

July 8, 2025

Carly L. Farmer, PE, CFM  
Assistant City Engineer  
City of New Braunfels  
550 Landa Street  
New Braunfels, TX 78130

Re: Dry Comal Creek PMR

Dear Ms. Farmer,

Freese and Nichols, Inc. (FNI) is pleased to submit this proposal for providing professional engineering services to the City of New Braunfels (City) to update the effective Federal Emergency Management Agency (FEMA) floodplain mapping along Dry Comal Creek and Upper Dry Comal Creek, and submit a Physical Map Revision (PMR) application for FEMA's approval. The purpose of this project is to update the FEMA effective floodplain mapping along Dry Comal Creek and a portion of Upper Dry Comal Creek, from the confluence of Dry Comal Creek and Guadalupe River to the Soil Conservation Service (SCS) Site Number 2 Reservoir, using the best available hydrologic and hydraulic (H&H) models, and incorporate National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rainfall. A project location map is provided in **Figure 1**. The detailed scope of work (SOW) can be viewed in **Attachment A**.

#### TIME OF COMPLETION

FNI is authorized to commence work on the Project upon execution of this Agreement and agrees to complete the services in accordance with the detailed schedule included as **Attachment C**.

If FNI's services are delayed through no fault of FNI, FNI shall be entitled to equitable adjustment of compensation and FNI shall be entitled to adjust contract schedule consistent with the number of days of delay.

#### DELIVERABLES

- Project report in .doc and .pdf formats
- HEC-HMS and HEC-RAS models
- FEMA MT-2 forms
- GIS submittal: floodway, 100-year and 500-year floodplain delineations, Annotated FIRMs, Hydraulic Workmap, and all relevant shapefiles.

#### COMPENSATION

FNI will provide these services based on the rate schedule included as **Attachment CO**. These services shall be authorized for a maximum, not to exceed cost, of Two Hundred One Thousand Seventy Eight Dollars (\$201,078) in accordance with **Attachment B**. If FNI sees the Scope of Services changing so that Additional Services are needed, FNI will notify the City for OWNER's approval before proceeding.

Payment of the services shall be due and payable upon submission of a statement for services. Statements for services shall not be submitted more frequently than monthly.

