PURCHASE ORDER

VENDOR

TEXAS A&M FOREST SERVICE
PURCHASING DEPARTMENT

Order Date
06/13/2022

Page 01

200 Technology Way, Suite 1120, College Station, TX 77845-3424; Phone 979-458-7380, FAX 979-458-7386

Purchase Order No.	(Include this number on all correspondence and packages)
P200413	

VENDOR GUARANTEES MERCHANDISE DELIVERED ON THIS ORDER WILL MEET OR EXCEED SPECIFICATIONS IN THE BID INVITATION.

INVOICE TO:

TEXAS A&M FOREST SERVICE
FRP--ASSOCIATE DIRECTOR
200 TECHNOLOGY WAY, SUITE 1162
COLLEGE STATION TX 77845-3424

VENDOR

15413014130
TIMMONS GROUP INC
1001 BOULDERS PKWY STE 300
NORTH CHESTERFIELD, VA 23225-5512

- -

ALL TERMS AND CONDITIONS SET FORTH IN OUR BID INVITATION BECOME A PART OF THIS ORDER.

SHIP TO:

TEXAS A&M FOREST SERVICE
FRP--ASSOCIATE DIRECTOR
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COLLEGE STATION TX 77845-3424

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Item	Description	Quantity	UOM	Unit Price	Ext Price
	USER REF: 000000-LNM				
1	4.1.1 Project initiation and kickoff	1	EA	2,200.000	2,200.00
2	4.1.2 Define analysis area, FOA extent, and fuelscape extent	1	EA	1,100.000	1,100.00
3	4.2.1 Develop a proccess or tool for managing fuel model rulesets	1	EA	13,750.000	13,750.00
4	4.2.2 Provide fuel model selection support	1	EA	13,750.000	13,750.00
5	4.2.3 Provide guidance on mapping initial canopy fuel parameters	1	EA	13,750.000	13,750.00
6	4.2.4 CReview TAMFS pre-calibration fuelscape rasters	1	EA	1,650.000	1,650.00
7	4.3.1 Develop gridded historical Weather-Type Probabilities (WTPs) at 4-km resolution	1	EA	2,750.000	2,750.00
8	4.4.1 Initial fire behavior simulations on pre-calibration fuelscape	1	EA	16,500.000	16,500.00
9	4.5.1 Fuel calibration workshops	1	EA	16,500.000	16,500.00
10	4.5.2 Review final fuelscape rasters	1	EA	1,650.000	1,650.00
11	4.6.1 Compile and review National FSim BP	1	EA	2,750.000	2,750.00
12	4.6.2 Compile and review historical fire occurrence by FOA including trend analysis	1	EA	12,100.000	12,100.00
13	4.6.3 Compile and review wind data by FOA	1	EA	5,500.000	5,500.00
14	4.6.4 Parameterize FSim	1	EA	13,750.000	13,750.00
AJD					

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FOB: DESTINATION FRT INCLUDED

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The State of Texas is exempt from all Federal Excise Taxes.

STATE AND CITY SALES TAX EXEMPTION CERTIFICATE: The undersigned claims an exemption from taxes under Texas Tax Code, Section 151.309 (4), for purchase of tangible personal property described in this numbered order, purchased from contractor and/or shipper listed above, as this property is being secured for the exclusive use of the State of Texas.

The Terms and Conditions of the State of Texas shall prevail.

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Alan Degelman

PURCHASING AGENT FOR
TEXAS A&M FOREST SERVICE

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Item	Description	Quantity	UOM	Unit Price	Ext Price
15	4.6.5 Calibration runs for each FOA at 120-m resolution	1	EA	27,500.000	27,500.00
16	4.6.6 Final runs for each FOA at 120-m with minimum 10,000 iterations	1	EA	16,500.000	16,500.00
17	4.7.1 Flame front characteristics	1	EA	16,500.000	16,500.00
18	4.7.2 Conditional ember production and load characteristics	1	EA	16,500.000	16,500.00
19	4.7.3 Ember production and load characteristics	1	EA	16,500.000	16,500.00
20	4.7.4 Wildfire risk to homes	1	EA	16,500.000	16,500.00
21	4.7.5 Integrated measures	1	EA	5,500.000	5,500.00
22	4.8.1 Final Report & Presentation	1	EA	38,500.000	38,500.00
23	4.9.1 Interim risk to homes, infrastructure, timber, and drinking water	1	EA	27,500.000	27,500.00
24	4.9.2 HVRA discovery workshop	1	EA	13,750.000	13,750.00
25	4.10.1 Stochastic modeling and resoruce optimization discovery workshop	1	EA	8,250.000	8,250.00
				TOTAL	321,200.00
	***** NET 30 *****				
	NOTE TO VENDOR: "SHIP TO" AND "INVOICE TO" ADDRESSES MAY				
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Item	Description	Quantity	UOM	Unit Price	Ext Price
	DIFFER. FAILURE TO SUBMIT INVOICE TO PROPER ADDRESS MAY RESULT IN DELAYED PAYMENT. BY ACCEPTANCE OF THIS PURCHASE ORDER VENDOR AGREES TO ALL TERMS AND CONDITIONS (AS APPLICABLE) LISTED ON ATTACHED "TEXAS A&M FOREST SERVICE PURCHASE ORDER--ATTACHMENT A". VENDOR HEREBY CERTIFIES THAT THE NETWORK HARDWARE OR SOFTWARE, AS APPLICABLE, PROCURED OR LEASED UNDER THIS CONTRACT, HAS UNDERGONE INDEPENDENT CERTIFICATION TESTING FOR KNOWN AND RELEVANT VULNERABILITIES IN ACCORDANCE WITH SECTION 2059.060 OF THE TEXAS GOVERNMENT CODE. EXEMPTION: PURCHASES FROM VENDORS AWARDED FEDERAL CONTRACTS. TERMS & CONDS OF GSA CONTRACT# GS-35F-0462T AND AGENCY T&C'S SHALL APPLY. VENDOR'S STATEMENT OF WORK ATTACHED. VENDOR QUOTE: TWRA2022 VENDOR REF: CHRIS GERECKE 804-334-9243				

AJD

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PURCHASING AGENT FOR
TEXAS A&M FOREST SERVICE

STATEMENT OF WORK

TWRA 2022 Update

Phase I – Fuels and Fire Behavior Characterization

5/24/2022

Table of Contents

1 Introduction

Texas A&M Forest Service (TAMFS) seeks to update the Texas Wildfire Risk Assessment (TWRA) and deploy the results to the Texas Wildfire Risk Assessment Portal (TxWRAP)[1]. This project is incorporated by reference to and shall be in full compliance with the terms and conditions of the GSA Consolidated Schedule with Timmons Group, Inc.—No. GS-35F-0462T.

The purpose of the TWRA 2022 Update Project is to develop and implement an updated risk assessment that accurately portrays current risk conditions, increases user engagement, and improves the overall utility of TxWRAP. Furthermore, it will help keep TxWRAP as the go-to source for obtaining, communicating, and managing wildfire risk information across the state. The TWRA 2022 Update will be administered in phases based on available funding. Accordingly, Phase I will concentrate on fuels and fire behavior characterization. Subsequent phases will address:

- Valued Resource and Asset (HVRA) Characterization
- Wildfire Risk Production
- Summary Statistics Generation
- Deployment of Results to TxWRAP

TWRA 2022 Update will utilize the best available data and adopt the latest scientific methods and nationally recognized nomenclature for wildfire risk assessments. The selected publications listed below will guide the development and implementation of the TWRA update. If necessary, new and innovative risk metrics will be developed to help highlight wildfire-related issues in Texas.

