives of the model update are to extend the calibration period from 2012 through 2020, incorporate new data on structure and aquifer properties, and use the improved numerical capabilities of MODFLOW 6 to improve model efficiency, accuracy, and applicability to management at the district and GMA level.

In Milam County, the structural update will include evaluation of at least 12 geophysical logs in the Trinity group in addition to the logs used in the development of the previous GAM. We will also use these logs in Milam County to estimate water quality and refine the locations and offsets of faults.

To update the NTWGAM, we will establish an efficient workflow for model construction and calibration that minimizes construction errors and results in a purpose-built model. The applied workflow dictates how a groundwater model is constructed and deployed in a specific resource management context. This workflow deserves specific attention because it ultimately controls the quality and utility of the model. The INTERA Team brings experience applying reproducible modeling workflows built on a foundation of scripting and open-source software tools, so that all decisions and assumptions made during the modeling workflow are transparently and openly documented. The scripting-driven workflow brings significant advancements to improve efficiency, transparency, and ultimately quality, to all facets of the modeling process.

After we have met with GMA 8 and TWDB, and agreement has been reached on the particulars of the model update, we will start developing the updated model packages. The first subtask will be model discretization which includes horizontal grid size as well as layering. MODFLOW 6 enables revision of the model to an unstructured format, allowing variable grid dimensions as well as pinching and compositing layers that may exist in the current NTWGAM. The current model is difficult to use because of the large number of grid cells and the presence of a pass-through layer that connects the shallow outcrop portions of the aquifer from the deeper portions of the aquifer. We will explore simplifying this formulation for ease of use. We will also meet with GMA 8 and develop a rationale for relaxing the ¼-mile grid spacing in portions of the model grid where it is not required. Another place where model layering may be improved is in the handling of the Northern Segment of the Edwards (Balcones Fault Zone [BFZ]) Aquifer. The TWDB is developing an updated Edwards (BFZ) Aquifer GAM, and the integration of layering and properties between this model and the updated NTWGAM will facilitate groundwater management for southern GCDs within GMA 8 through the more accurate evaluation of pumping impacts from the southernmost counties in the aquifer system. Many of the GMA 8 member GCDs have also characterized faulting that is currently not implemented in the 2014 NTWGAM. We will work closely with these GCDs to ensure that this faulting is accurately represented in the updated NTWGAM.

Several transient stress packages will require extension from 2012 through 2020, including pumping, recharge, stream routing, and evapotranspiration (ET). Stream routing will be implemented in a manner consistent with the 2014 NTWGAM. The USGS Soil-Water-Balance (SWB) model (Westenbroek and others, 2010; Westenbroek and others, 2018) can be used for estimating recharge on a grid similar to that used for groundwater availability models. The SWB model code was successfully demonstrated to the TWDB when applied by Mr. Keester during an analysis of changes in soil moisture in four watersheds in the Upper Colorado River Basin (Furnans and others, 2019) and in developing estimates of the temporal and spatial distribution of recharge for aquifers in central and west Texas (Sen and others, 2022). In addition, the USGS applied the SWB model code to develop estimates of recharge to the Gulf Coast Aquifer System as part of the ongoing development of the GULF-2023 model.

The SWB code uses a combination of gridded and tabular data to calculate potential groundwater recharge separately for each grid cell within a model domain. The SWB code evaluates the sources and sinks of water within each grid cell at and near land surface and then calculates recharge as difference between the change in soil moisture and the sources and sinks. Sources for recharge include precipitation and inflow (surface runoff from an adjacent grid cell) while sinks include evapotranspiration, outflow (surface runoff to an adjacent grid cell), and interception (rainfall trapped and used by vegetation and evaporated or transpired from plant surfaces).

Over the past several years, GCDs within GMA 8 have worked with the TWDB TexMesonet group to establish several stations for collecting climate and soil moisture data. These data can now be applied during development of a SWB model to constrain the parameters used for calculating daily evapotranspiration, soil moisture, and potential infiltration. We propose following the approach developed for the TWDB to create a similar ensemble SWB model for GMA 8 including calibration to TexMesonet data using PESTPP-IES (White and others, 2020) and results processing for watersheds and aquifer outcrops. Drawing upon our previous experience with the code and data we will also apply lessons learned to improve efficiency in model development and application.

Results from the SWB model will be used in conjunction with analyses of recharge and evapotranspiration documented for the current NTWGAM (Kelley and others, 2014). The proposed SWB model will serve to increase our understanding of the sources of aquifer inflow and outflow in the outcrop area. Development of the SWB model will allow GMA 8 to apply TexMesonet data to further inform the conceptual model of potential recharge to the Edwards, Woodbine, and Trinity aquifers.

