

RESOLUTION NO. 2024 - 328

A RESOLUTION BY THE BOARD OF COUNTY COMMISSIONERS OF ST. JOHNS COUNTY, FLORIDA, AUTHORIZING THE COUNTY ADMINISTRATOR, OR DESIGNEE, TO EXECUTE AND ISSUE CHANGE ORDER NO: 05 TO MASTER CONTRACT NO: 21-MCC-WOO-13032 TO WOOLPERT, INC., TO PROVIDE HURRICANE SEASON 2024 PRE-STORM AND POST-STORM LIDAR ACQUISITION, PROCESSING, AND DELIVERY.

RECITALS

WHEREAS, storms frequently eroded the coastline of St. Johns County. The County relies on Lidar technology to monitor beach erosion, support dune maintenance, and provide rapid response after a storm; and

WHEREAS, on January 26, 2021, the County entered into Master Contract No: 21-MCC-WOO-13032 with Woolpert, Inc., under RFQ No: 21-34; Digital Orthophotography, to provide pre-storm and post-storm high-density Lidar data pertaining to the County's coastline; and

WHEREAS, the high-density Lidar pre-storm data is needed for the 2024 Hurricane season and if a significant storm does occur, the post-storm 2024 Lidar dataset will also be needed; and

WHEREAS, Change Order No: 06 will increase the value of Master Contract No: 21-MCC-WOO-13032 to \$1,002,111.52 and County Purchasing Policy requires approval from the St. Johns County Board of County Commissioners on all change orders that increase the value of a contract beyond \$500,000.00; and

WHEREAS, the change order will be funded through SJC Disaster Recovery Division; and

WHEREAS, the County has reviewed the terms, provisions, conditions and requirements of the proposed change order to the master contract (attached hereto, and incorporated herein) and finds that executing the change order to complete the work serves a public purpose; and,

WHEREAS, the change order will be in substantial conformance with the attached draft change order.

NOW, THEREFORE BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF ST. JOHNS COUNTY, FLORIDA, as follows:

Section 1. The above Recitals are incorporated by reference into the body of this Resolution and such Recitals are adopted as finds of fact.

Section 2. The County Administrator, or designee, is hereby authorized to execute and issue Change Order No: 06 to \$1,002,111.52 to Woolpert, Inc. in substantially the same form and format as attached, for completion of the work as specified, in accordance with the Contract.

Section 3. To the extent that there are typographical and/or administrative errors that do not change the tone, tenor, or concept of this Resolution, then this Resolution may be revised without subsequent approval by the Board of County Commissioners.

PASSED AND ADOPTED by the Board of County Commissioners of St. Johns County, Florida, on this 6th day of August, 2024.

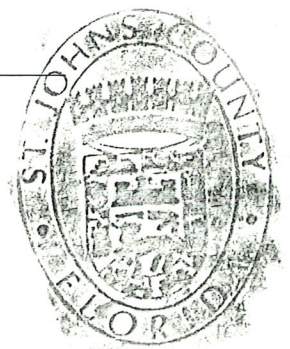
Rendition Date AUG 09 2024

BOARD OF COUNTY COMMISSIONERS OF ST. JOHNS COUNTY, FLORIDA

By: Sarah Arnold, Chair

ATTEST: Brandon J. Patty,  
Clerk of Circuit Court & Comptroller

By: Gwenne King  
Deputy Clerk





**CONTRACT CHANGE ORDER NO: 06**  
RFQ No. 21-34; Digital Orthophotography  
Master Contract No: 21-MCC-WOO-13032

**Consultant:** Woolpert, Inc.  
4454 Idea Center Boulevard  
Dayton, OH 45430-1500

**Date:** June 27, 2024

**Project:** Hurricane Season 2024 Pre and Post Storm Lidar Acquisition, Processing, and Delivery

**SCOPE OF WORK:**

Change Order #06 is hereby issued to increase the not-to-exceed amount of Master Contract No: 21-MCC-WOO-13032 Four Hundred Ninety-one Thousand Seven Hundred Ninety-Eight dollars and Zero cents (\$491,798.00), for Pre-Hurricane Season 2024 project costs, which include acquisition of high density lidar data and ground control, and post processing and delivery of the pre-hurricane lidar dataset, at the cost of \$245,899.00. If a significant storm does occur, Post Storm 2024 project costs will include acquisition of high density lidar data and ground control, and post processing and delivery of the post-storm lidar dataset, at the cost of \$245,899.00, as provided by Woolpert, Inc. ("Consultant"), in the submitted proposal dated June 21, 2024, and attached hereto.

**PAYMENT TERMS:**

Original Not-to-Exceed Amount .....	\$ 128,443.52
Net Change by previously authorized Change Orders .....	\$ 181,870.00
The Not-to-Exceed Amount prior to this Change Order .....	\$ 510,313.52
The Not-to-Exceed Amount is hereby increased in the amount of .....	\$ 491,798.00
The revised Not-to-Exceed Amount including this Change Order is .....	\$ 1,002,111.52

**SCHEDULE:**

The Contract Time will be unchanged, as provided below:  
Original NTP: 01/26/2021 + 2,190 consecutive calendar days = 01/26/2027 Final Completion.

Acceptance of this Change Order shall constitute a modification to Master Contract No: 21-MCC-WOO-13032 and shall be performed in accordance with all of the same terms and conditions of the Master Contract. The adjustment, if any, to the Master Contract shall constitute a full and final settlement of any and all claims arising out of or related to the Changes set forth herein, including claims of impact and delay costs. This Contract Change Order is not valid until signed by the County and the Consultant.

**Woolpert, Inc.**

Representative  
Signature: \_\_\_\_\_

Printed Name  
& Title: \_\_\_\_\_

Date: \_\_\_\_\_

**St. Johns County, FL**

Representative  
Signature: \_\_\_\_\_

Printed Name     Jaime T. Locklear, MPA, NIGP-CPP, CPPO, CPPB  
& Title:             Director, Purchasing and Contracts

Date: \_\_\_\_\_

All terms and conditions of the above-referenced Master Contract dated January 26, 2021 remain in full force and effect. All invoices must reference Master Contract No: 21-MCC-WOO-13032, Change Order #06. By approving Change Order, the SIC Dept is certifying the availability of funds for this. Do not approve/process this Change Order until funds are available in the appropriate line item.

PURCHASING REQUEST FORM

Date: 5/8/24

Department: Coastal Management  
Contact/Project Mgr: Stephen Hammond  
Dept Head Approval: Damon Douglas

Task Order       Change Order       Amendment

Bid/RFP/RFQ #: RFQ 21-34  
Vendor Name: Woolpert  
Amount Budgeted: \$284,492.00  
Cost/GL Code(s): 0110-53150  
Proposal Attached: Yes (Yes or No)

Completion Time: 12/31/2024 or Contract Time Increase/Decrease:   
(Number of Days)

Scope of Work:

Topographic lidar and Bathymetric lidar for 2024 pre-hurricane season.

Reason for Change: (Change Orders and Amendments Only)

Pre-Hurricane 2024

Important Info:

Please complete and forward, via email, to your department's Purchasing Liaison.