Dry Comal Creek PMR

7/8/2025

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Sincerely,

Chris Trevino, PE, CCM

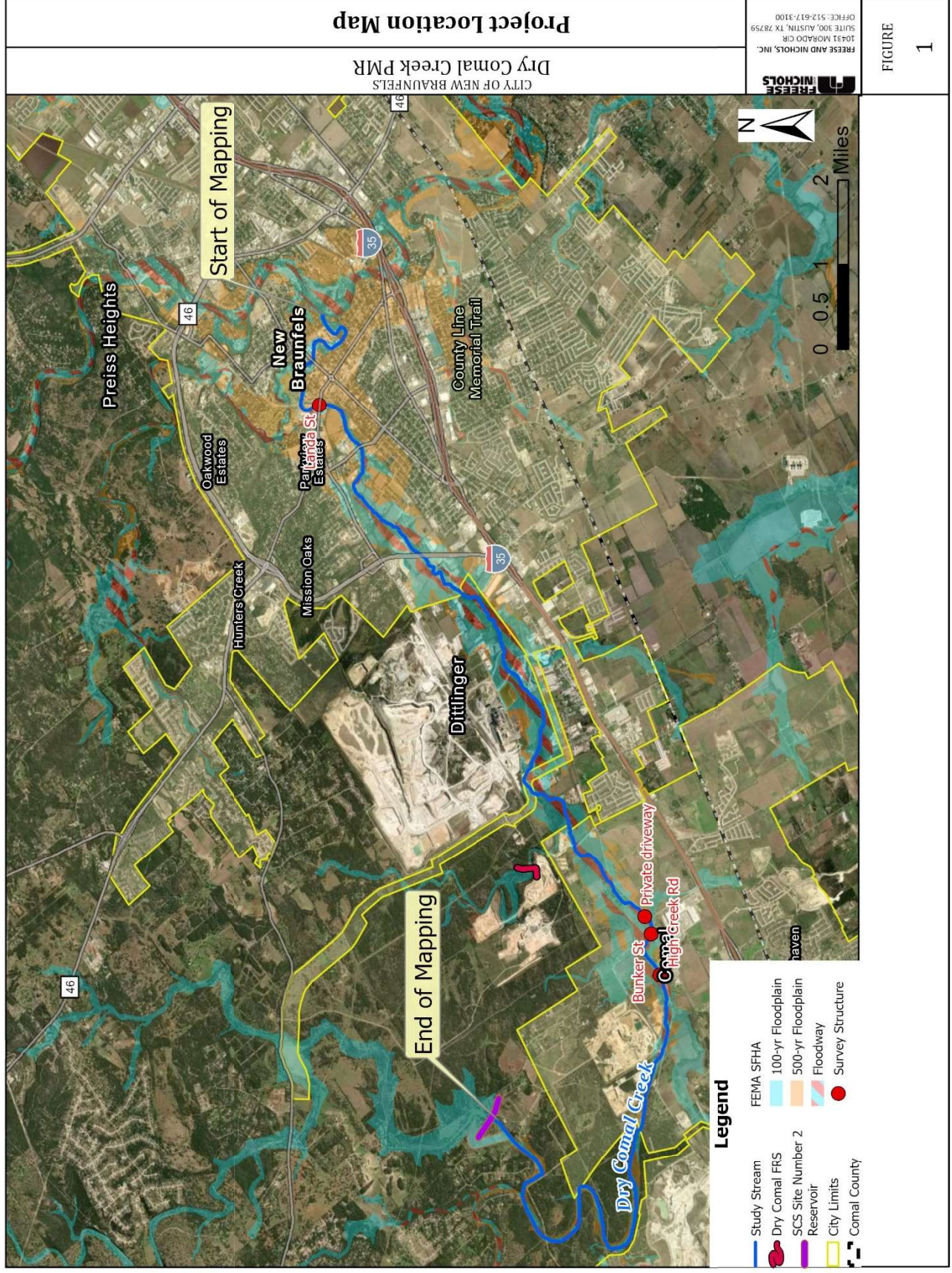
Central Texas Assistant Division Manager

cc:

Attachments:

- A: Scope of Work
- B: Fee
- C: Schedule
- CO: Compensation Rate
- D: Survey Proposal from Maestas & Associates, LLC (July 7, 2025)

DRAFT



## **ATTACHMENT A: Scope of Work**

### **TASK 1. Project Management**

Perform project coordination, including managing the schedule and quality control plan, and coordinating with the City throughout the duration of the project (approximately six months). Provide monthly status reports and invoices with backup documentation for the duration of the project.

### **TASK 2. Data Collection**

1. Topography: will use the same terrain applied in the New Braunfels Drainage Area Master Plan (DAMP) project and clip to the project location.
  - a. LiDAR datasets were obtained from TNRIS 2021 LiDAR and TNRIS 2019 LiDAR.
2. Best available HEC-RAS model for Dry Comal Creek from effective LOMR studies (13-06-2849P, 20-06-1144P, 23-06-2196P, and Town Creek LOMR), to be provided by the City.
3. FEMA effective HEC-RAS models for Dry Comal Creek and Upper Dry Comal Creek.
4. DAMP H&H models and existing land use data.
5. Texas General Land Office (GLO) Comal River-Guadalupe River HEC-HMS and HEC-RAS 2D models (completed October 2024).
6. FNI report and model from the Dry Comal Creek Flood Retarding Structure (dam) project along Dry Comal Creek Tributary 13.
7. Crossing structure data from construction as-builts, to be provided by the City.
8. Survey to be performed by a subconsultant. City will provide the right of entry (ROE) for survey. The detailed survey proposal provided by Maestas & Associates, LLC, dated July 7, 2025, is included in **Attachment D**. Survey deliverables include:
  - a. Digital LEGL and TOPO drawing files in AutoCAD format to include a prepared surface model.
  - b. Tree Table and surface xml/tin files.
  - c. Electronic copies of all field notes, pictures, and sketches prepared by the surveyor.