Reference Publications:

- Scott, Joe H.; Thompson Matthew P.; Calkin, David E. (2013) A Wildfire Risk Assessment Framework for Land and Resource Management. General Technical Report FMRS-GTR-315. USDA Forest Service, Rocky Mountain Research Station, 83 p.
- Scott, Joe H.; Brough, April M.; Gilbertson-Day, Julie W.; Dillon, Gregory K.; Moran, Christopher. 2020. Wildfire Risk to Communities: Spatial datasets of wildfire risk for populated areas in the United States. Fort Collins, CO: Forest Service Research Data Archive. https://doi.org/10.2737/RDS-2020-0060
- Scott, Joe H.; Gilbertson-Day, Julie W.; Moran, Christopher; Dillon, Gregory K.; Short, Karen C.; Vogler, Kevin C. 2020. Wildfire Risk to Communities: Spatial datasets of landscape-wide wildfire risk components for the United States. Fort Collins, CO: Forest Service Research Data Archive. https://doi.org/10.2737/RDS-2020-0016
- Scott, Joe H. 2020. A Deterministic Method for Generating Flame-Length Probabilities. In: Hood, Sharon; Drury, Stacy; Steelman, Toddi; Steffens, Ron, tech. eds. The fire continuum—preparing for the future of wildland fire: Proceedings of the Fire Continuum Conference. 21-24 May 2018, Missoula, MT. Proc. RMRS-P-78. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Pages 195-205. https://www.fs.usda.gov/treesearch/pubs/62336

[1] www.TexasWildfireRisk.com

The overall goal for Phase I is to develop the required vegetation, fuels, historical fire weather and fire behavior layers necessary for deriving fire intensity and burn probability (i.e., likelihood of an area burning) datasets. One of the primary drivers behind this update is to leverage the 10-meter vegetation and fuel products that were recently produced as part of the TAMFS fuels mapping project, which represent the best and highest resolution data available statewide. Nevertheless, these products require careful review and calibration to accurately portray fuel and fire behavior conditions across the state.

Specific objectives for Phase I include:

- Leverage Texas Fuel Mapping products as the baseline data source for updating fuel parameters.
- Engage state and federal representatives to ensure local conditions, requirements and priorities are incorporated into the fuels and fire behavior calibration processes.
- Calibrate surface fuels to accurately reflect Texas fuel conditions.
- Determine expected canopy fire potential for existing forested vegetation types and calibrate canopy base height and canopy bulk density accordingly.
- Create a suite of fire behavior products to support subsequent steps in the risk assessment processes as well as other fire planning efforts.
- Create and calibrate burn probability to represent Texas fuel conditions.
- Create gridded fire weather/fuel moisture scenarios to support fire simulations.
- Coordinate with state and federal representatives to identify highly valued resources and assets that will be utilized in Phase 2.
- Discover approaches for using risk assessment results for stochastic modeling and resource optimization.

2 Background

The TWRA supports the three primary goals of the National Cohesive Wildland Fire Management Strategy: 1) restoring and maintaining fire resilient landscapes, 2) creating Fire Adapted Communities, and 3) improving safe and effective wildfire response. It also supports the USFS priorities of 1) improving the condition of forests and grasslands, and 2) promoting shared stewardship by increasing partnerships and volunteerism, being good neighbors, and providing excellent customer service.

TxWRAP is the primary mechanism by which TAMFS deploys risk information to create awareness among the public and arm local, state, and federal planners with tools to support wildfire mitigation and prevention efforts across the state. It provides access to the results of the Texas Wildfire Risk Assessment via web and mobile applications through an intuitive and user-friendly interface. Information extracted from TxWRAP is incorporated into strategic planning initiatives and hazard mitigation plans aimed at creating fire-adapted communities and restoring and maintaining fire

resilient landscapes. Moreover, it supports many national programs including Firewise USA®, CWPP's, and Ready Set Go!

Users of TxWRAP represent a broad spectrum of the wildfire community, including federal, state, and local governments, fire department representatives, landowners, homeowners, consultants, and universities. There are currently 2,808 registered professional users and 4,617 detailed risk summary reports that have been generated since deploying TxWRAP in 2012. Additionally, 63,346 public users have visited the site.

Community Assessor was deployed in 2017 and this application empowers SGSF states to perform standardized community assessments and support WUI staff to help communities be more fire-adapted across the state. It also promotes local collaboration by allowing trained and qualified users to participate in the community assessment process. All information is stored in a central repository and made available to support the development of CWPP's and Firewise USA® Sites. More than 3,526 community assessments have been completed to date.

The results of this Project will have a positive effect on the lives of citizens in Texas by helping to identify wildland fire hazards that threaten their safety, and by facilitating the planning needed to mitigate those hazards.

3 Project Initiation and Implementation

TAMFS is the contracting agency and will have sole authority for all project-related matters. TAMFS personnel shall be actively involved in the design and implementation throughout the project.

3.1 Project Implementation Team

3.1.1 A project implementation team will be formed to:

- Help manage the business and technical aspects of the project.
- Review roles and responsibilities of project team members including defining primary points of contact for TAMFS and the Contractor.
- Any issues that arise will be resolved through a collaborative decision process between TAMFS and Contractor.
- TAMFS contains sole authority to approve/reject all project-related matters.

3.2 Progress Reports and Meetings

- Project Kick-Off Meeting - an initial online meeting will be held at a time selected by TAMFS. The purpose of the kickoff meeting is to review project approach, objectives, work plan details, staff responsibilities and roles, technical requirements, delivery milestones and billing logistics.
- The Contractor will be responsible for conducting bi-weekly or monthly status meetings with the TAMFS project manager. The meetings will be held on a TBD day of the week at a time and place so designated by TAMFS project manager. The meetings can take place via phone or web conferencing.

- The Contractor will provide the TAMFS project manager with monthly written progress reports of this project. These are due to the TAMFS project manager by the close of the last business day of the month.
- The progress reports shall cover all work performed and completed during the month for which the progress report is provided and shall present the work to be performed during the subsequent month.
- The progress report shall identify any problems encountered, or still outstanding, with an explanation of the cause of the problem and how the problem has been or will be resolved.

4 Scope – Project-Based Services

The scope of work involves a series of tasks focused on compiling key input datasets, calibrating fuels, running fire simulations, and generating a suite of fire behavior outputs to support subsequent steps in the risk assessment modeling process. The project area is statewide.

The Texas Fuels Mapping project will supply the baseline vegetation, fuels, disturbance, and topographic layers. If necessary, enhancements will be applied to these baseline products to reflect findings identified through calibration workshops. The goal is to ensure Texas fuel conditions are accurately represented and expected fire behavior is achieved under a range of fire weather/fuel moisture scenarios.

4.1 Project Initiation

4.1.1 The project will start with an initiation and kickoff meeting.

4.1.2 Define key project parameters including analysis area, FOA extent, fuelscape extent, and geospatial data delivery specifications.

4.2 Pre-Calibration Fuelscape, Compile and Prepare Source Data

This task involves the compilation of source input datasets and the processing of those data into the GIS database formats required for processing in subsequent tasks.

4.2.1 Develop a process or tool for managing fuel model rulesets.

Assist TAMFS with designing a process or a tool for managing and validating fuel model rulesets that are similar to some of the functions available in the LANDFIRE Total Fuel Change Tool (LFTCT). This includes the ability to check for missing, duplicate or overlapping rulesets.