May 1, 2024

Damon Douglas, MPA  
Coastal Manager  
St. Johns County Disaster Recovery  
500 San Sebastian View  
St. Augustine, FL 32084

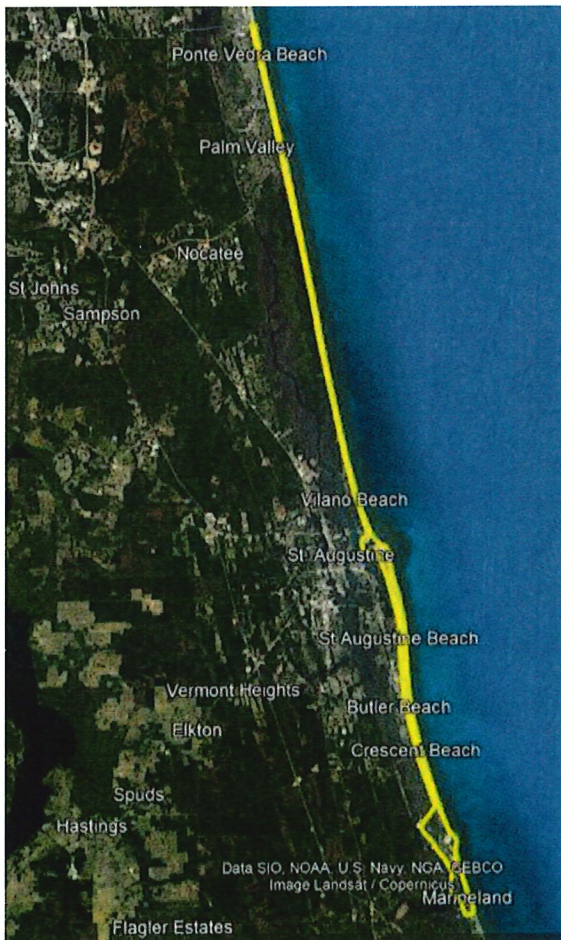
**Re: 2024 St. Johns County Lidar Beach Monitoring Budgetary Estimate**

Dear Mr. Douglas,

Woolpert is pleased to provide an estimate to acquire high density lidar of the St. Johns County Beach area around the beginning of hurricane season.

### Project Area

The project area consists of the ocean facing beaches for the entire coast of St. Johns County totaling 9.91 square miles and approximately 16 square miles of coastal bathymetric lidar.





## Project Approach

Woolpert has been asked to acquire elevation data for the entire St. Johns County Beach area utilizing lidar technology to monitor beach erosion, and support dune maintenance throughout the 2024 Hurricane season. Woolpert will acquire ~20 point per square meter lidar data and 2 points per square meter bathymetric lidar data for the St. John Beach coastline at the beginning of the 2024 hurricane season at low tide. Woolpert will initially acquire the data utilizing a base station. If the county tasks Woolpert to process this data, we will acquire survey ground points and checkpoints needed to meet the required vertical and horizontal accuracy specifications.

The following steps will be in place to allow for the best opportunities for a successful project.

- Flight Planning / Acquisition Approach
  - Woolpert has flight planned this project at low tide utilizing at an approximate altitude of 1,600' AGL. This lower altitude was selected to achieve the best chances of a consistent collection of lidar data. This altitude will allow us to fly underneath the clouds that are so prevalent along the East coast of Florida during the summer and fall. This altitude will produce a ~20 point per square meter point cloud for the topographic lidar and a 2 points per square meter for the bathymetric lidar. This approach will create an extremely dense and accurate surface model with a vertical accuracy of 10cm.

## Deliverables

Woolpert will acquire and process the pre-hurricane 2024 data unless St. Johns County requests Woolpert not to process the initial data. In the event of a hurricane or strong storm at the behest of St. Johns County, Woolpert will acquire post-storm lidar at the same specifications. At this time, Woolpert will process and produce final deliverables for the post storm lidar. Below are the final deliverables for both datasets.

- Topographic lidar deliverables:
  - LAS v1.4 classified point cloud at the rate 20 points/m<sup>2</sup> and including ground and structure classes
  - Ground DEMs with 1-foot resolution, in ESRI Grid format
  - 8-bit gray-scale intensity images of topographic returns in GeoTIFF format
  - Data to be delivered in tiles of 1250' x 1250' along with delivery of segmented data based on monument locations
  - FGDC-compliant metadata file
    - Include statements on horizontal and vertical accuracy (tested to meet or produced to meet)
- Bathymetric lidar deliverables:
  - LAS v1.4 classified point cloud including bathymetric ground, water surface, and noise classes
  - Bathymetric Ground DEMs with 3-foot resolution, in ESRI Grid Format
  - A shapefile of bathymetric voids above a minimum area threshold of 100 square feet will be produced and used to clip the DEMs.
  - Data to be delivered in tiles of 1250' x 1250'
  - FGDC-compliant metadata file
- Lidar processing report
- A signed and sealed survey report containing all relevant aspects of the ground and aerial surveys.



**Total Lump Sum Budgetary cost estimate:**

- **Pre-Hurricane 2024 Project cost – Task Order #1:**
  - Acquisition of high density lidar data (~20 ppsm topo/2ppsm Bathy) and ground control: \$187,629.00
  - Post Processing & Delivery of pre-hurricane lidar dataset: \$96,863.00
  - Task #1 Total: \$284,492.00**
  
- **Post Storm 2024 Project Cost – Task Order #2:**
  - Acquisition of high density lidar data (~20 ppsm topo/2ppsm Bathy) and ground control: \$187,629.00
  - Post Processing & Delivery of lidar dataset – Post Storm lidar: \$96,863.00
  - Task #2 Total: \$284,492.00**

Thank you once again for the opportunity to propose on this project. We look forward to your response and to working with you again. Should you have any questions at all, please never hesitate to call me at any time.

Sincerely,

Woolpert, Inc.

Jeff Lovin  
Sr. Vice President

Eric (Rick) J. Householder  
Program Director



## **Exhibit B – Surveying Specifications**

### **Beach Elevation Data Collection with Lidar St. Johns County**

#### **1. Region of Data Collection**

St. Johns County beaches countywide (between the Duval-St. Johns and Flagler-St. Johns boundaries) extending from the Atlantic Ocean shoreline to three varying distances landward of the waterline.

- From the Duval-St. Johns County line to the northern shore of the St. Augustine Inlet the western limit of data collection should be 600 feet landward of the waterline.
- From the southern shore of the St. Augustine Inlet to the northern shore of the Matanzas Inlet the western limit of data collection should be 1000 feet landward of the waterline.
- From the northern shore of the Matanzas Inlet to the Flagler-St. Johns County line the western limit of data collection should be 400 feet landward of the waterline.
- Bathymetric data will be acquired from the eastern most boundary of the topographic lidar AOI extending 2,000 feet offshore.

#### **2. Timing of Data Collection**

Within approximately one hour on either side of the astronomical low tide in the adjacent Atlantic Ocean. The acquisition shall take place only when the atmosphere is mostly clear of clouds, fog, haze, smoke, rain, or other phenomena which could hinder or negatively impact the success of Lidar data acquisition.

#### **3. Professional Requirements**

All survey related work must be accomplished under direct supervision of a surveyor currently licensed in the State of Florida.

#### **4. Methods and Data Standards**

All data must meet or exceed the primary set of specifications defined in this document, and those defined in the following documents where applicable:

- American Society for Photogrammetric Engineering and Remote Sensing (ASPRS) LAS Specification Version 1.4
- FGDC-STD-012-2002 Content Standard for Digital Geospatial Metadata: Extensions for Remote Sensing Metadata
- National Coastal Mapping Strategy (NCMS) for bathymetric lidar v1.0

All conditions specifically described in this document shall supersede any potentially conflicting technical specifications mentioned within any of the above referenced documents. A survey report shall be submitted and include explicit documentation describing how the CONTRACTOR satisfied or exceeded the specifications of this document and any of the above listed standards where applicable.