### **TASK 3. H&H Analysis and Floodplain Mapping**

1. Hydrology
  - a. FNI will review and utilize the HEC-HMS (version 4.10) model developed in the DAMP project. The HMS model incorporates NOAA Atlas 14 2-, 5-, 10-, 25-, 50-, 100- and 500-year frequency events rainfall, and includes the Dry Comal Creek Flood Retarding Structure (the dam) along Dry Comal Creek Tributary 13.
  - b. Only the existing land use conditions will be included in hydrologic analysis.
  - c. FNI will add depth-area analysis in the HMS model.
  - d. The DAMP hydrologic model assumes all quarries along Dry Comal Creek drain directly into Dry Comal Creek and do not account for any storage. This assumption will be maintained for this effort.
2. Hydraulics
  - a. FNI will coordinate with the City to obtain the best available HEC-RAS model from the effective LOMR studies.
  - b. FNI will utilize the best available model and update to the latest version of HEC-RAS (version 6.6 or newer). The model will include the Duplicate Effective, Corrected Effective, Existing Conditions, and Floodway plans.
  - c. FNI will perform the following updates to the best available model:
    - i. Update the best available HEC-RAS model to include the entire mapping extent using FEMA effective models for Dry Comal Creek and Upper Dry Comal Creek.

- ii. Update crossing structure inputs using construction as-builts, DAMP HEC-RAS model, survey data to be provided by a survey subconsultant, and survey data from the GLO study.
  - iii. Review the model and update the Existing Conditions cross-section geometries using the latest terrain data.
  - iv. Review and update the Existing Conditions Manning's n values based on aerial imagery if necessary.
  - v. Update the Existing Conditions plan to Atlas 14 flows.
  - vi. Develop floodway modeling.
- 3. Floodplain Mapping
  - a. FNI will develop the following mappings by exporting the floodplain boundary from RASMapper with minimal smoothing and cleanup. The final products will not be in the fully attributed FEMA geodatabase format.
    - i. Floodway mapping.
    - ii. 100-year floodplain mapping.
    - iii. 500-year floodplain mapping.
  - b. Tie-in locations
    - i. Downstream: at the confluence of Dry Comal Creek and Guadalupe River.
    - ii. Upstream: at a location just downstream of the Soil Conservation Service (SCS) Site Number 2 Reservoir.
    - iii. Tie-in with tributaries: the floodplain along Dry Comal Creek will tie-in with the effective floodplain at tributaries. Mapping for the tributaries is not included in this scope. It is assumed that certain tributaries may be remapped based on the existing flood profiles and model results if the Dry Comal Creek water surface elevations decrease at those confluences.

#### **TASK 4. PMR Submittal**

- 1. Project report documenting the hydrologic and hydraulics methodology and model results.
- 2. HEC-HMS and HEC-RAS models.
- 3. GIS submittal
  - a. Maps: five (5) annotated FIRM panels, and topographic workmap.
  - b. Shapefiles: floodplain delineations and relevant shapefiles required for PMR submittal (S\_FLD\_HAZ\_AR, S\_FLD\_HAZ\_LN, S\_LOMR, S\_XS, and S\_GEN\_STRUCT).
  - c. It is assumed that FEMA's contractor reviewer will prepare the final FIRM panels and incorporate shapefiles ((including attribution) into FEMA's geodatabases.
- 4. FEMA MT-2 forms. FNI assumes that the City of New Braunfels will pay the fee when we submit the review to FEMA, which is currently listed as \$8,000 (online) plus \$2,500 per FIRM panel on FEMA's website (total of \$20,500).
- 5. Address FEMA review comments on hydrology, hydraulics, and GIS submittal. It is assumed that there will be three (3) rounds of FEMA Review.