- The fuel mapping process will leverage the relevant parts of the LANDFIRE process such as developing fuel rules or fuel model assignment by vegetation type—as directed by TAMFS and with expert guidance.
- Using custom scripts, analysts (in consultation with TAMFS analysts) will start from the TAMFS vegetation database and associated fuel model assignment rules to build a raster grid of surface fire behavior fuel models.

4.2.2 Provide fuel model selection support.

Provide expert consultation to TAMFS regarding fuel model selection for vegetation types mapped by TAMFS, especially for vegetation types that are tricky or difficult to model. Review TAMFS fuel model calls to identify potential issues and ensure consistency with other fuel model mapping efforts.

- Work with TAMFS to identify appropriate fuel model selections using fire behavior information to guide decision making.
- Provide TAMFS guidance to review fire behavior results by vegetation type and fuel model.

4.2.3 Provide guidance on mapping initial canopy fuel parameters.

Coordinate with TAMFS to define canopy fire potential for forested vegetation types and set initial canopy fuel parameters. Develop a script or process for mapping canopy base height and canopy bulk density from TAMFS vegetation products.

- Evaluate with TAMFS the use of LANDFIRE coefficients to calculate canopy base height versus using a novel approach.
- Evaluate with TAMFS calculating canopy bulk density using the GLM from the LANDFIRE calculation process.

4.2.4 Review TAMFS pre-calibration fuelscape rasters.

TAMFS will provide vendor with the initial fuelscape rasters for the project. Contractor will perform quality assurance and quality control on these rasters to ensure the units of measure are as expected and values are within appropriate range. The list of initial fuelscape rasters includes:

- Fire Behavior Fuel Model raster
- Canopy base height raster
- Canopy bulk density raster
- Canopy cover raster
- Canopy height raster
- Slope raster
- Aspect raster
- Elevation raster

4.3 Develop Gridded Historical Fire Weather Scenarios

Sources of gridded historical climate data that uniformly cover the state will be identified and, with the advice and guidance of TAMFS, a source, or combination of sources, for use across the state will be selected. The nominal grid cell size shall be between 2 km and 8 km. The gridded historical climate data can be hourly or daily, but must consist of a minimum of wind speed, wind direction, temperature, and relative humidity. Daily data regarding Energy Release Component is also needed.

4.3.1 Develop gridded historical Weather-Type Probabilities (WTPs) at 4-km resolution

Contractor will process the selected gridded historical climate data to classify each hourly or daily observation into a Weather Type (weather scenario). A Weather Type is a combination of wind speed (increments of 5 mi/h), wind direction (eight cardinal and intercardinal directions), and fine dead fuel moisture content (three classes).

Contractor will produce and deliver rasters of conditional Weather Type Probability at the native grid spacing of the selected data source. For a given raster cell, the conditional Weather Type Probabilities shall sum to one.

Leverage products delivered as part of SWRA update project and process results for use in TWRA simulations. Contractor will produce and deliver rasters of conditional Weather Type Probability at 10-m resolution, using focal smoothing to upsample WTP rasters from the native, 4-km resolution. WTPs at 10-m resolution will be snapped to the fuel model raster and renormalized to sum to one.

4.4 Initial Fire Behavior

Analyzing initial fire behavior from the pre-calibration fuelscape provides baseline information of expected fire behavior resulting from the preliminary fuel mapping fuels and canopy characteristics. Summary of the fire behavior maps by vegetation type and fuel rule identifier provides specific information on which aspects of the fuel mapping rules (surface and/or canopy fuel parameters) need modification to produce calibrated fire behavior results.

4.4.1 Initial fire behavior simulations on pre-calibration fuelscape

Analyzing initial fire behavior simulations on the preliminary or pre-calibration fuelscape provides foundational information for fuel calibration. For each vegetation type and fuel rule combination, the Contractor shall conduct an analysis of canopy fuel parameters using gNexus or a similar product to identify the average flat-ground Torching Index and Crowning Index for all pixels in each vegetation type/rule combination. These simulations will be conducted using a live and dead surface fuel moisture scenario determined in consultation with TAMFS. The Contractor will deliver a summary of results in Excel to help TAMFS and local fire behavior specialists determine if an adjustment must be made to CBH or CBD to achieve the expected fire behavior. The following rasters are needed:

- Weighted Rate of Spread raster
- Weighted Flame Length raster
- Conditional Ember Production Index raster
- Torching Index raster
- Crowning Index raster
- Fire-type probability rasters

4.5 Fuelscape Review and Calibration

The purpose of the fuelscape review and calibration workshop is to ensure fuel and fire behavior conditions are accurately portrayed across Texas. Participation and input from fuels specialists and ecologists is critical to the success of this task. The following items are needed for review of preliminary fuel rules and fire behavior.

4.5.1 Fuel calibration workshops

Contractor will conduct three online workshops to allow state and federal stakeholders to provide input and feedback on initial outputs. Calibrations or adjustments may be necessary to ensure outputs accurately portray Texas fuel conditions. Additional specifications include:

- Contractor will deliver products in tasks 4.4.1 to facilitate review across the project-area extent. Rasters will be optimized for drawing performance and include appropriate symbology.
- Workshops will involve smaller working groups or focus on different geographic areas across the state.
- Local fuel specialists and ecologists will be recruited to participate in the workshops. Workshops will be undertaken as web meetings to facilitate maximum opportunity for multiple meetings and interaction with state and federal representatives.
- Review priority vegetation types and fuel mapping by prevalence on landscape and impact on fire history/occurrence
- Discuss expected fire behavior and review results of preliminary fire behavior calculations
- Discuss and/or identify fuelscape edits needed for recent disturbances
- Adjust surface and canopy fuel parameters as necessary to achieve expected fire behavior as defined by workshop participants

4.5.2 Review final fuelscape rasters

TAMFS will provide the final, calibrated set of fuelscape rasters used for fire behavior modeling. The raster datasets will be delivered using the geospatial data delivery specifications defined in Task 4.1.2 and will include the set of three topography rasters and five surface and canopy characteristic rasters as follows:

- Slope raster
- Aspect raster
- Elevation raster
- Fire Behavior Fuel Model raster
- Canopy base height raster
- Canopy bulk density raster
- Canopy cover raster
- Canopy height raster

Contractor will perform quality assurance and quality control on these rasters to ensure the units of measure are as expected and values are within appropriate range.

4.6 Burn Probability Modeling

This task includes parameterizing and calibrating the FSim model of fire occurrence, growth and behavior based on fuel, historical weather, topography, and historical fire occurrence across Texas. Contractor will compile and review National FSim BP, compile and review historical fire occurrence by FOA (including trend analysis), compile, and review wind data by FOA, parameterize FSim, provide calibration runs for each FOA at 120-m resolution and final runs for each FOA at 120-m with a minimum 10,000 iterations.