#### **5. Project Specifications**



St. Johns County requires acquisition and processing of aerial topographic lidar and bathymetric lidar, and supporting ground control services in accordance with the following techniques and specifications:

**5.1 Projections, Datums, and Units**

All geographic locations shall be delivered in the Florida State Plane Coordinate System East NAD 1983 and be in units of U.S. Survey Feet EPSG 6438. Elevations shall be reported in units of U.S. Survey Feet referenced to the North American Vertical Datum of 1988 (NAVD88 Geoid Model FPRNGD16B). All angular orientation data shall be formatted in units of decimal degrees.

**5.2.1 Geodetic Control and Positional Accuracy**

The network of survey control, both base stations and ground control points, shall be adequate to support the positional accuracy specifications outlined in this document.

Elevations at all control and check point locations shall be established by closed loop differential leveling using digital leveling techniques tied to NGS vertical monuments with a First Order Class II or better vertical designation. All leveling shall be accomplished with a digital level capable of 2nd Order or better accuracy. In addition to any designated control and check points locations, each turning point location shall be marked for recovery and determination of the horizontal coordinates. RTK GNSS or the FDOT VRS shall be used to establish the horizontal coordinates of all control, check points, and each of the turning point locations established during the differential leveling. The digital leveling and RTK/VRS procedures must demonstrate coordinate accuracies consistent with the control accuracy requirements set forth in Table 1.

Table 1	Ground Control/Checkpoint Requirements	Absolute Accuracy	Absolute Vertical Accuracy
	Horizontal Accuracy		
	± 5 cm or 0.16 ft RMSE		± 2.5 cm or 0.08 ft RMSE

**5.2.2 Aerial Lidar Positioning**

Position data must meet the ASPRS Accuracy Standards for 20 cm RMSE<sub>x</sub> and RMSE<sub>y</sub> Horizontal Accuracy Class and for 5 cm RMSE<sub>z</sub> non-vegetated Vertical Accuracy (NVA) Class (Tables 2 and 3). Vegetated vertical accuracy (VVA) need not be tested. Checkpoints shall be used each for horizontal and vertical accuracy testing. Checkpoints must be spread roughly equally in both vegetated and non-vegetated areas.

**Table 2 Lidar Horizontal Accuracy Requirements**

Horizontal Accuracy Class X	Absolute Accuracy				Relative Accuracy (Swath to Swath)			
	RMSE <sub>x</sub> , RMSE <sub>y</sub> ≤ X	RMSE <sub>x</sub> ≤ 1.414 X	Mean Error ± 0.25X	95% Confidence Level ≤ 2.448X	RMSD <sub>x</sub> , RMSD <sub>y</sub> ≤ X	RMSD <sub>r</sub> ≤ 1.1414 X	Mean Difference ± 0.25 X	95% Confidence Level ≤ 2.448X
20 cm 0.66 ft	≤ 20 cm ≤ 0.66 ft	≤ 28.3 cm ≤ 0.93 ft	± 5 cm ± 0.16 ft	≤ 49 cm ≤ 1.61 ft	≤ 20 cm ≤ 0.66 ft	≤ 28.3 cm ≤ 0.93 ft	± 5 cm ± 0.16 ft	≤ 49 cm ≤ 1.61 ft





**Table 3 Lidar Vertical Accuracy Requirements**

Vertical Accuracy Class X	Absolute Accuracy				Relative Accuracy (within Swath/Swath to Swath)			
	NVA RMSEz (X) ≤ X	NVA Mean Error ± 0.25X	NVA 95% Confidence Level ≤ 1.96X	VVA @ 95% Percentile ≤ 3.0X	Within Swath Max Difference ≤ 0.6X	RMSDz ≤ 0.8 X	Mean Difference ± 0.25 X	Max Difference ± 1.2 X
5 cm 0.16 ft	≤ 5 cm ≤ 0.16 ft	± 1.25 cm ± 0.04 ft	≤ 9.8 cm ≤ 0.32 ft	N/A	≤ 3 cm ≤ 0.10 ft	≤ 4 cm ≤ 0.13 ft	± 1.25 cm ± 0.04 ft	± 6 cm ± 0.20 ft

**Bathymetric Lidar Horizontal and Vertical Accuracy Requirements**

Woolpert follows NOAA National Geodetic Service (NGS) guidance for topographic-bathymetric lidar horizontal and vertical accuracy recommendations. Horizontal positions shall be accurate to ≤1.0m (RMSEr), {terrestrial only, bathymetric returns may exceed}.

The bathymetric lidar data collected under this project will be assessed and reported in accordance with the National Coastal Mapping Strategy (NCMS) for bathymetric lidar v1.0. The vertical accuracy will be assessed for bathymetric lidar quality level QL2b. The quality level definitions and corresponding accuracy requirements for bathymetric lidar are shown below:

**Table 4 Bathymetric Lidar Vertical Accuracy Requirements**

Bathy LIDAR Quality Level	Source	Vertical accuracy coefficients a,b	Nominal Pulse Spacing (m)	Point Density (pt/m <sup>2</sup> )	Example Applications
QL0 <sub>B</sub>	Bathymetric LIDAR	0.25, 0.0075	≤0.7	≥2.0	Detailed site surveys requiring the highest accuracy and highest resolution seafloor definition; dredging and inshore engineering surveys; high-resolution surveys of ports and harbors
QL1 <sub>B</sub>	Bathymetric LIDAR	0.25, 0.0075	≤2.0	≥0.25	
QL2 <sub>B</sub>	Bathymetric LIDAR	0.30, 0.0130	≤0.7	≥2.0	Charting surveys; regional sediment management General bathymetric mapping; coastal science and management applications Change analysis; deep-water surveys, environmental analysis
QL3 <sub>B</sub>	Bathymetric LIDAR	0.30, 0.0130	≤20	≥0.25	
QL4 <sub>B</sub>	Bathymetric Lidar	0.50, 0.0130	≤5.0	≥0.04	Recon/planning; all general applications not requiring higher resolution and accuracy

For submerged bathymetric data areas, the relative accuracy will meet NCMS 1.0, QL2b RMSEz between adjacent swaths with a maximum difference of ±29.6-cm.

**6. Deliverables**



The CONTRACTOR shall deliver to St. Johns County the following:

- LAS v1.4 classified point cloud at the rate 20 points/m<sup>2</sup> and including ground and structure classes
- Ground DEMs with 1-foot resolution, in ESRI Grid format
- 8-bit gray-scale intensity images in TIF format
- Data to be delivered in tiles of 1250' x 1250' along with delivery of segmented data based on monument locations
- FGDC-compliant metadata file
  - Include statements on horizontal and vertical accuracy (tested to meet or produced to meet)
- LAS v1.4 classified point cloud including bathymetric ground, water surface, and noise classes
- Bathymetric Ground DEMs with 3-foot resolution, in ESRI Grid Format
- A shapefile of bathymetric voids above a minimum area threshold of 100 square feet will be produced and used to clip the DEMs.
- Bathymetric data to be delivered in tiles of 1250' x 1250'
- FGDC-compliant metadata file for bathymetric data.
- Lidar processing report
- A signed and sealed survey report containing all relevant aspects of the ground and aerial surveys



**CONTRACT AGREEMENT**  
**RFQ NO: 21-34; Digital Orthophotography**  
**Master Contract #: 21-MCC-WOO-13032**

This Contract Agreement, ("Agreement") is made as of this 21<sup>st</sup> day of January, 2021, by and between **St. Johns County, FL** ("County"), a political subdivision of the State of Florida, with principal offices located at 500 San Sebastian View, St. Augustine, FL 32084, and **Woolpert, Inc.** ("Consultant"), authorized to do business in the State of Florida, with offices located at 4454 Idea Center Boulevard, Dayton, OH 45430-1500; Phone: (937) 461-5660; Fax: (937) 461-0743; and Email: [jeff.lovin@woolpert.com](mailto:jeff.lovin@woolpert.com).