ATTACHMENT B

| Dry Comal Creek PMR<br>7/7/2025 |    |  |         |  |
|---------------------------------|----|--|---------|--|
| Project Fee Summary             |    |  |         |  |
| Basic Services                  | \$ |  | 201,078 |  |
| Special Services                | \$ |  | -       |  |
| Total Project                   | \$ |  | 201,078 |  |

| Task Description                                                                      | Labor            |                 |                 |                  |                  | Total Hours     | Total Labor Effort | Expenses                  |                      | Subconsultants   |                  | Total             |
|---------------------------------------------------------------------------------------|------------------|-----------------|-----------------|------------------|------------------|-----------------|--------------------|---------------------------|----------------------|------------------|------------------|-------------------|
|                                                                                       | PM               | SA              | QC              | EIT              | GIS              | OA              |                    | FEMA PMR Fees (\$ FIRM's) | Total Expense Effort | Maestas (Survey) | Total Sub Effort |                   |
| <b>Project Management</b>                                                             |                  |                 |                 |                  |                  |                 |                    |                           |                      |                  |                  |                   |
| Project setup                                                                         | 4                |                 |                 |                  |                  |                 | 4                  |                           | \$ -                 |                  | \$ -             | \$ -              |
| Internal kickoff meeting                                                              | 3                | 1               | 1               | 2                | 1                |                 | 8                  |                           | \$ -                 |                  | \$ -             | \$ -              |
| External kickoff meeting                                                              | 3                |                 |                 | 2                |                  |                 | 5                  |                           | \$ -                 |                  | \$ -             | \$ -              |
| Internal meetings                                                                     | 32               | 8               | 8               | 32               | 16               |                 | 96                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Project Coordination Meetings (3)                                                     | 9                |                 |                 | 6                |                  |                 | 15                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Project Tracking (Schedule and Financials) (8 mo)                                     | 36               |                 |                 |                  |                  |                 | 36                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Monthly Reporting / Periodic client communications (8 mo)                             | 16               |                 |                 |                  |                  | 8               | 24                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Corporate Support (Operations Analyst, Accounting Specialist, Contract Administrator) |                  |                 |                 |                  |                  | 8               | 8                  |                           | \$ -                 |                  | \$ -             | \$ -              |
| <b>Data Collection</b>                                                                |                  |                 |                 |                  |                  |                 |                    |                           |                      |                  |                  |                   |
| Survey                                                                                | 8                |                 |                 | 16               |                  |                 | 24                 |                           | \$ -                 |                  | \$ -             | \$ -              |
|                                                                                       | 4                |                 |                 |                  |                  |                 | 4                  |                           | \$ -                 |                  | \$ -             | \$ -              |
| <b>Hydrologic Analysis</b>                                                            |                  |                 |                 |                  |                  |                 |                    |                           |                      |                  |                  |                   |
| Develop depth-area analysis                                                           | 8                | 2               |                 | 16               |                  |                 | 26                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Export model results                                                                  | 4                | 2               |                 | 16               |                  |                 | 22                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| <b>Hydraulic Analysis</b>                                                             |                  |                 |                 |                  |                  |                 |                    |                           |                      |                  |                  |                   |
| Update model to include the entire mapping extent                                     | 2                | 2               |                 | 8                |                  |                 | 12                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Update crossing structure inputs                                                      | 4                | 2               |                 | 16               |                  |                 | 22                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Review and update XS geometry and Manning's n, if necessary                           | 6                | 2               |                 | 32               |                  |                 | 40                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Update to Atlas 14 flows                                                              | 2                |                 |                 | 6                |                  |                 | 8                  |                           | \$ -                 |                  | \$ -             | \$ -              |
| Develop Floodway Model                                                                | 6                | 2               |                 | 16               |                  |                 | 24                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| QC and Correct Model                                                                  | 4                |                 | 4               | 8                |                  |                 | 18                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Floodplain mapping for the existing 100-yr and 500-yr                                 | 2                | 2               |                 | 8                | 8                |                 | 20                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Floodway mapping                                                                      | 2                | 2               |                 | 2                | 4                |                 | 10                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| <b>PMR/FEMA Coordination</b>                                                          |                  |                 |                 |                  |                  |                 |                    |                           |                      |                  |                  |                   |
| Prepare Models for submission                                                         | 8                |                 |                 | 16               |                  |                 | 24                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Prepare FEMA MIT-2 Forms                                                              | 8                |                 |                 | 8                |                  |                 | 16                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Prepare PMR Report                                                                    | 16               |                 |                 | 40               |                  |                 | 56                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Prepare five (5) Annotated FIRM's, topographic workmap, and GIS shapefiles            | 8                |                 |                 | 8                | 32               |                 | 48                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| QC and address comments                                                               | 8                | 2               | 8               | 16               | 16               |                 | 50                 |                           | \$ -                 |                  | \$ -             | \$ -              |
| Submit PMR                                                                            | 2                |                 |                 | 4                |                  |                 | 6                  |                           | \$ -                 |                  | \$ -             | \$ -              |
| FEMA Coordination/Address FEMA comments (3 rounds)                                    | 24               | 3               | 6               | 48               | 36               |                 | 117                |                           | \$ -                 |                  | \$ -             | \$ -              |
| <b>Total Hours / Quantity</b>                                                         | <b>229</b>       | <b>32</b>       | <b>27</b>       | <b>326</b>       | <b>113</b>       | <b>16</b>       | <b>743</b>         | <b>20,500</b>             | <b>\$ -</b>          | <b>\$ 38,130</b> | <b>\$ -</b>      | <b>\$ 20,001</b>  |
| <b>Total Effort</b>                                                                   | <b>\$ 44,197</b> | <b>\$ 9,504</b> | <b>\$ 5,913</b> | <b>\$ 55,420</b> | <b>\$ 15,707</b> | <b>\$ 2,912</b> | <b>\$ 133,653</b>  | <b>\$ 23,575</b>          | <b>\$ 23,575</b>     | <b>\$ 43,850</b> | <b>\$ 43,850</b> | <b>\$ 201,078</b> |