# MASTER TECHNICAL SERVICES AGREEMENT

## WORK ORDER FORM

Pumping will be updated from 2012 through 2020, using techniques for collection and allocation within the model domain consistent with the current NTWGAM with two exceptions. First, as part of collecting data from GCDs in GMA 8, we will obtain available data and analyses of groundwater use to compare to the water use data available through the TWDB. We will discuss major differences with both the GCDs and the TWDB to resolve any discrepancies in the new calibration period pumping data. Secondly, we will ensure that the transition in pumping between the last historical period of the current NTWGAM (2012) and 2013 is consistent with climatological changes or known water use trends.

The GCDs within GMA 8 have been collecting a significant amount of data on aquifer properties, including hydraulic conductivity, transmissivity and storativity. For the 2014 NTWGAM, hydraulic conductivity was scaled to the model scale through development of a geohydrostratigraphic model that correlated aquifer test derived values of hydraulic conductivity with formation, lithology, and depositional environments. Using the geohydrostratigraphic approach for the NTWGAM update, aquifer parameters could be assigned to the model grid based on known geological factors and the model being constrained by the available aquifer test data. We will compare new aquifer test parameters based on aquifer tests to the calibrated values at a given grid cell. Next, we will develop an averaging scheme that allows integration of the new data into the existing model parameter fields. Prior to calibration, we will develop a comparison of the frequency distribution of aquifer properties from the current NTWGAM and the updated initial parameter field to ensure that constraints on parameter perturbation during calibration are still consistent with those originally used. This will allow consistency with the 2014 NTWGAM while honoring new values that are significantly different than those used in the current model.

We will update calibration targets for the extended calibration period from 2012 through 2020. These targets will include water levels, stream baseflow estimates, and spring flows. Water levels will be collected from TWDB's Groundwater Database and from monitoring data from GCDs. We will request information from each GCD on their DFC compliance monitoring network. Because of the importance of model fit at compliance monitoring wells, we will investigate weighting options for compliance network water levels in the calibration task (Task C). Because surface water interaction is becoming a more important management objective, we will query GCDs on key spring flows that are managed to and make sure they are being appropriately included in the updated NTWGAM. Once the model packages are updated, we will meet with GMA 8 to present implementation of the new packages from 2012 through 2020. TWDB staff will also attend this meeting. After addressing any comments, re-calibration of the model will begin.

At the end of Task A, we will have demonstrated that the converted MODFLOW 6 NTWGAM meets the original calibration criteria documented in the report, Kelley and others 2014. In Task C, we will extend the calibration period from 2012 to 2020. Because the updated model will be incorporating additional data on properties, structure, and discretization, we will calibrate the updated model from 1890 through 2020. The key calibration metrics for the updated NTWGAM will be similar to the current model and will include water levels (heads), estimates of baseflow to streams, and springflow. The current NTWGAM calibration was also guided by a conceptual flow balance which will be used as a constraint in updating the model. As part of a pre-calibration activities, we will review model bias (misfit) with observed water levels and rates of water level change to focus calibration on improving historical water level misfit in the existing NTWGAM. We will achieve this through the calibration metric weighting discussed below.

We propose to use this approach in parameter estimation as well as in model construction. This extension is facilitated by use of the Python package pyEMU to programmatically undertake parameter estimation, and the iterative ensemble smoother PESTPP-IES, which greatly reduces the computational demand of nonlinear, high-dimensional parameter estimation. PESTPP-IES was developed by INTERA's Dr. Jeremy White and was recently used in the calibration of the GULF 2023 GAM for the northern Gulf Coast Aquifer and has been accepted by the TWDB for use on the Cross-Timbers Aquifer GAM, currently under development by INTERA. During parameter estimation, PESTPP-IES also performs an uncertainty analysis, effectively combining the calibration and uncertainty analysis workflows. As was done in the 2014 NTWGAM, calibration metrics will be weighted to reproduce the aspects of the historical dataset that are most aligned with the model objectives during the calibration process. Likewise, parameters adjusted during calibration, such as aquifer hydraulic conductivity, will have prior distributions defined to constrain parameter perturbation and prevent non-sensical parameterization while honoring field measurements. We will provide regular monthly updates to GMA 8 and the TWDB on progress during calibration. The updated and recalibrated NTWGAM model files will be provided to GMA 8 and TWDB for review before advancing to Task D – Predictive Simulations.