In consideration of the mutual promises contained herein, the County and the Consultant agree as follows:

**ARTICLE 1 – DURATION and EXTENSION**

This Agreement shall become effective upon signature by the County, as of the Effective Date shown above, shall remain in effect for a period of six (6) calendar years, and may be extended as necessary to complete the required services, upon satisfactory performance by the Consultant, mutual agreement by both parties, and the availability of funds. While this Agreement may be extended as stated in this Article, it is expressly noted that the County is under no obligation to extend this Agreement. It is further expressly understood that the option of extension is exercisable only by the County, and only upon the County's determination that the Consultant satisfactorily performed the Services noted in the Contract Documents.

**ARTICLE 2 - ENUMERATION OF CONTRACT DOCUMENTS**

The term "Contract Documents" shall include all RFQ Documents and any addenda/exhibits thereto; all Specifications; this Agreement, any duly executed amendments, addenda, and/or exhibits hereto; and any and all Change Orders.

**ARTICLE 3 - SERVICES**

The Consultant's responsibility under this Agreement is to provide any and all labor, materials, equipment, transportation, and supervision necessary to provide professional services for digital orthophotos for St. Johns County, Florida, as specified in the Scope of Work attached hereto as "Exhibit B", proposed by the Consultant, approved by the County in accordance with RFQ No: 21-34 and as otherwise provided in the Contract Documents.

The project consists of providing professional services for digital orthophotos for St. Johns County, Florida. The project area consists of eight hundred sixty-six (866) 5,000' x 5,000' tiles for a total of seven hundred seventy-six (776) square miles. All tiles are full tiles where specific coastal tiles shall be collected within +/- 2 hours of Mean Lower Low Water (MLLW).

Services provided by the Consultant shall be under the general direction of St. Johns County Land Management Systems Department or other authorized County designee, who shall act as the County's representative throughout the duration of this Agreement.

**ARTICLE 4 – SCHEDULE**

The Consultant shall perform the required Services according to the schedule submitted and approved by the County. No changes to said schedule shall be made without prior written authorization from the County's representative.

**ARTICLE 5 – COMPENSATION/BILLING/INVOICES**

- A. The County shall compensate the Consultant a total lump sum amount not to exceed **One Hundred Twenty-Eight Thousand Four Hundred Forty-Three Dollars and Fifty-Two Cents (\$128,443.52)** in accordance with the Fee Schedule provided herein on Exhibit "A", which shall include any and all direct and indirect costs, and reimbursable expenses. The maximum amount available as compensation to Consultant under this Agreement shall not exceed the amount stated above without the County's express written approval, and amendment, to this Agreement.
- B. The Consultant may request increases to this Fee Schedule on a bi-annual basis. Requests for changes to the fees must be submitted to the Purchasing Manager or designee no later than sixty (60) days prior to each scheduled round of Orthoimagery for review. If approved, changes to the fees shall be authorized through a Contract Amendment, and signed by both parties.
- C. It is strictly understood that Consultant is not entitled to the above-referenced amount of compensation. Rather,

Consultant's compensation is based upon Consultant's adhering to the Scope of Work, detailed in this Agreement. As such, the Consultant's compensation is dependent upon satisfactory completion and delivery of all work products and deliverables noted in the Scope of Work, and detailed in this Agreement.

- D. The Consultant shall bill the County for services satisfactorily performed, and materials satisfactorily delivered at the end of the month services are completed. The signature of the Consultant's authorized representative on the submitted invoice shall constitute the Consultant's certification to the County that:
1. The Consultant has billed the County for all services rendered by it and any of its Consultants or subcontractors or subconsultants through the date of the invoice;
  2. As of the date of the invoice, no other outstanding amounts are due from the County to the Consultant for services rendered;
  3. The reimbursable expenses, if any, have been reasonably incurred; and
  4. The amount requested is currently due and owing.
- E. Though there is no billing form or format pre-approved by either the County, or the Consultant, bills/invoices submitted by the Consultant shall include a detailed written report of the Work accomplished in connection with the Scope of Work, and must be submitted with a Request for Payment Form 1551, as provided by the County. The County may return a bill/invoice from the Consultant, and request additional documentation/information. Under such circumstances, the timeframe for payment will be extended by the time necessary to receive a verified bill/invoice.
- F. The Consultant's acceptance of the County's payment of an invoiced amount shall release the County from any claim by the Consultant, or by the Consultant's sub-contractors, for work performed but not invoiced during the time period indicated on the invoice for which payment was issued.
- G. Unless otherwise notified, bills/invoices should be delivered to:
- St. Johns County Land Management Systems Department  
Attn: Gail Oliver, PLS, Director of Land Management Systems  
500 San Sebastian View  
St. Augustine, FL 32084
- H. **FINAL INVOICE:** In order for the County and the Consultant to reconcile/close their books and records, the Consultant shall clearly indicate "Final Invoice" on the Consultant's final bill/invoice to the County. Such indication establishes that all services have been satisfactorily performed and that all charges and costs have been invoiced to the County and that there is no further Work to be performed under this Agreement.

#### **ARTICLE 6 – TRUTH-IN-NEGOTIATION CERTIFICATE**

The signing of this Agreement by the Consultant shall act as the execution of a truth-in-negotiation certificate certifying that wage rates and other factual unit costs supporting the compensation are accurate, complete, and current as of the date of this Agreement.

The original contract price and any additions thereto shall be adjusted to exclude any significant sums by which the County determines the contract price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. All such contract adjustments shall be made within one (1) year following the end of the Agreement.

#### **ARTICLE 7 – ARREARS**

The Consultant shall not pledge the County's credit or make it a guarantor of payment or surety for any contract, debt, obligation, judgement, lien, or any form of indebtedness. The Consultant further warrants and represents that it has no obligation or indebtedness that would impair its ability to fulfill the terms of this Agreement.

#### **ARTICLE 8 – TERMINATION**

- A. This Agreement may be terminated by the County without cause upon at least thirty (30) calendar days advance written notice to the Consultant of such termination without cause.
- B. This Agreement may be terminated by the County with cause upon at least seven (7) calendar days advance written notice of such termination with cause. Such written notice shall indicate the exact cause for termination.

## **ARTICLE 9 – NOTICE OF DEFAULT/RIGHT TO CURE**

- A. Should the Consultant fail to perform (default) under the terms of this Agreement, then the County shall provide written notice to the Consultant, which such notice shall include a timeframe of no fewer than seven (7) calendar days in which to cure the default. Failure to cure the default within the timeframe provided in the notice of default (or any such amount of time as mutually agreed to by the parties in writing), shall constitute cause for termination of this Agreement.
- B. Consistent with other provisions in this Agreement, Consultant shall be paid for services authorized and satisfactorily performed under this Contract up to the effective date of termination.
- C. Upon receipt of a notice of termination, except as otherwise directed by the County in writing, the Consultant shall:
  - 1. Stop work on the date to the extent specified.
  - 2. Terminate and settle all orders and subcontracts relating to the performance of the terminated work.
  - 3. Transfer all work in process, completed work, and other material related to the terminated work to the County.
  - 4. Continue and complete all parts of the work that have not been terminated.

## **ARTICLE 10 – PERSONNEL**

The Consultant represents that it has, or shall secure at its own expense, all necessary personnel required to perform the Work as provided in the Contract Documents. It is expressly understood that such personnel shall not be employees of, or have any contractual relationship with the County.