ATTACHMENT C. SCHEDULE

| ID | Task Mode | Task Name                                               | Duration | Start        | Finish       | Predecessors |
|----|-----------|---------------------------------------------------------|----------|--------------|--------------|--------------|
| 1  |           | <b>Notice To Proceed</b>                                | 0 days   | Mon 10/6/25  | Mon 10/6/25  |              |
| 2  |           | <b>Task 1 - Project Management</b>                      | 34 wks   | Mon 10/6/25  | Fri 5/29/26  | 1            |
| 3  |           | 1.1 Project setup                                       | 1 wk     | Mon 10/6/25  | Fri 10/10/25 | 1            |
| 4  |           | 1.2 kickoff meetings                                    | 1 wk     | Mon 10/6/25  | Fri 10/10/25 | 1            |
| 5  |           | <b>Task 2 - Data Collection</b>                         | 1 wk     | Mon 10/13/25 | Fri 10/17/25 | 4            |
| 6  |           | 2.1 Structure Survey                                    | 4 wks    | Mon 10/6/25  | Fri 10/31/25 | 1            |
| 7  |           | <b>Task 3 - H&amp;H Analysis and Floodplain Mapping</b> | 65 days  | Mon 10/20/25 | Fri 1/16/26  | 5            |
| 8  |           | <b>3.1 Hydrology</b>                                    | 10 days  | Mon 10/20/25 | Fri 10/31/25 | 5            |
| 9  |           | 3.1.1 Develop depth-area analysis                       | 1 wk     | Mon 10/20/25 | Fri 10/24/25 | 4            |
| 10 |           | 3.1.2 Export model results                              | 1 wk     | Mon 10/27/25 | Fri 10/31/25 | 9            |
| 11 |           | <b>3.2 Hydraulics</b>                                   | 45 days  | Mon 11/3/25  | Fri 1/2/26   | 10           |
| 12 |           | 3.2.1 Review Previous Studies                           | 1 wk     | Mon 11/3/25  | Fri 11/7/25  | 10           |
| 13 |           | 3.2.2 Update crossing structure inputs                  | 1 wk     | Mon 11/3/25  | Fri 11/7/25  | 6            |
| 14 |           | 3.2.3 Update cross-sections and Manning's n             | 1 wk     | Mon 11/10/25 | Fri 11/14/25 | 13           |
| 15 |           | 3.2.4 Update to Atlas 14 flows                          | 1 wk     | Mon 11/17/25 | Fri 11/21/25 | 14           |
| 16 |           | Thanksgiving Holiday                                    | 1 wk     | Mon 11/24/25 | Fri 11/28/25 | 15           |
| 17 |           | 3.2.5 Develop Floodway Model                            | 1 wk     | Mon 12/1/25  | Fri 12/5/25  | 16           |
| 18 |           | 3.2.6 QC                                                | 1 wk     | Mon 12/8/25  | Fri 12/12/25 | 17           |
| 19 |           | 3.2.7 Address comments                                  | 1 wk     | Mon 12/15/25 | Fri 12/19/25 | 18           |