After the NTWGAM is successfully re-calibrated, we will perform a series of three predictive simulations, as defined by GMA 8. In 2014 and 2015, INTERA performed similar predictive simulations as part of developing the revised 2014 NTWGAM and under a separate contract with GMA 8. The three simulations to be performed as part of Task D are:

- Run 1 - Determine the amount of production that can occur in order to achieve the current GMA 8 DFC
- Run 2 - Determine what the GMA 8 DFCs would be assuming the current MAG values
- Run 3 - Determine the sustainable amount of production from the Trinity and Woodbine Aquifers

Run 1 will use the updated NTWGAM to produce a simulation with the right balance of pumping per aquifer and county to match the current DFC. To perform this simulation, we will keep pumping locations consistent with the current MAG run and optimally adjust pumping to close the misfit on DFCs per county per aquifer. We will use PEST to perform the optimization. Run 2 will use the updated NTWGAM to produce a simulation that predicts pumping (MAG equivalent) using the constraint of the current county/aquifer DFCs which are expressed in terms of drawdown. For this simulation, we will use PEST to optimize pumping on a county/aquifer basis that recreates the average county/aquifer drawdown equal to the current DFC. Again, pumping will be aggregated from model cells where pumping occurs in the current MAG run. This simulation is less unique than Run 1 and we will adopt a normalized methodology to modify county aquifer pumping. Run 3 will require discussion with GMA 8 member GCDs to define sustainable production in the context of GMA 8. The USGS defines sustainable groundwater development as the development and use of groundwater in a manner that can be maintained for an indefinite time without causing unacceptable environmental, economic, or social consequences (Alley and others). In 2014, INTERA simulated a run termed the "conservation run" which examined the amount of pumping that could occur per aquifer per county from 2025 to 2070 that would bring water levels back to 2010 levels (140,000 AFY in Trinity and 18,700 AFY Woodbine). After completing the model runs, we will present results to GMA 8 and document the simulations in a technical memorandum with all model files.

## 2.0 TERM

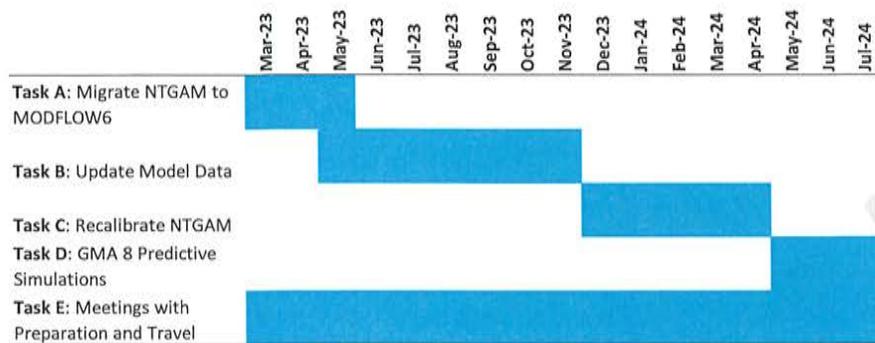
The term of this Work Order will commence on 7 March 2023 and will continue until 1 July 2025 unless sooner terminated by the Client and as provided in the Master Agreement.

# MASTER TECHNICAL SERVICES AGREEMENT

## WORK ORDER FORM

### 3.0 DELIVERABLES AND SCHEDULE

The table below shows our proposed 17-month schedule for completing each of the tasks described above. This schedule includes eight meetings of the GMA 8 GCDs over the period as well as the three virtual meetings with TWDB. This schedule is designed to provide sufficient time for the GMA 8 GCDs to review the model update and predictive simulations in Task D leading into the 2026 round of joint planning.



### 4.0 FEES/COMPENSATION/REIMBURSABLES

INTERA shall be compensated for work performed on either a Time and Materials or a Fixed Price basis as selected below:

TIME AND MATERIALS

FIXED PRICE

FIXED PRICE OR NOT TO EXCEED AMOUNT: \$591,100

Inclusive of any applicable taxes? YES  NO

### 5.0 DESIGNATED REPRESENTATIVES

CLIENT:

Printed Name: Paul Sigle  
 Phone: 855-426-4433  
 Email: p.sigle@northtexasgcd.org

INTERA:

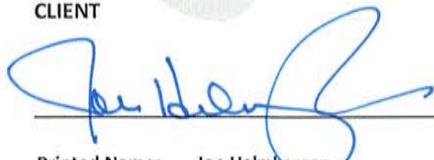
Printed Name: Wade Oliver  
 Phone: 832-535-5763  
 Email: woliver@intera.com

### 6.0 AUTHORIZATION

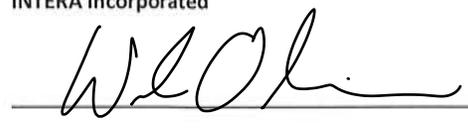
The Services and Goods in this Work Order shall be performed in accordance with the terms and conditions set forth in the Master Technical Services Agreement made on 7 March 2023 between the Client and INTERA.