4.6.1 Compile and review National FSim BP

- Obtain the latest 270-m National FSim BP for Analysis Area
- Upsample/ooze BP to 10-m resolution

- Virtual National FSim review workshop: agenda, attendance list, and compiled notes

4.6.2 Compile and review historical fire occurrence by FOA including trend analysis

- Obtain nationwide Fire Occurrence Database (K.Short current version)
- Virtual fire occurrence data review workshop: agenda, attendance list, and compiled notes

4.6.3 Compile and review wind data by FOA

- Obtain and summarize wind data from RAWS stations
- Wind data review workshop: agenda, attendance list, and compiled notes

4.6.4 Parameterize FSim

Contractor will develop starting parameter inputs required by the FSim Large Fire Simulator, including:

- FSim calibration targets by FOA
- ERC streams by FOA
- Fdists by FOA
- FRISK files by FOA
- Any additional inputs needed for FSim calibration

4.6.5 Calibration runs for each FOA at 120-m resolution

Contractor will finalize input parameters for each FOA required by the FSim Large Fire Simulator, including:

- Rate of spread adjustment values (ADJs)
- Suppression Factor values
- AcreFract values
- Any others relevant to final parameterization

4.6.6 Final runs for each FOA at 120-m with a of minimum 10,000 iterations

Deliver the following datasets for TAMFS approval:

- Burn Probability raster covering the Analysis Area (the states plus a 10-km buffer into neighboring states) at 120-m resolution
- Upsampled to 10-m with encroachment into urban areas, partitioned by state
- Fire perimeter event set
  - Minimum 10,000 iterations
  - Ignition locations (points) and final simulated perimeters (polygons)
  - Retain all FSim attributes for point and polygon features
- Delivery specifications
  - Create GeoTIFF or file Geodatabase formats for raster results.
  - Create file geodatabase format for point and polygon features.
  - Use projection defined in geospatial delivery specifications in 4.1.2.
  - Provide datasets as floating-point if required.
  - Use native 10-meter resolution based on fire behavior input datasets.
  - Snap all raster datasets to the same grid as the fire behavior inputs.
  - Ensure all datasets include metadata based on FGDC ISO standards.
  - Create layer files for each dataset.

4.7 Fire Characteristics Modeling (10-m Resolution)

This task includes deriving a suite of fire behavior outputs using the gridded fire weather scenarios and calibrated fuel input datasets. These datasets are necessary to complete subsequent steps in the TWRA update process.

4.7.1 Flame front characteristics

4.7.1.1 Weighted flame-front fire characteristics rasters

The weighted flame-front characteristics rasters represent the weighted-mean value considering a full range of weather scenarios. These rasters include:

- Characteristic Flame Length
- Characteristic Fireline Intensity
- Characteristic Rate of Spread
- Characteristic Heat per Unit Area

4.7.1.2 Fire-type probability (FTP)

Fire-Type Probability is the conditional probability of fire type in the following classes:

- Surface fire (grass/shrub)
- Underburn (canopy present but not involved in fire)
- Low-grade passive crown fire
- Mid-grade passive crown fire
- High-grade passive crown fire
- Active crown fire

4.7.1.3 Operational Flame-Length Exceedance Probabilities

Operational Flame-Length Exceedance Probabilities (Ops FLEPs) represent the likelihood that headfire intensity will exceed the following three thresholds:

- Probability of Manual Control (FL > 4’)
- Probability of Mechanical Control (FL > 8’)
- Probability of Extreme Fire Behavior (FL > 11’)

4.7.1.4 Fire-effects Flame-Length Probabilities (FLPs)

Fire-effects flame-length probabilities represent the conditional likelihood that fire intensity will be within each of the following fire intensity classes (fire intensity levels, or FILs), after accounting for flanking and backing behavior:

- FIL1 (FL < 2’)
- FIL2 (2 < FL > 4’)
- FIL3 (4 < FL > 6’)
- FIL4 (6 < FL > 8’)
- FIL5 (8 < FL > 12’)
- FIL6 (FL > 12’)

4.7.2 Conditional ember production and load characteristics

- Conditional Ember Production Index
- Conditional Ember Load Index

- Conditional sources of ember load to buildings

4.7.3 Ember production and load characteristics

- Ember Production Index (EPI) - EPI is the propensity to produce embers given fuel, weather, and topography
- Ember Load Index (ELI) - ELI is the propensity to receive embers given fuel, weather, and topography
- Sources of ember load to buildings

4.7.4 Wildfire risk to homes

- Risk to Potential Structures (RPS) - Risk to Potential Structures is a compound measure of the exposure of a hypothetical (potential) structure to wildfire; it is a measure developed for the Wildfire Risk to Communities Project (wildfirerisk.org).
- Conditional Risk to Potential Structures
- Damage Potential
- Structure Exposure Score

4.7.5 Integrated measures

- Wildfire Hazard Potential (WHP) - Wildfire Hazard Potential is a compound measure of wildfire hazard that integrates burn probability, fire intensity, vegetation type, and small-fire ignition density; WHP was developed by the Fire Modeling Institute of the U.S. Forest Service Rocky Mountain Research Station.
- Suppression Difficulty Index (SDI) - SDI is a compound measure of the difficulty of using hand crews and mechanical equipment to contain a wildfire. The Wildfire Risk Management Science Team of the U.S. Forest Service Rocky Mountain Research Station developed SDI.

Delivery specifications shall include:

- Provide datasets in GeoTIFF or file geodatabase format with layer files for each dataset.
- Use projection as defined by geospatial delivery specifications in 4.1.2.
- Provide datasets as floating-point if required.
- Use native 10-meter resolution based on fire behavior input datasets.
- Snap all raster datasets to the same grid as the fire behavior inputs.
- Ensure all datasets include metadata based on FGDC ISO standards.

4.8 Final Report and Presentation

Develop a final project report documenting all methods, parameters, and results. The TAMFS Project Manager will collaborate with Contractor to define the content of the final report. Compile all project deliverables and deliverer to TAMFS on a hard drive.

4.9 HVRA Discovery

4.9.1 Interim risk to homes, infrastructure, timber, and drinking water

Use HVRA characterized nationally as a pilot assessment using the 10-m fire characteristics produced in 4.7.1.1

- The Contractor will use the wildfire modeling results to prepare preliminary wildfire risk results. These pilot results will use the existing national HVRA datasets and characterization inputs (Response Functions and Relative Importance values).
- The pilot risk results will be used in Task 4.9.2 to introduce workshop participants to the risk products and prompt discussion about HVRA customization needs for Texas.

4.9.2 HVRA Discovery Workshop

Host virtual workshop to identify and review nationally available spatial HVRA data and discuss additional or alternative datasets for a Texas analysis. Provide TAMFS with agenda, attendance list, compiled notes and resulting list of identified HVRA.

4.10 Stochastic Modeling Discovery

4.10.1 Stochastic modeling and resource optimization discovery workshop

Help organize and participate in one or more virtual meetings with faculty and/or staff of Texas A&M University (TAMU) with the goal of discovering approaches for using the assessment's results for stochastic modeling and resource optimization. Document key findings and opportunities for TAMFS and TAMU.

5 Pricing

Pricing for Project Based Services will be based on a fixed price, per deliverable basis using rates defined in the terms and conditions of GSA contract GS-35F-0462T. Contractor shall itemize the pricing for each deliverable.