| 20 |           | Christmas Holiday                                       | 2 wks    | Mon 12/22/25 | Fri 1/2/26   | 19           |
| 21 |           | <b>3.3 Mapping</b>                                      | 10 days  | Mon 1/5/26   | Fri 1/16/26  |              |
| 22 |           | 3.3.1 Floodplain mapping                                | 1 wk     | Mon 1/5/26   | Fri 1/9/26   | 20           |
| 23 |           | 3.3.2 Floodway mapping                                  | 1 wk     | Mon 1/12/26  | Fri 1/16/26  | 22           |
| 24 |           | <b>Task 4 - PMR Submittal</b>                           | 95 days  | Mon 1/12/26  | Fri 5/22/26  |              |
| 25 |           | 4.1 Prepare Models for submission                       | 1 wk     | Mon 1/12/26  | Fri 1/16/26  | 22           |
| 26 |           | 4.2 Project report                                      | 1 wk     | Mon 1/19/26  | Fri 1/23/26  | 23           |
| 27 |           | 4.3 FEMA MT-2 Forms                                     | 1 wk     | Mon 1/26/26  | Fri 1/30/26  | 26           |
| 28 |           | 4.4 Prepare GIS submittal                               | 1 wk     | Mon 1/26/26  | Fri 1/30/26  | 26           |
| 29 |           | 4.5 QC                                                  | 1 wk     | Mon 2/2/26   | Fri 2/6/26   | 28           |
| 30 |           | 4.6 Address QC comments                                 | 1 wk     | Mon 2/9/26   | Fri 2/13/26  | 29           |
| 31 |           | 4.7 Submit for City's review                            | 2 wks    | Mon 2/16/26  | Fri 2/27/26  | 30           |
| 32 |           | 4.8 Address City's comments                             | 2 wks    | Mon 3/2/26   | Fri 3/13/26  | 31           |
| 33 |           | 4.9 Submit PMR for FEMA Review                          | 1 wk     | Mon 3/16/26  | Fri 3/20/26  | 32           |
| 34 |           | 4.10 FEMA Review (1st Round)                            | 2 wks    | Mon 3/23/26  | Fri 4/3/26   | 33           |
| 35 |           | 4.11 Address FEMA comments                              | 1 wk     | Mon 4/6/26   | Fri 4/10/26  | 34           |
| 36 |           | 4.12 FEMA Review (2nd Round)                            | 2 wks    | Mon 4/13/26  | Fri 4/24/26  | 35           |
| 37 |           | 4.13 Address FEMA comments                              | 1 wk     | Mon 4/27/26  | Fri 5/1/26   | 36           |
| 38 |           | 4.14 FEMA Review (3rd Round)                            | 2 wks    | Mon 5/4/26   | Fri 5/15/26  | 37           |
| 39 |           | 4.15 Address FEMA comments                              | 1 wk     | Mon 5/18/26  | Fri 5/22/26  | 38           |
| 40 |           | <b>Final PMR Submittal</b>                              | 1 wk     | Mon 5/25/26  | Fri 5/29/26  | 39           |