All Work required hereunder shall be performed by the Consultant, or under its supervision. All personnel engaged in performing the Work shall be fully qualified and, if required, authorized or permitted under federal, state and local law to perform such Work.

Any changes or substitutions in the Consultant's key personnel must be made known to the County's representative and written approval granted by the County before said change or substitution can become effective.

The Consultant warrants that all Work shall be performed by skilled and competent personnel to the highest professional standards in the field. The Consultant is responsible for the professional quality, technical accuracy, and timely completion of all work performed hereunder, and shall correct or revise any errors or deficiencies in the Work, without additional compensation.

## **ARTICLE 11 – SUBCONTRACTING**

The County reserves the right to approve the use of any subcontractor, or to reject the selection of a particular subcontractor, and to inspect all facilities of any subcontractors in order to make a determination as to the capability of the subcontractor to perform the Work described in the Contract Documents. The Consultant is encouraged to seek minority and women business enterprises for participation in subcontracting opportunities.

If a subcontractors or subconsultant fails to satisfactorily perform in accordance with the Contract Documents, and it is necessary to replace the subcontractors or subconsultants to complete the Work in a timely fashion, the Consultant shall promptly do so, subject to approval by the County.

The County reserves the right to disqualify any subcontractor, vendor, or material supplier based upon prior unsatisfactory performance.

## **ARTICLE 12 – E-VERIFY**

The Consultant shall utilize the U.S. Department of Homeland Security's E-Verify System to verify employment eligibility of any and all personnel hired to perform work under this Agreement. Additionally, the Consultant shall explicitly require any and all sub-consultants and sub-consultants to utilize the U.S. Department of Homeland Security's E-Verify System to verify employment eligibility of all personnel hired to perform work under this Agreement.

## **ARTICLE 13 – FEDERAL AND STATE TAX**

In accordance with Local, State, and Federal law, the County is exempt from the payment of Sales and Use Taxes. The County shall provide a tax exemption certificate to the Consultant upon request. The Consultant shall not be exempt from the payment of all applicable taxes in its performance under this Agreement. It is expressly understood by the County and by the Consultant that the Consultant shall not be authorized to use the County's Tax Exemption status in any manner.

The Consultant shall be solely responsible for the payment and accounting of any and all applicable taxes and/or withholdings including but not limited to Social Security payroll taxes (FICA), associated with or stemming from Consultant's performance under this Agreement.

**ARTICLE 14 – AVAILABILITY OF FUNDS**

The County's obligations under this Agreement are contingent upon the lawful appropriation of sufficient funds, for that purpose, by the St. Johns County Board of County Commissioners. Pursuant to the requirements of Section 129.07, Florida Statutes, payment made under this Agreement shall not exceed the amount appropriate in the County's budget for such purpose in that fiscal year. Nothing in this Agreement shall create any obligation on the part of the Board of County Commissioners to appropriate such funds for the payment of services provided under this Agreement during any given County fiscal year. Moreover, it is expressly noted that the Consultant cannot demand that the County provide any such funds in any given County Fiscal Year.

**ARTICLE 15 - INSURANCE**

The Consultant shall not commence work under this Agreement until he/she has obtained all insurance required under this section and such insurance has been approved by the County. All insurance policies shall be issued by companies authorized to do business under the laws of the State of Florida. The Consultant shall furnish proof of Insurance to the County prior to the commencement of operations. The Certificate(s) shall clearly indicate the Consultant has obtained insurance of the type, amount, and classification as required by contract and that no material change or cancellation of the insurance shall be effective without thirty (30) days prior written notice to the County. Certificates shall specifically include the County as Additional Insured for all lines of coverage except Workers' Compensation and Professional Liability. A copy of the endorsement must accompany the certificate. Compliance with the foregoing requirements shall not relieve the Consultant of its liability and obligations under this Agreement.

Certificate Holder Address: St. Johns County, a political subdivision of the State of Florida  
500 San Sebastian View  
St. Augustine, FL 32084

The Consultant shall maintain during the life of this Agreement, Comprehensive General Liability Insurance with minimum limits of \$1,000,000 per occurrence, \$2,000,000 aggregate to protect the Consultant from claims for damages for bodily injury, including wrongful death, as well as from claims of property damages which may arise from any operations under this Agreement, whether such operations be by the Consultant or by anyone directly employed by or contracting with the Consultant.

The Consultant shall maintain during the life of this Agreement, Comprehensive Automobile Liability Insurance with minimum limits of \$2,000,000 combined single limit for bodily injury and property damage liability to protect the Consultant from claims for damages for bodily injury, including the ownership, use, or maintenance of owned and non-owned automobiles, including rented/hired automobiles whether such operations be by the Consultant or by anyone directly or indirectly employed by a Consultant.

The Consultant shall maintain during the life of the contract, Professional Liability or Errors and Omissions Insurance with minimum limits of \$1,000,000, if applicable.

The Consultant shall maintain during the life of this Agreement, adequate Workers' Compensation Insurance in at least such amounts as are required by the law for all of its employees (if three or more) per Florida Statute 440.02.

In the event of unusual circumstances, the County Administrator, or his designee, may adjust these insurance requirements.

**ARTICLE 16 - INDEMNIFICATION**

The Consultant shall indemnify and hold harmless the County, and its officers, and employees, from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fees, to the extent caused by the negligence, recklessness, intentional/unintentional conduct or omission of the Consultant and other persons employed or utilized by the Consultant.

**ARTICLE 17 – SUCCESSORS AND ASSIGNS**

The County and the Consultant each binds itself and its partners, successors, executors, administrators and assigns to the other party of this Agreement and to the partners, successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement. Except as above, neither the County nor the Consultant shall assign, sublet, convey or transfer its interest in this Agreement without the written consent of the other. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of the County, which may be a party hereto, nor shall it be construed as giving any rights or benefits hereunder to anyone other than the County and the Consultant.

**ARTICLE 18 – NO THIRD PARTY BENEFICIARIES**

It is expressly understood by the County, and the Consultant, and this Agreement explicitly states that no third party beneficiary status or interest is conferred to, or inferred to, any other person or entity.

**ARTICLE 19 – REMEDIES**

No remedy herein conferred upon any party is intended to be exclusive, or any other remedy, and each and every such remedy shall be cumulative and shall be in addition to every other remedy given hereunder or nor or hereafter existing at law or in equity or by statute or otherwise. No single or partial exercise by any party or any right, power, or remedy hereunder shall preclude any other or further exercise thereof.

In any action brought by either party for the enforcement of the obligations of the other party, the prevailing party shall be entitled to recover reasonable attorney's fees.

**ARTICLE 20 – CONFLICT OF INTEREST**

The Consultant represents that it presently has no interest and shall acquire no interest, either directly or indirectly, which would conflict in any manner with the performance of services required hereunder. The Consultant further represents that no person having any interest shall be employed for said performance.

The Consultant shall promptly notify the County, in writing, by certified mail, of all potential conflicts of interest for any prospective business association, interest or other circumstance, which may influence or appear to influence the Consultant's judgment or quality of services being provided hereunder. Such written notification shall identify the prospective business association, interest or circumstance, the nature of work that the Consultant may undertake and request an opinion of the County, whether such association, interest, or circumstance constitutes a conflict of interest if entered into by the Consultant.

The County agrees to notify the Consultant of its opinion by certified mail within thirty (30) days of receipt of notification by the Consultant. If, in the opinion of the County, the prospective business association, interest or circumstance would not constitute a conflict of interest by the Consultant, the County shall so state in the notification and the Consultant shall, at his/her option enter into said association, interest or circumstance and it shall be deemed not in conflict of interest with respect to services provided to the County by the Consultant under the terms of this Agreement.