Table 1. Pricing Schedule

No.	SOW Reference	Deliverable Description	Price Quote	Estimated Start	Estimated Completion
1	4.1.1	Project initiation and kickoff	$2,200	2022-06-01	2022-07-31
2	4.1.2	Define analysis area, FOA extent, and fuelscape extent	$1,100	2022-06-01	2022-07-31
3	4.2.1	Develop a process or tool for managing fuel model rulesets	$13,750	2022-06-01	2022-08-31
4	4.2.2	Provide fuel model selection support	$13,750	2022-06-01	2022-08-31
5	4.2.3	Provide guidance on mapping initial canopy fuel parameters	$13,750	2022-06-01	2022-08-31
6	4.2.4	Review TAMFS pre-calibration fuelscape rasters	$1,650	2022-07-01	2022-08-31
7	4.3.1	Develop gridded historical Weather-Type Probabilities (WTPs) at 4-km resolution	$2,750	2022-07-01	2022-09-30
8	4.4.1	Initial fire behavior simulations on pre-calibration fuelscape	$16,500	2022-08-01	2022-09-30
9	4.5.1	Fuel calibration workshops	$16,500	2022-09-01	2022-11-30
10	4.5.2	Review final fuelscape rasters	$1,650	2022-11-01	2022-12-31
11	4.6.1	Compile and review National FSim BP	$2,750	2022-08-01	2022-09-30
12	4.6.2	Compile and review historical fire occurrence by FOA including trend analysis	$12,100	2022-07-01	2022-09-30
13	4.6.3	Compile and review wind data by FOA	$5,500	2022-07-01	2022-09-30
14	4.6.4	Parameterize FSim	$13,750	2022-11-01	2022-12-31
15	4.6.5	Calibration runs for each FOA at 120-m resolution	$27,500	2023-01-01	2023-03-30
16	4.6.6	Final runs for each FOA at 120-m with minimum 10,000 iterations	$16,500	2023-04-01	2023-06-30
17	4.7.1	Flame front characteristics	$16,500	2023-04-01	2023-06-30
18	4.7.2	Conditional ember production and load characteristics	$16,500	2023-04-01	2023-06-30
19	4.7.3	Ember production and load characteristics	$16,500	2023-04-01	2023-06-30
20	4.7.4	Wildfire risk to homes	$16,500	2023-04-01	2023-06-30
21	4.7.5	Integrated measures	$5,500	2023-04-01	2023-06-30
22	4.8.1	Final report and presentation	$38,500	2023-04-01	2023-06-30
23	4.9.1	Interim risk to homes, infrastructure, timber, and drinking water	$27,500	2023-04-01	2023-06-30
24	4.9.2	HVRA discovery workshop	$13,750	2023-04-01	2023-06-30
25	4.10.1	Stochastic modeling and resource optimization discovery workshop	$8,250	2023-04-01	2023-06-30
		TOTAL	$321,200		

6 Period of Performance

Period of performance shall commence on date purchase order is issued and shall conclude on 6/30/2024. Any extension for the period of performance must be approved by Texas A&M Forest Service

7 Invoices and Payment

Payment will be as per terms and conditions of this Statement of Work.

7.1 Inspection and Acceptance

Contractor shall allow TAMFS up to fifteen working days for inspection upon receipt of deliverables. If deliverable is not acceptable, TAMFS will return deliverable to Contractor for modification to meet specifications. After modification, Contractor shall return deliverable and allow TAMFS another fifteen working days for inspection. This process will repeat until the deliverable is acceptable. TAMFS will provide acceptance in writing and payment will be made thirty calendar days from acceptance of deliverable or receipt of correct invoice, whichever is later.

7.2 All deliverables must be completed and accepted by TAMFS before invoices can be submitted.

7.3 Contractor will provide a 45-day warranty on all work and deliverables from the date of TAMFS acceptance.

7.4 Invoice shall include:

- Invoice number
- Purchase order number
- Date
- Itemized charges and grand total
- Description of deliverables
- Contractor's name
- Remit to address

7.5 TAMFS "ship to" and "invoice to" addresses will be provided on subsequent purchase order(s)

7.6 TAMFS is tax exempt as an agency of the State of Texas. Do not include State Sales tax or Federal Excise tax in prices.

7.7 There are no insurance or bonding requirements

8 Customer/Contractor-Furnished Equipment and Workspace

Texas A&M Forest Service shall provide no equipment and/or workspace.

9 State Ownership of Work Product

Contractor and Texas A&M Forest Service acknowledge and agree that any and all analyses, evaluations, reports, memoranda, letters, ideas, processes, methods, programs, and manuals that were developed, prepared, conceived, made or suggested by the Contractor for Texas A&M Forest Service pursuant to a SOW, including all such developments as are originated or conceived during the term of this Contract but are completed or reduced to writing thereafter (the "Work Product") will be and remain the exclusive property Texas A&M Forest Service. All rights, title, and ownership interests, including copyright, which Contractor and all Workers may have in any Work Product or any tangible media embodying such Work Product are hereby assigned to Texas A&M Forest Service. Contractor, for itself and on behalf of its Workers, waives any property interest in such work product.

10 Intellectual Property Matters

10.1 Definitions

10.1.1 " Work Product" means any and all deliverables produced by Contractor for Texas A&M Forest Service under a Statement of Work issued pursuant to this Contract, including any and all tangible or intangible items or things that have been or will be prepared, created, developed, invented or conceived at any time following the effective date of the Contract, including but not limited to any (i) works of authorship (such as manuals, instructions, printed material, graphics, artwork, images, illustrations, photographs, computer programs, computer software, scripts, object code, source code or other programming code, HTML code, flow charts, notes, outlines, lists, compilations, manuscripts, writings, pictorial materials, schematics, formulae, processes, algorithms, data, information, multimedia files, text web pages or web sites, other written or machine readable expression of such works fixed in any tangible media, and all other copyrightable works), (ii) trademarks, service marks, trade dress, trade names, logos, or other indicia of source or origin, (iii) ideas, designs, concepts, personality rights, methods, processes, techniques, apparatuses, inventions, formulas, discoveries, or improvements, including any patents, trade secrets and know-how, (iv) domain names, (v) any copies, and similar or derivative works to any of the foregoing, (vi) all documentation and materials related to any of the foregoing, (vii) all other goods, services or deliverables to be provided to Texas A&M Forest Service under the Contract or a Statement of Work, and (viii) all Intellectual Property Rights in any of the foregoing, and which are or were created, prepared, developed, invented or conceived for the use or benefit of Texas A&M Forest Service in connection with this Contract or a Statement of Work, or with funds appropriated by or for Texas A&M Forest Service or Texas A&M Forest Service's benefit: (a) by any Contractor personnel or Texas A&M Forest Service personnel, or (b) any Texas A&M Forest Service personnel who then became personnel to Contractor or any of its affiliates or subcontractors, where, although creation or reduction-to-practice is completed while the person is affiliated with Contractor or its personnel, any portion of same was created, invented or conceived by such person while affiliated with Texas A&M Forest Service.

10.1.2 "Intellectual Property Rights" means the worldwide legal rights or interests evidenced by or embodied in: (i) any idea, design, concept, personality right, method, process, technique, apparatus, invention, discovery, or improvement, including any patents, trade secrets, and know-how; (ii) any work of authorship, including any copyrights, moral rights or neighboring rights; (iii) any trademark, service mark, trade dress, trade name, or other indicia of source or origin; (iv) domain name registrations; and (v) any other proprietary or similar rights. The Intellectual Property Rights of a party include all worldwide legal rights or interests that the party may have acquired by assignment or license with the right to grant sublicenses.

10.1.3 "Statement of Work" means a document signed by Texas A&M Forest Service and Contractor describing a specific set of activities and/or deliverables, which may include Work Product and Intellectual Property Rights, that Contractor is to provide Texas A&M Forest Service, issued pursuant to the Contract.

10.1.4 "Third-Party IP" means the Intellectual Property Rights of any third party not a party to this Contract, and which is not directly or indirectly providing any goods or services to Texas A&M Forest Service under this Contract.