Project: Schedule\_2022-05-04\_

Date: Mon 7/7/25

Task

Split

Milestone

Summary

Project Summary

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

External Milestone

Deadline

Progress

Manual Progress

Slippage

Page 1

| <u>Position</u>               | <u>Hourly Rate</u> |
|-------------------------------|--------------------|
| Professional 1                | 139                |
| Professional 2                | 170                |
| Professional 3                | 193                |
| Professional 4                | 219                |
| Professional 5                | 257                |
| Professional 6                | 297                |
| Construction Manager 1        | 120                |
| Construction Manager 2        | 150                |
| Construction Manager 3        | 163                |
| Construction Manager 4        | 203                |
| Construction Manager 5        | 245                |
| Construction Manager 6        | 282                |
| Construction Representative 1 | 108                |
| Construction Representative 2 | 120                |
| Construction Representative 3 | 150                |
| Construction Representative 4 | 163                |
| CAD Technician/Designer 1     | 118                |
| CAD Technician/Designer 2     | 155                |
| CAD Technician/Designer 3     | 189                |
| Corporate Project Support 1   | 114                |
| Corporate Project Support 2   | 137                |
| Corporate Project Support 3   | 182                |
| Intern / Coop                 | 77                 |

**Rates for In-House Services and Equipment**

| <u>Mileage</u>     | <u>Bulk Printing and Reproduction</u> |              | <u>Equipment</u>                     |                 |
|--------------------|---------------------------------------|--------------|--------------------------------------|-----------------|
| Standard IRS Rates | <u>B&amp;W</u>                        | <u>Color</u> | Valve Crew Vehicle (hour)            | \$75            |
|                    | Small Format (per copy)               | \$0.10       | Pressure Data Logger (each)          | \$500           |
|                    | Large Format (per sq. ft.)            |              | Water Quality Meter (per day)        | \$100           |
|                    | Bond                                  | \$0.25       | Microscope (each)                    | \$150           |
|                    | Glossy / Mylar                        | \$0.75       | Ultrasonic Thickness Guage (per day) | \$275           |
|                    | Vinyl / Adhesive                      | \$1.50       | Coating Inspection Kit (per day)     | \$275           |
|                    |                                       |              | Flushing / Cfactor (each)            | \$500           |
|                    | Mounting (per sq. ft.)                | \$2.00       | Backpack Electrofisher (each)        | \$1,000         |
|                    | Binding (per binding)                 | \$0.25       |                                      |                 |
|                    |                                       |              | <u>Survey Grade</u>                  | <u>Standard</u> |
|                    |                                       |              | Drone (per day)                      | \$200 \$100     |
|                    |                                       |              | GPS (per day)                        | \$150 \$50      |

**OTHER DIRECT EXPENSES:**

Other direct expenses are reimbursed at actual cost times a multiplier of 1.15. They include outside printing and reproduction expense, communication expense, travel, transportation and subsistence away from the FNI office. For other miscellaneous expenses directly related to the work, including costs of laboratory analysis, test, and other work required to be done by independent persons other than staff members, these services will be billed at a cost times a multiplier of 1.15. For Resident Representative services performed by non-FNI employees and CAD services performed In-house by non-FNI employees where FNI provides workspace and equipment to perform such services, these services will be billed at cost times a multiplier of 2.0. This markup approximates the cost to FNI if an FNI employee was performing the same or similar services.

**These ranges and/or rates will be adjusted annually in February. Last updated 2025.**

July 7, 2025

Freese & Nichols, Inc.  
Liting Tao, P.E., CFM  
9601 McAllister Freeway, Suite 1008  
San Antonio, Texas 78216

**REF: Surveying and Subsurface Utility Engineering Services for the GBRA Sunfield Water Reclamation Facility Expansion**

Dear Ms. Tao:

Maestas & Associates LLC (Maestas) is pleased to provide Freese & Nichols, Inc (FNI) with this estimate for Surveying services for the City of New Braunfels Dry Comal Creek Structures Project. The base scope of work involves Maestas performing a topographic and improvement survey at four creek crossings located at High Creek Road, Bunker Street, a private road located on the Anderson Columbia Co property, and at Landa Street (Hwy 46) in Comal County, Texas.