**ARTICLE 21 – EXCUSABLE DELAYS**

The Consultant shall not be considered in default by reason of any delay in performance if such delay arises out of causes reasonably beyond the Consultant's control and without its fault or negligence. Such cases may include, but are not limited to: acts of God; the County's ommissive and commissive failures; natural or public health emergencies; freight embargoes; and severe weather conditions.

If delay is caused by the failure of the Consultant's subcontractors or subconsultant(s) to perform or make progress, and if such delay arises out of causes reasonably beyond the control of the Consultant and its subcontractors or subconsultant(s) and is without the fault or negligence of either of them, the Consultant shall not be deemed to be in default.

Upon the Consultant's request, the County shall consider the facts and extent of any delay in performing the work and, if the Consultant's failure to perform was without its fault or negligence, the Contract Schedule and/or any other affected provision of this Agreement shall be revised accordingly; subject to the County's right to change, terminate, or stop any or all of the Work at any time.

**ARTICLE 22 – DISCLOSURE AND OWNERSHIP OF DOCUMENTS**

The Consultant shall deliver to the County for approval and acceptance, and before being eligible for final payment of any amounts due, all documents and materials prepared by and for the County under this Agreement.

All written and oral information not in the public domain, or not previously known, and all information and data obtained, developed, or supplied by the County, or at its expense, shall be kept confidential by the Consultant and shall not be disclosed to any other party, directly or indirectly, without the County's prior written consent, unless required by a lawful order. All drawings, maps, sketches, and other data developed, or purchased under this Agreement, or at the County's expense, shall be and remains the County's property and may be reproduced and reused at the discretion of the County.

The County and the Consultant shall comply with the provisions of Chapter 119, Florida Statutes (Public Records Law). All covenants, agreements, representations and warranties made herein, or otherwise made in writing by any party pursuant hereto, including but not limited to, any representations made herein relating to disclosure or ownership of documents, shall survive the execution and delivery of this Agreement and the consummation of the transactions contemplated hereby.

#### **ARTICLE 23 – INDEPENDENT CONSULTANT RELATIONSHIP**

The Consultant is, and shall be, in the performance of all work services and activities under this Agreement, an independent Consultant, and not an employee, agent, or servant of the County. All persons engaged in any of the work or services performed pursuant to this Agreement shall at all times and in all places be subject to the Consultant's sole direction, supervision, and control.

The Consultant shall exercise control over the means and manner in which it and its employees perform the work, and in all respects the Consultant's relationship and the relationship of its employees to the County shall be that of an independent Consultant and not as employees or agents of the County. The Consultant does not have the power or authority to bind the County in any promise, agreement or representation other than specifically provided for in this Agreement.

#### **ARTICLE 24 – CONTINGENT FEES**

Pursuant to Section 287.055(6), Florida Statutes, the Consultant warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Consultant to solicit or secure this Agreement and that it has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for the Consultant, any fee, commission, percentage, gift, or any other consideration contingent upon or resulting from the award or making of this Agreement.

Violation of this section shall be grounds for termination of this Agreement. If this Agreement is terminated for violation of this section, the County may deduct from the contract price, or otherwise recover, the full amount of such fee, commission, percentage, gift, or other consideration.

#### **ARTICLE 25 – ACCESS AND AUDITS**

The Consultant shall maintain adequate records to justify all charges, expenses, and costs incurred in performing the work for at least three (3) years after completion of this Agreement. The County shall have access to such books, records, and documents as required in this section for the purpose of inspection or audit during normal business hours, at the County's cost, upon five (5) days written notice.

#### **ARTICLE 26 – NONDISCRIMINATION**

The Consultant warrants and represents that all of its employees are treated equally during employment without regard to race, color, religion, physical handicap, sex, age or national origin.

#### **ARTICLE 27 – ENTIRETY OF CONTRACTUAL AGREEMENT**

The County and the Consultant agree that this Agreement, signed by both parties sets forth the entire agreement between the parties, and that there are no promises or understandings other than those stated herein, or are incorporated by reference into this Agreement. None of the provisions, terms, conditions, requirements, or responsibilities noted in this Agreement may be amended, revised, deleted, altered, or otherwise changed, modified, or superseded, except by written instrument, duly executed by authorized representatives of both the County, and the Consultant.

#### **ARTICLE 28 – ENFORCEMENT COSTS**

If any legal action or other proceeding is brought for the enforcement of this Agreement, or because of an alleged dispute, breach, default or misrepresentation in connection with any provisions of this Agreement, the successful or prevailing party or parties shall be entitled to recover reasonable attorney's fees, court costs and all reasonable expenses even if not



taxable as court costs (including, without limitation, all such reasonable fees, costs and expenses incident to appeals), incurred in that action or proceedings, in addition to any other relief to which such party or parties may be entitled.

**ARTICLE 29 – COMPLIANCE WITH APPLICABLE LAWS**

Both the County and the Consultant shall comply with any and all applicable laws, rules, regulations, orders, and policies of the County, State, and Federal Governments.

**ARTICLE 30 – AUTHORITY TO PRACTICE**

The Consultant hereby represents and warrants that it has and shall continue to maintain all licenses and approvals required to conduct its business, and that it shall at all times, conduct its business activities in a reputable manner.

**ARTICLE 31 – SEVERABILITY**

If any term or provision of this Agreement, or the application thereof to any person or circumstances shall, to any extent, be held invalid or unenforceable, the remainder of this Agreement, or the application of such items or provision, to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected and every other term and provision of this Agreement shall be deemed valid and enforceable to the extent permitted by law.

**ARTICLE 32 - AMENDMENTS AND MODIFICATIONS**

No amendments or modifications of this Agreement shall be valid unless in writing and signed by each of the parties.

The County reserves the right to make changes in the work, including alterations, reductions therein or additions thereto. Upon receipt by the Consultant of the County's notification of a contemplated change, the Consultant shall: (1) if requested by the County, provide an estimate for the increase or decrease in cost due to the contemplated change; (2) notify the County of any estimated change in the completion date; and (3) advise the County in writing if the contemplated change shall effect the Consultant's ability to meet the completion dates or schedules of this Agreement. If the County instructs in writing, the Consultant shall suspend work on that portion of the project, pending the County's decision to proceed with the change. If the County elects to make the change, the County shall issue a Change Order for changes, or a contract change order, if the original contract is to be changed or amended the Consultant shall not commence work on any such change until such written change order has been issued and signed by each of the parties.

**ARTICLE 33 – FLORIDA LAW & VENUE**

This Agreement shall be governed by the laws of the State of Florida. Any and all legal action necessary to enforce this Agreement shall be held in St. Johns County, Florida.

**ARTICLE 34 – ARBITRATION**

The County shall not be obligated to arbitrate or permit any arbitration binding on the County under any of the Contract Documents or in connection with the project in any manner whatsoever.

**ARTICLE 35 - NOTICES**

All notices required in this Agreement shall be sent by certified mail, return receipt requested, and if sent to the County shall be mailed to:

St. Johns County Purchasing Department  
**Attn: Purchasing Manager**  
500 San Sebastian View  
St. Augustine, FL 32084

and if sent to the Consultant shall be mailed to:

Woolpert, Inc.  
**Attn: Jeff S. Lovin, CP, PS, Senior Vice President**  
4454 Idea Center Boulevard  
Dayton, OH 45430-1500

**ARTICLE 36 - HEADINGS**

The heading preceding the articles and sections herein are solely for convenience of reference and shall not constitute a part of this Agreement, or affect its meaning, construction or effect.