10.1.5 "Contractor IP" shall mean all tangible or intangible items or things, including the Intellectual Property Rights therein, created or developed by Contractor (a) prior to providing any Services or Work Product to Texas A&M Forest Service and prior to receiving any documents, materials, information or funding from or on behalf of Texas A&M Forest Service relating to the Services or Work Product, or (b) after the Effective Date of the Contract if such tangible or intangible items or things were independently developed by Contractor outside Contractor's provision of Services or Work Product for Texas A&M Forest Service hereunder and were not created, prepared, developed, invented or conceived by any Texas A&M Forest Service personnel who then became personnel to Contractor or any of its affiliates or subcontractors, where, although creation or reduction-to-practice is completed while the person is affiliated with Contractor or its personnel, any portion of same was created, invented or conceived by such person while affiliated with Texas A&M Forest Service.

10.2 Ownership

As between Contractor and Texas A&M Forest Service, the Work Product and Intellectual Property Rights therein are and shall be owned exclusively by Texas A&M Forest Service, and not Contractor. Contractor specifically agrees that the Work Product shall be considered "works made for hire" and that the Work Product shall, upon creation, be owned exclusively by Texas A&M Forest Service. To the extent that the Work Product, under applicable law, may not be considered works made for hire, Contractor hereby agrees that the Contract effectively transfers, grants, conveys, assigns, and relinquishes exclusively to Texas A&M Forest Service all right, title and interest in and to all ownership rights in the Work Product, and all Intellectual Property Rights in the Work Product, without the necessity of any further consideration, and Texas A&M Forest Service shall be entitled to obtain and hold in its own name all Intellectual Property Rights in and to the Work Product. Contractor acknowledges that Contractor and Texas A&M Forest Service do not intend Contractor to be a joint author of the Work Product within the meaning of the Copyright Act of 1976. Texas A&M Forest Service shall have access, during normal business hours and upon reasonable prior notice to Contractor, to all Contractor materials, premises and computer files containing the Work Product. Contractor and Texas A&M Forest Service, as appropriate, will cooperate with one another and execute such other documents as may be reasonably appropriate to achieve the objectives herein. No license or other right is granted hereunder to any Third-Party IP, except as may be incorporated in the Work Product by Contractor.

10.3 Further Actions

Contractor, upon request and without further consideration, shall perform any acts that may be deemed reasonably necessary or desirable by Texas A&M Forest Service to evidence more fully the transfer of ownership and/or registration of all Intellectual Property Rights in all Work Product to Texas A&M Forest Service to the fullest extent possible, including but not limited to the execution, acknowledgement and delivery of such further documents in a form determined by Texas A&M Forest Service. In the event Texas A&M Forest Service shall be unable to obtain Contractor's signature due to the dissolution of Contractor or Contractor's unreasonable failure

to respond to Texas A&M Forest Service's repeated requests for such signature on any document reasonably necessary for any purpose set forth in the foregoing sentence, Contractor hereby irrevocably designates and appoints Texas A&M Forest Service and its duly authorized officers and agents as Contractor's agent and Contractor's attorney-in-fact to act for and in Contractor's behalf and stead to execute and file any such document and to do all other lawfully permitted acts to further any such purpose with the same force and effect as if executed and delivered by Contractor, provided however that no such grant of right to Texas A&M Forest Service is applicable if Contractor fails to execute any document due to a good faith dispute by Contractor with respect to such document. It is understood that such power is coupled with an interest and is therefore irrevocable. Texas A&M Forest Service shall have the full and sole power to prosecute such applications and to take all other action concerning the Work Product, and Contractor shall cooperate, at Texas A&M Forest Service's sole expense, in the preparation and prosecution of all such applications and in any legal actions and proceedings concerning the Work Product.

10.4 Waiver of Moral Rights

Contractor hereby irrevocably and forever waives, and agrees never to assert, any Moral Rights in or to the Work Product which Contractor may now have or which may accrue to Contractor's benefit under U.S. or foreign copyright or other laws and any and all other residual rights and benefits which arise under any other applicable law now in force or hereafter enacted. Contractor acknowledges the receipt of equitable compensation for its assignment and waiver of such Moral Rights. The term "Moral Rights" shall mean any and all rights of paternity or integrity of the Work Product and the right to object to any modification, translation or use of the Work Product, and any similar rights existing under the judicial or statutory law of any country in the world or under any treaty, regardless of whether or not such right is denominated or referred to as a moral right.

10.5 Confidentiality

All documents, information and materials forwarded to Contractor by Texas A&M Forest Service for use in and preparation of the Work Product, shall be deemed the confidential information of Texas A&M Forest Service, and subject to the license granted by Texas A&M Forest Service to Contractor under sub-paragraph h hereunder, Contractor shall not use, disclose, or permit any person to use or obtain the Work Product, or any portion thereof, in any manner without the prior written approval of Texas A&M Forest Service.

10.6 Injunctive Relief

The Contract is intended to protect Texas A&M Forest Service's proprietary rights pertaining to the Work Product, and the Intellectual Property Rights therein, and any misuse of such rights would cause substantial and irreparable harm to Texas A&M Forest Service's business. Therefore, Contractor acknowledges and stipulates that a court of competent jurisdiction may immediately enjoin any material breach of the intellectual property, use, and confidentiality provisions of this Contract, upon a request by Texas A&M Forest Service, without requiring proof of irreparable injury as same should be presumed.

10.7 Return of Materials Pertaining to Work Product

Upon the request of Texas A&M Forest Service, but in any event upon termination or expiration of this Contract or a Statement of Work, Contractor shall surrender to Texas A&M Forest Service all documents and things pertaining to the Work Product, including but not limited to drafts, memoranda, notes, records, drawings, manuals, computer software, reports, data, and all other documents or materials (and copies of same) generated or developed by Contractor or furnished by Texas A&M Forest Service to Contractor, including all materials embodying the Work Product, any Texas A&M Forest Service confidential information, or Intellectual Property Rights in such Work Product, regardless of whether complete or incomplete. This section is intended to apply to all Work Product as well as to all documents and things furnished to Contractor by Texas A&M Forest Service or by anyone else that pertains to the Work Product.

10.8 Contractor License to Use

Texas A&M Forest Service hereby grants to Contractor a non-transferable, non-exclusive, royalty-free, fully paid-up license to use any Work Product solely as necessary to provide the Services to Texas A&M Forest Service. Except as provided in this Section, neither Contractor nor any Subcontractor shall have the right to use the Work Product in connection with the provision of services to its other customers without the prior written consent of Texas A&M Forest Service, which consent may be withheld in Texas A&M Forest Service's sole discretion.

10.9 Third-Party Underlying and Derivative Works

To the extent that any Contractor IP or Third Party IP are embodied or reflected in the Work Product, or are necessary to provide the Services, Contractor hereby grants to the Texas A&M Forest Service, or shall obtain from the applicable third party for Texas A&M Forest Service's benefit, the irrevocable, perpetual, non-exclusive, worldwide, royalty-free right and license, for Texas A&M Forest Service's internal business purposes only, to (i) use, execute, reproduce, display, perform, distribute copies of, and prepare derivative works based upon such Contractor IP or Third Party IP and any derivative works thereof embodied in or delivered to Texas A&M Forest Service in conjunction with the Work Product, and (ii) authorize others to do any or all of the foregoing. Contractor agrees to notify Texas A&M Forest Service on delivery of the Work Product or Services if such materials include any Third-Party IP. On request, Contractor shall provide Texas A&M Forest Service with documentation indicating a third party's written approval for Contractor to use any Third-Party IP that may be embodied or reflected in the Work Product.

10.10 Agreement with Subcontractors

Contractor agrees that it shall have written agreement(s) that are consistent with the provisions hereof related to Work Product and Intellectual Property Rights with any employees, agents, consultants, contractors or subcontractors providing Services or Work Product pursuant to the Contract, prior to their providing such Services or Work Product, and that it shall maintain such written agreements at all times during performance of this Contract, which are sufficient to

support all performance and grants of rights by Contractor. Copies of such agreements shall be provided to the Texas A&M Forest Service promptly upon request.