**BASE SCOPE OF SURVEYING SERVICES:**

1. Records Research:
  - a. Using Comal County Appraisal District (CCAD) and Comal County Clerk websites, Maestas will gather ownership and deed information for the base drawing. Maestas will research existing plats, Right-of-Way (R.O.W.) maps, deeds, easements and perform a retracement survey to locate fence corners, monuments, iron pins, etc., to analyze and establish existing R.O.W.'s and boundary lines.
  - b. The preliminary base map will display any R.O.W.'s, easements, and boundaries along with record land ownership information and addresses as publicly available through CCAD.
2. Submit an 811 ticket to mark utilities within public rights-of-way.
3. Establish horizontal and vertical control at each site.
  - a. Horizontal control will be based on the Texas State Plane Coordinate System, South Central Zone (4204), NAD 83 (2011).
  - b. Vertical control will be based on the closest NGS monument to each site. Differential levels will be run from the NGS monuments through all control points and benchmarks established at each site.
4. Perform a boundary and R.O.W. retracement and resolution survey for each site.
5. Perform a topographic, tree, and improvement survey at each site to include the following:
  - a. Cross sections will be taken at 50-foot stations and at all significant grade breaks in between sufficient to produce a surface model at 1-foot contour intervals.
  - b. Topo will cover the width of the creek within the top of banks and extend outside of the banks by 100 feet. Topo will cover the full width of each road R.O.W. for the same extent of the creek cross sections. Topo along the creek will extend up / downstream at least 100 LF outside of the road R.O.W.'s or from the edge of the road where wholly on private property.
  - c. Locate all visible improvements including, but not limited to, tops of curbs, edges of pavement, pavement material, mailboxes, driveways, sidewalks, property monuments, utility poles, site

equipment, valves, slabs, utility signs and structures, fences, landscaping features, shrubbery, trees, buildings (footprint and finished floor elevation), cleanouts, etc.

- i. Locate all drainage structures to include culvert pipe sizes, material, and invert/flow line elevations.
  - ii. Bridges will include (but not limited to) perimeter of deck, deck elevations, support column locations and sizes, low chord elevations, abutments, and armor joints.
- d. All manholes within the project limits will be located and detailed to collect pipe inverts, material, and directions. Next upstream/downstream manhole will be located outside of limits if accessible.
- e. Measure downs to the operating nut will be collected at all valves. Next upstream/downstream valve outside of the project limits will be collected if accessible.
- f. Trees 6-inches and larger at DBH will be located.
6. Prepare deliverables to include:
  - a. Digital LEGL and TOPO drawing files in AutoCAD format to include a prepared surface model.
    - i. All surveyed points will be included in the drawing.
    - ii. Horizontal and vertical control used to perform the survey will be depicted and annotated within the drawing file referencing material type, coordinates and elevations.
  - b. Tree Table and surface xml/tin files.
  - c. Electronic copies of all field notes, pictures, and sketches prepared by the surveyor.
7. Perform QA/QC of all deliverables prior to submittal.

**GENERAL NOTES AND EXCEPTIONS:**

1. Right of entry (ROE) to access private/commercial properties is necessary to complete the survey as outlined above. ROE is not a part of this proposal and is the responsibility of the Client/City of New Braunfels.

Our estimated **Lump Sum** fee for the **Base Scope of Surveying Services** will be **\$38,130.00** broken down as follows:

- High Creek Road = \$7,790.00
- Bunker Street = \$9,055.00
- Anderson Columbia Co Property = \$9,135.00
- Landa Street = \$12,150.00

Sincerely,  
Maestas & Associates LLC



Keith Keppler, RPLS  
Vice President / Survey and S.U.E. Division