**ARTICLE 37 – USE OF COUNTY LOGO**

Pursuant to, and consistent with, County Ordinance 92-2 and County Administrative Policy 101.3, the Consultant may not manufacture, use, display, or otherwise use any facsimile or reproduction of the County Seal/Logo without express written approval St. Johns County, Florida.

**ARTICLE 38 – SURVIVAL**

It is explicitly noted that the following provisions of this Agreement, to the extent necessary, shall survive any suspension, termination, cancellation, revocation, and/or non-renewal of this Agreement, and therefore shall be both applicable and enforceable beyond any suspension, termination, cancellation, revocation, and/or non-renewal: (1) Truth-in-Negotiation; (2) Federal and State Taxes; (3) Insurance; (4) Indemnification; (5) Access and Audits; (6) Enforcement Costs; and (7) Access to Records.

**ARTICLE 39 – AUTHORITY TO EXECUTE**

Each party represents that it has the lawful authority to enter into this Agreement and has authorized the execution of this Agreement by the party’s authorized representative shown below.

**ARTICLE 40 – PUBLIC RECORDS**

- A. The cost of reproduction, access to, disclosure, non-disclosure, or exemption of records, data, documents, and/or materials, associated with this Agreement shall be subject to the applicable provisions of the Florida Public Records Law (Chapter 119, Florida Statutes), and other applicable State and Federal provisions. Access to such public records, may not be blocked, thwarted, and/or hindered by placing the public records in the possession of a third party, or an unaffiliated party.
- B. In accordance with Florida law, to the extent that Consultant’s performance under this Contract constitutes an act on behalf of the County, Consultant shall comply with all requirements of Florida’s public records law. Specifically, if Consultant is expressly authorized, and acts on behalf of the County under this Agreement, Consultant shall:
  - (1) Keep and maintain public records that ordinarily and necessarily would be required by the County in order to perform the Services;
  - (2) Upon request from the County’s custodian of public records, provide the County with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost as provided in Chapter 119, Florida Statutes, or as otherwise provided by law;
  - (3) Ensure that public records related to this Agreement that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by applicable law for the duration of this Agreement and following completion of this Agreement if the Consultant does not transfer the records to the County; and
  - (4) Upon completion of this Agreement, transfer, at no cost, to the County all public records in possession of the Consultant or keep and maintain public records required by the County to perform the Services.

If the Consultant transfers all public records to the County upon completion of this Agreement, the Consultant shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Consultant keeps and maintains public records upon completion of this Agreement, the Consultant shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the County, upon request from the County’s custodian of public records, in a format that is compatible with the County’s information technology systems.

Failure by the Consultant to comply with the requirements of this section shall be grounds for immediate, unilateral termination of this Agreement by the County.

**IF THE CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO ITS DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:**

**500 San Sebastian View  
St. Augustine, FL 32084  
(904) 209-0805  
[publicrecords@sjcfl.us](mailto:publicrecords@sjcfl.us)**

**RFQ NO: 21-34; Digital Orthophotography  
Master Contract #: 21-MCC-WOO-13032**

IN WITNESS WHEREOF, authorized representatives of the County and Consultant have executed this Agreement on the day and year below noted.

**Owner**

St. Johns County, FL (Seal)  
(Typed Name)

By: [Signature]  
Signature of Authorized Representative

Leigh A. Daniels, CPPB  
Printed Name

Purchasing Manager  
Title

1/26/21  
Date of Execution

**Consultant**

Woolpert, Inc. (Seal)  
(Typed Name)