10.11 License to Texas A&M Forest Service

Contractor grants to Texas A&M Forest Service, a perpetual, irrevocable, royalty free license, solely for the Texas A&M Forest Service's internal business purposes, to use, copy, modify, display, perform (by any means), transmit and prepare derivative works of any Contractor IP embodied in or delivered to Texas A&M Forest Service in conjunction with the Work Product. The foregoing license includes the right to sublicense third parties, solely for the purpose of engaging such third parties to assist or carryout Texas A&M Forest Service's internal business use of the Work Product. Except for the preceding license, all rights in Contractor IP remain in Contractor.

11 Contractor Development Rights

To the extent not inconsistent with Texas A&M Forest Service's rights in the Work Product or as set forth herein, nothing in this Contract shall preclude Contractor from developing for itself, or for others, materials which are competitive with those produced as a result of the Services provided hereunder, provided that no Work Product is utilized, and no Intellectual Property Rights of Texas A&M Forest Service therein are infringed by such competitive materials. To the extent that Contractor wishes to use the Work Product, or acquire licensed rights in certain Intellectual Property Rights of Texas A&M Forest Service therein in order to offer competitive goods or services to third parties, Contractor and Texas A&M Forest Service agree to negotiate in good faith regarding an appropriate license and royalty agreement to allow for such.

12 Response Submission Requirements

Response submission must be completed and sent to TAMFS by Friday, June 10 at 2:00 PM. Response shall be sent to the following mailing address or email address:

Mailing Address:
Texas A&M Forest Service
Purchasing Office
200 Technology Way, Suite 1120
College Station, TX 77845

Email Address:
Alan Degelman, TAMFS Purchasing Manager, adegelman@tfs.tamu.edu

ATTACHMENT A
TEXAS A&M FOREST SERVICE
PURCHASE ORDER
TERMS AND CONDITIONS

1. REQUIREMENTS OF AWARDED BID

1.1 Vendor must comply with all rules, regulations and statutes relating to purchasing in the State of Texas in addition to the requirements of this form.

1.2 Vendor must have price per unit shown. Unit prices shall govern in the event of extension errors.

1.3 Awarded bid was submitted to the Texas A&M Forest Service (TFS) on or before the hour and date specified for the bid opening.

1.4 Late and/or unsigned bids were not considered under any circumstances. Person signing bid must have the authority to bind the firm in a contract.

1.5 Awarded bid quoted F.O.B. destination, freight prepaid and allowed unless otherwise stated within the order.

1.6 Bid prices are to be firm for TFS acceptance for 60 days from opening date. Cash discounts offered will be taken if earned.

1.7 Bid cannot be altered or amended after opening time. Any alterations made before opening time should be initialed by bidder or his authorized agent. No bid can be withdrawn after opening time without approval by TFS Purchasing Office based on a written acceptable reason.

1,8 Purchases made for TFS are exempt from the State Sales tax and Federal Excise tax. Do not include tax in quotation. Excise Tax Exemption Certificate will be furnished by TFS upon request.

1.9 TFS reserves the right to accept or reject all or any part of any bid, waive minor technicalities and award the bid to best serve the interests of the TFS.

1.10 Late, illegible, incomplete, or otherwise non-responsive bids will not be considered.

2. SPECIFICATIONS

2.1 Vendor shall furnish items as specified by model or catalogue numbers, brand names or manufacture referenced on the purchase order.

2.2 Unless otherwise specified, items shall be new and unused and of current production.

2.3 All electrical items must meet all applicable OSHA standards and regulations, and bear the appropriate listing from UL, FMRC or NEMA.

2.4 TFS will not be bound by any oral statement or representation contrary to the written specifications of this purchase order.

2.5 Manufacturer's standard warranty shall apply unless otherwise stated in the IFB.

3. TIE BIDS

Awards will be made in accordance with TAC Rule 20.36 (b) (3) and 20.38 (preferences).

4. DELIVERY

4.1 Delivery shall be within the quoted number of days required to place material in receiving agency's designated location under normal conditions. Delivery days mean calendar days, unless otherwise specified. Failure to state delivery time obligates bidder to deliver in 14 calendar days. Unrealistic delivery promises may cause bid to be disregarded.

4.2 If delay is foreseen, vendor shall give written notice to TFS. Vendor must keep TFS advised at all times of order status. Default of promised delivery (without accepted reasons) or failure to meet specifications authorizes TFS to purchase supplies elsewhere and charge full increase, if any, in cost and handling to defaulting vendor.

4.3 No substitutions permitted without TFS written approval.

4.4 Delivery shall be made during normal working hours only, unless prior approval has been obtained from TFS.

4.5 Each shipment must be accompanied by a packing slip which shows the TFS Purchase Order number and the description, quantity shipped and any back-ordered quantity for each item shipped. Each package must be clearly marked with the destination address and TFS Purchase Order number.

5. INSPECTION AND TESTS

All goods will be subject to inspection and test by TFS. Authorized TFS personnel shall have access to any supplier's place of business for the purpose of inspecting merchandise. Tests shall be performed on samples submitted with the bid or on samples taken from regular shipment. All costs shall be borne by the vendor in the event products tested fail to meet or exceed all conditions and requirements of the specification. Goods delivered and rejected in whole or in part may, at the TFS' option, will be returned to the vendor or held for disposition at vendor's expense. Latent defects may result in revocation of acceptance.

6. AWARD OF CONTRACT AND FORCE MAJURE

A response to this IFB is an offer to contract based upon the terms, conditions and specifications contained herein. Bids do not become contracts until they are accepted through a TFS purchase order. The contract shall be governed, construed and interpreted under the laws of the State of Texas, and as same may be amended. Any legal actions must be filed in Brazos County, Texas. The TFS may grant relief from performance of the contract if the vendor is prevented from compliance and performance by the act of war, order of legal authority, act of God, or other unavoidable causes not attributed to the fault or negligence of the contractor. To obtain release on Force Majure, the vendor must file a written request to the TFS.

7. PAYMENT

Vendor shall submit one (1) copy of an itemized invoice referencing TFS Purchase Order number. TFS will incur no penalty for late payment if made in 30 or fewer days from receipt of goods or services and an uncontested invoice. **TFS will not be liable for payment of invoices received six (6) or more months after receipt of goods/services.**

8. PATENTS OR COPYRIGHTS

Vendor agrees to protect the TFS from claims involving infringement of patents or copyrights.

9. VENDOR ASSIGNMENTS

Vendor hereby assigns to TFS any and all claims for overcharges associated with this contract arising under the antitrust laws of the United States 15 U.S.C.A. Section 1, et seq. (1973), and the antitrust laws of the State of Texas, TEX. Bus. & Comm. Code Ann. Sec. 15.01, et seq. (1967). Inquiries pertaining to quotation must give the quotation number and opening date.

10. BIDDER AFFIRMATION

Signing a bid with a false statement is a material breach of contract and shall void the submitted bid or any resulting contracts, and the bidder shall be removed from all bid lists. By signature hereon affixed, the bidder hereby certifies that:

10.1 The bidder has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with the submitted quotation.

10.2 The bidder is not currently delinquent in the payment of any franchise tax owed the State of Texas.

10.3 Neither the bidder nor the firm, corporation, partnership or institution represented by the bidder, or anyone acting for such firm, corporation or institution has violated the antitrust laws of this State, or the Federal Antitrust Laws, (see Section 9 above) nor communicated directly or indirectly the bid made to any competitor or any other person engaged in such line of business.