This Work Order is agreed to and entered into on 7 March 2023.

CLIENT

  
 Printed Name: Joe Helmlinger

INTERA Incorporated

  
 Printed Name: Wade Oliver

MASTER TECHNICAL SERVICES AGREEMENT

WORK ORDER FORM

CONFIDENTIAL



INTERA Incorporated  
Three Sugar Creek Center Blvd., Suite 675  
Sugar Land, Texas 77478 USA  
281.560.4560

June 8, 2023

Paul Sigle, General Manager  
North Texas Groundwater Conservation District  
PO Box 508  
Gainesville, TX 76421

**RE: INTERA Invoice for Northern Trinity and Woodbine Aquifers GAM Update**

Dear Mr. Sigle,

This letter is to accompany the attached invoice for our work providing the Northern Trinity and Woodbine Aquifers GAM Update. This invoice covers all work from May 2023, and includes:

- Initial work converting existing model to MODFLOW6.
- Preparation for kickoff meeting with GMA 8 GCDs.
- Initial project data collection and data request to GMA 8 GCDs.
- Routine project management activities.

If you have any questions or need any further clarification, please do not hesitate to contact me. We appreciate the opportunity to work with you.

Sincerely,

A handwritten signature in blue ink that reads "Wade Oliver".

Wade Oliver, P.G.  
INTERA Incorporated



INTERA Incorporated  
 9600 Great Hills Trail, Suite 300W  
 Austin, Texas 78759 USA  
 512.425.2000

**North Texas Groundwater Conservation District**

**Paul Sigle**

5100 Airport Dr.  
 Denison, TX 75020

Invoice Number: **05-23-57**  
 Date: 06/14/2023  
 Terms: Net 30 Days

Billing Period: 05/01/23 - 05/31/23

Project: NTGCD.M002.NTWGAM-UPDATE  
 Northern Trinity and Woodbine Aquifers GAM Update

**WO #1**

Project Manager: Wade A. Oliver

**Task A Migrate NTGAM to MODFLOW6**

*Professional Services*

	Hours	Rate (\$/hr)	Billed Amount
Neil E. Deeds	1.00	280.00	\$280.00
Van A. Kelley	1.00	280.00	\$280.00
Wade A. Oliver	12.00	220.00	\$2,640.00
Andres E. Prieto Estrada	51.50	155.00	\$7,982.50
Ryan E. Harmon	12.00	155.00	\$1,860.00
Andrew W. Osborne	18.50	125.00	\$2,312.50
<i>Task A: Professional Services Subtotal</i>			96.00 \$15,355.00
<b>Task A Total</b>			<b>\$15,355.00</b>

**Task B Update Model Data**

*Professional Services*

	Hours	Rate (\$/hr)	Billed Amount
Andres E. Prieto Estrada	14.50	155.00	\$2,247.50
<i>Task B: Professional Services Subtotal</i>			14.50 \$2,247.50
<b>Task B Total</b>			<b>\$2,247.50</b>

**Task E Meetings with Preparation and Travel**

*Professional Services*

	Hours	Rate (\$/hr)	Billed Amount
Amanda N. Joiner	1.00	88.00	\$88.00
Wade A. Oliver	1.00	220.00	\$220.00

**Task E Meetings with Preparation and Travel**

**Professional Services**

<i>Task E: Professional Services Subtotal</i>	2.00	\$308.00
<b>Task E Total</b>		<b>\$308.00</b>

**INVOICE TOTAL** **\$17,910.50**

**Please remit payment to:**

**INTERA Incorporated  
9600 Great Hills Trail, Suite 300W  
Austin, TX 78759  
FEIN: 74-3010638**

**By ACH to:**

**JP Morgan Chase Bank, New York, NY  
ABA / Routing # 111000614  
Account #935156617  
INTERA Incorporated**

**By Wire Transfer:**

**JP Morgan Chase Bank, New York, NY  
Routing / Transit #: 021000021  
SWIFT Code: CHASUS33  
Account #935156617  
INTERA Incorporated**

ADJOURN