10.4 Pursuant to Section 2155.004(a) Government Code the bidder has not received compensation for participation in the preparation of the specification for this IFB.

10.5 Pursuant to Section 231.006 (d), Family Code, re: child support, the bidder certifies that the individual or business entity named in this bid is not ineligible to receive the specified payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.

10.6 Pursuant to Section 2155.004(b) Government Code the bidder certifies that the individual or business entity name in this bid is not ineligible to receive the specified payment and acknowledges that this contract may be terminated and/or payment withheld if this certification is inaccurate.

10.7 The Contractor shall defend, indemnify, and hold harmless the State of Texas, all of its officers, agents and employees from and against all claims, actions, suits, demands, proceedings, costs, damages, and liabilities, arising out of, connected with, or resulting from any acts or omissions of contractor or any agent, employee, subcontractor, or supplier of contractor in the execution of performance of this contract.

10.8 Bidder agrees that any payment due under this contract will be applied towards eliminating any debt or delinquency, regardless of when it arises, including but not limited to delinquent taxes and child support that is owed to the State of Texas.

10.9 Bidder certifies that they are in compliance with section 669.003 of the Government Code, relating to contracting with executive head of a State agency. If section 669.003 applies, bidder will complete the following information in order for the bid to be evaluated:

Name of Former Executive: _____

Name of State Agency: _____

Date of Separation from State Agency: _____

Position with Bidder: _____

Date of Employment with Bidder: _____

10.10 Bidder agrees to comply with Government Code 2155.4441, pertaining to service contract use of products in the State of Texas.

10.11 Contractor understands that acceptance of funds under this contract acts as acceptance of the authority of the State Auditor's Office, or any successor agency, to conduct an audit or investigation in connection with those funds. Contractor further agrees to cooperate fully with the State Auditor's Office or its successor in the conduct of the audit or investigation, including providing all records requested. Contractor will ensure that this clause concerning the authority to audit funds received indirectly by subcontractors through Contractor and the requirement to cooperate is included in any subcontract it awards.

11. BUSINESS OWNERSHIP

Pursuant to Section 231.006 (c), Family Code, quotation must include name and Social Security Number of each person with at least 25% ownership of the business entity submitting quotation. Bidders that have pre-registered this information on the TPASS Centralized Master Bidders List have satisfied the requirement. If not pre-registered, attach name & social security number for each person. Otherwise, information must be provided prior to award.

12. NOTE TO BIDDER

Any terms and conditions attached to a bid will not be considered. Such terms and conditions may result in disqualification of the bid.

13. ALTERNATIVE DISPUTE RESOLUTION

The dispute resolution process provided for in Chapter 2260 of the Texas Government Code shall be used, as further described herein, by Texas A&M Forest Service and the Contractor to attempt to resolve any claim for breach of contract made by the contractor:

(a) A contractor's claim for breach of this contract that the parties cannot resolve in the ordinary course of business shall be submitted to the negotiation process provided in Chapter 2260, subchapter B, of the Texas Government Code. To initiate the process, the contractor shall submit written notice, as required by subchapter B, to Robby DeWitt, Associate Director for Finance and Administration. Said notice shall specifically state the provisions of Chapter 2260, subchapter B, are being invoked. A copy of the notice shall be given to all other representatives of Texas A&M Forest Service and the contractor otherwise entitled to notice under the parties' contract. Compliance by the contractor with subchapter B is a condition precedent to the filing of a contested case proceeding under Chapter 2260, subchapter C, Texas Gov't Code.

(b) The contested case process provided in Chapter 2260, subchapter C, of the Texas Government Code is the contractor's sole and exclusive process for seeking a remedy for any and all alleged breaches of contract by Texas A&M Forest Service, if the parties are unable to resolve their disputes under this subparagraph (A).

(c) Compliance with the contested case process provided in subchapter C is a condition precedent to seeking consent to sue from the Legislature under Chapter 107 of the Civil Practices and Remedies Code. Neither the execution of this contract by Texas A&M Forest Service nor any other conduct of any representative of Texas A&M Forest Service relating to the contract shall be considered a waiver of sovereign immunity to suit.

(1) The submission, processing, and resolution of the contractor's claim is governed by the published rules adopted by the Office of the Attorney General of the State of Texas pursuant to Chapter 2260, as currently effective, hereafter enacted or subsequently amended. These rules are found under Title 1, Part 3, Chapter 68 of the TAC.

(2) Neither the occurrence of an event nor the pendency of a claim constitutes grounds for the suspension of performance by the contractor, in whole or in part.

(3) The designated individual responsible on behalf of Texas A&M Forest Service for examining any claim or counterclaim and conducting any negotiations related thereto as required under Title 10, Subchapter B, Section 2260.052 of the Texas Government Code shall be Robby DeWitt, Associate Director for Finance and Administration (979) 458-7300.

14. PUBLIC DISCLOSURE

(a) Bidder acknowledges that Texas A&M Forest Service is obligated to strictly comply with the Public Information Act, Chapter 552, *Texas Government Code*, in responding to any request for public information pertaining to this Agreement, as well as any other disclosure of information required by applicable Texas law.

(b) Upon Texas A&M Forest Service's written request, bidder will provide specified public information exchanged or created under this Agreement that is not otherwise excluded from disclosure under chapter 552, Texas Government Code, to Texas A&M Forest Service in a non-proprietary format acceptable to Texas A&M Forest Service. As used in this provision, "public information" has the meaning assigned Section 552.002, *Texas Government Code*, but only includes information to which Texas A&M Forest Service has a right of access.

(c) Bidder acknowledges that Texas A&M Forest Service may be required to post a copy of the fully executed Agreement on its internet website in compliance with Section 2261.253(a)(1), *Texas Government Code.*

15. REHAB ACT, VEVRAA, SECTION 503

This contractor and subcontractor shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

ATTACHMENT A
TEXAS A&M FOREST SERVICE
PURCHASE ORDER
TERMS AND CONDITIONS

16. **Conflict of Interest.** By executing this Agreement, Contractor and each person signing on behalf of Contractor certifies, and in the case of a sole proprietorship, partnership or corporation, each party thereto certifies as to its own organization, that to the best of their knowledge and belief, no member of The A&M System or The A&M System Board of Regents, nor any employee, or person, whose salary is payable in whole or in part by The A&M System, has direct or indirect financial interest in the award of this Agreement, or in the services to which this Agreement relates, or in any of the profits, real or potential, thereof.

17. **Prohibition on Contracts with Companies Boycotting Israel.** Prohibition on Contracts with Companies Boycotting Israel. To the extent that Texas Government Code, Chapter 2270 applies to this Agreement, PROVIDER certifies that (a) it does not currently boycott Israel; and (b) it will not boycott Israel during the term of this Agreement. PROVIDER acknowledges this Agreement may be terminated and payment withheld if this certification is inaccurate.

18. **Certification Regarding Business with Certain Countries and Organizations.** Pursuant to Subchapter F, Chapter 2252, Texas Government Code, Contractor certifies it is not engaged in business with Iran, Sudan, or a foreign terrorist organization. Contractor acknowledges this Agreement may be terminated if this certification is inaccurate.

19. **Prohibition on Contracts Related to Persons Involved in Human Trafficking.** Under Section 2155.0061, Government Code, the Contractor certifies that the individual or business entity named in this Agreement is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate.

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