By: [Signature]  
Signature of Authorized Representative

Tom Downey - Vice President  
Printed Name & Title

1/20/21  
Date of Execution

**ATTEST:**  
**St. Johns County, FL**  
**Clerk of Courts**

By: [Signature]  
Deputy Clerk

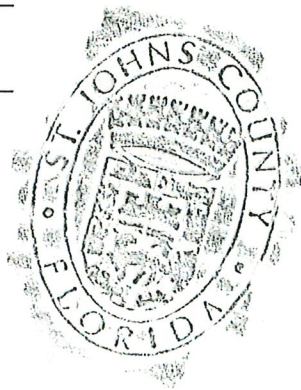
1/26/21  
Date of Execution

ST JOHNS COUNTY  
JAN 26 '21  
PURCHASING

**Legally Sufficient:**

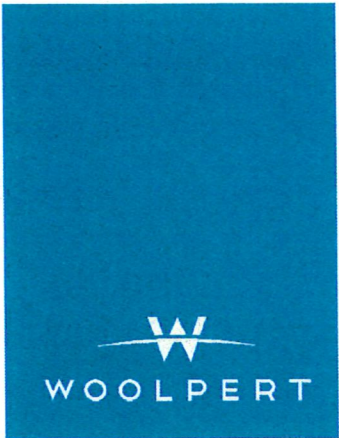
[Signature]  
Deputy County Attorney

1/26/21  
Date of Execution



**RFQ NO: 21-34; DIGITAL ORTHOPHOTOGRAPHY**  
**Master Contract #: 21-MCC-WOO-13032**

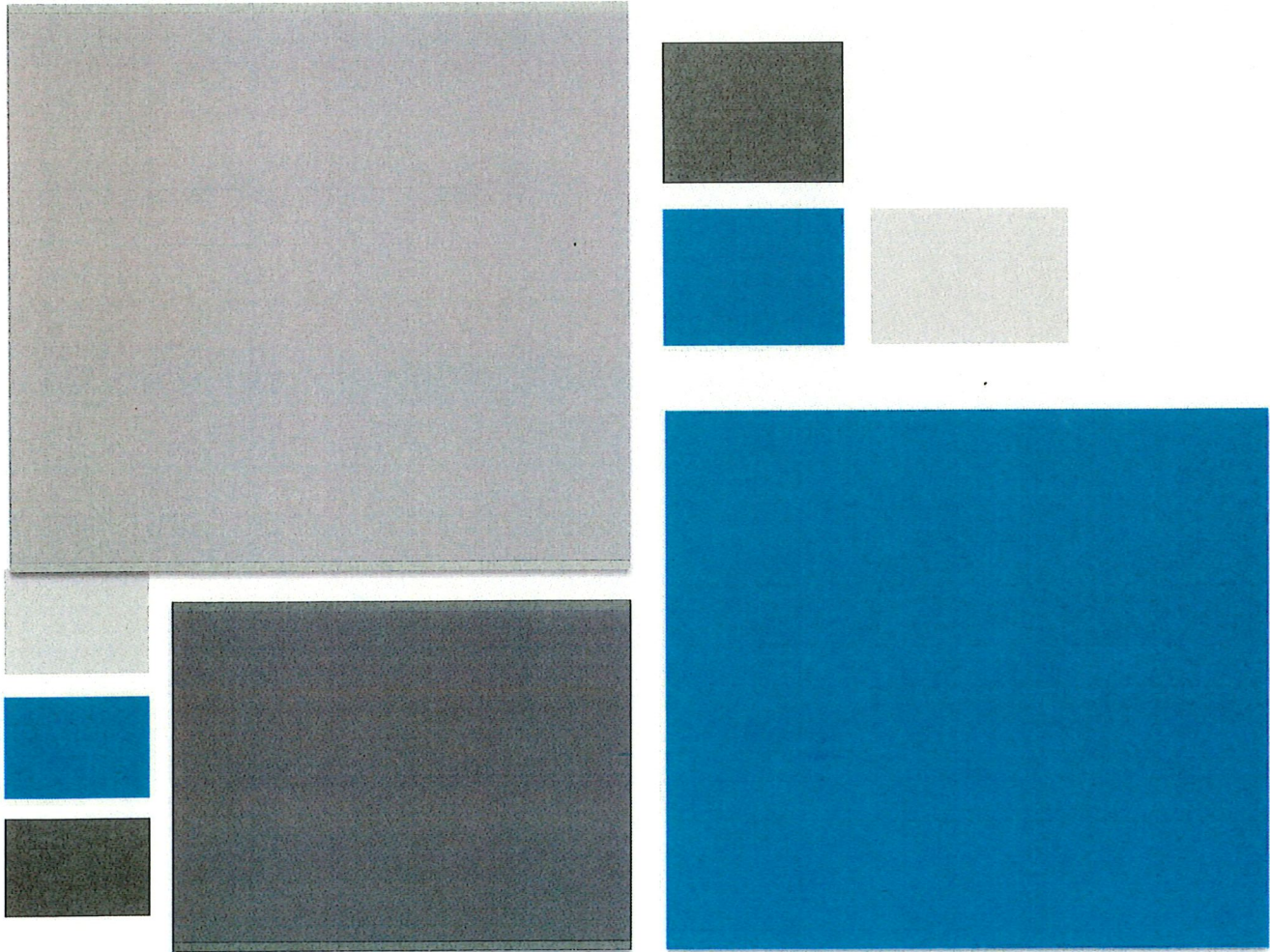
**EXHIBIT "A" – CONTRACTORS SCOPE OF WORK AND FEE SCHEDULE**



SCOPE OF WORK

2021 DIGITAL ORTHOPHOTOGRAPHY  
AND ADDITIONAL SERVICES  
St. Johns County, Florida

January 7, 2021





January 7, 2021

Ms. April Bacon, Purchasing Buyer  
Purchasing Division  
St. Johns County Board of County Commissioners  
500 San Sebastian View  
St. Augustine, FL 32084

**RE: Proposal for 2021 Digital Orthophotography and Additional Services Scope of Work**

Dear Ms. Bacon:

Woolpert, Inc. is pleased to submit our scope of work proposal to St. Johns County for the referenced project. The following pages detail our scope, methodology, deliverables, schedule and cost.

Sam Moffat, GISP, is Woolpert's designated Program Director. Eric Cole will serve as Woolpert's Project Manager and Mike Zoltek, PSM, CP, GISP will be Woolpert's Production Manager.

We look forward to working with St. Johns County on this project.

Sincerely,

Woolpert, Inc.

Jon Downey, PMP  
Vice President and Authorized Signatory



## Project Management

Upon receipt of notice of award, Woolpert will develop a project plan that covers the phases of the project, detailing how we will achieve the desired results, this plan will be a step-by-step guide for completing the project. The Project Plan will also include a detailed Procedures and Quality Assurance/ Quality Control (QA/QC) Guide outlining the accuracy and quality expectations for all products.

Sam Moffat | Program Director. Mr. Moffat will serve as the team's Program Director. He will work with St. Johns County to help identify mapping needs and deliver appropriate geospatial solutions. Mr. Moffat will provide general oversight and guidance with the County and Woolpert's Project Manager. He understands the Florida geospatial services environment and will listen intently to the County's comments and concerns and work diligently to resolve any issues.

Eric Cole | Project Manager. Mr. Cole will serve as the team's designated Project Manager. He will be the County's primary point of contact for this project and will be ultimately responsible for the team's performance. He will work with the entire project team to assure that the requirements and expectations of the County are met. Mr. Cole's primary responsibilities will be project planning, monitoring the schedule, determining and acquiring the needed resources, monitoring budgets and tasks to ensure quality control, and establishing project expectations.

Michael Zoltek, CP, PSM, CP, CFeds, GISP | Florida PSM Production Manager. Mr. Zoltek is a land surveyor, photogrammetrist, and GIS professional with over 27 years of experience. Mike brings clients a comprehensive background in surveying and mapping. He will serve as the PSM for this project and will monitor and review all technical aspects of this project to ensure the data and procedures meet all necessary requirements.

## Project Approach and Understanding

This project will incorporate all necessary tasks for the production of 0.5-foot pixel resolution orthophotography.

The project goal is to acquire new 4-band aerial imagery at a nominal 0.5-foot GSD, or better, for the subsequent production of digital orthophotography with a 0.5-foot pixel resolution delivered in uncompressed GeoTIFF format with FGDC compliant metadata.

Woolpert's project approach provides oversight of all facets of the projects with two Professional Surveyors and Mappers (PSMs) on the project team (Jose Sanfiel, PSM for ground control and Mike Zoltek, PSM, CP, CFeds, GISP for certification of all deliverable products). Woolpert will use the most cost-effective and efficient technology to produce the products and services that meet St. Johns County's accuracy and quality expectations.

By leveraging ESRI's ArcGIS Server for our SmartView redlining solution, we are providing a very simple and efficient architecture through which we can quickly, easily, and securely provide WMTS/WMS web services. Enabling these WMTS/WMS services will allow the County and other permitted users to connect to the imagery from other commercial off the shelf (COTS) and custom GIS packages such as ArcGIS Desktop. There is a huge benefit to providing this service to the County as it will provide significant time savings in giving feedback to Woolpert regarding desired quality, particularly as it relates to imagery. These datasets can be loaded as raster layers in any OGC-compliant GIS application, enabling users to utilize them as base layers on which they can overlay any existing local or State-held vector datasets for analysis and visualization.

## Specific Elements of the Technical Approach

### Project Planning

This phase will allow for the finalization of a project plan based on the scope of work, schedules, communication/coordination protocols, tracking, and QA/QC procedures.

All work will be done in accordance with the Florida Department of Revenue's *Florida County Digital Orthoimagery Program Standards, Dated October 18, 2019.*

Woolpert's Project Manager, Eric Cole, will tailor the project plan for presentation during a kickoff meeting, which will be held with Woolpert's production members and St. Johns County staff. An important element of these meetings is the assignment of roles and responsibilities among team members and the client.





## Aerial Imagery Acquisition

Color (RGB) and Color Infrared (CIR) will be captured simultaneously across the project area using Woolpert's Leica ADS100 large-format, multi-spectral sensors across the entire 776 square mile project areas (~866 – 5,000 x 5,000 tiles). The aerial imagery will be acquired at a flying height capable of producing 1"=100' scale orthoimagery with a 6" pixel resolution.

Woolpert will run the raw ADS imagery through initial processes immediately after acquisition has been completed to ensure that all project specifications have been met. This allows any necessary reflights to be accomplished as soon as possible after the date of the original acquisition.

Functionality of flight will include the ability to extract layers of data to produce optional future products such as planimetric features: structures, roads, parking, rivers, lakes, vegetation, etc.; topographic features: DTM, Contours, storm-water modeling, view-shed Analysis, 3D modeling, etc.

Aerial imagery will be obtained when the solar angle will be at least 30 degrees or more above the horizon at the time of exposure. Imagery collection will start as soon as Woolpert receives Notice to Proceed. It is anticipated that collections would begin in late January 2021 based on monitoring best leaf off conditions, when the sky is sufficiently clear; the ground is sufficiently free from haze, fog, smoke, or dust; and when streams are within their normal banks and when tidal waters are at low tide. Woolpert will use a large format Leica ADS digital aerial camera that captures continuous image strips along the flight line, thus creating 100% endlap. All flight lines will be flown with a minimum of 45% sidelap and will adhere to all other inflight requirements pertaining to the crab and tilt of the aircraft. The imagery will also be captured with a radiometric resolution of at least 12-bits/pixel for each band of imagery (red, green, blue and Infrared). Woolpert's Leica ADS sensor will capture all 4-bands of imagery individually and does not require a pan-sharpening process to produce the infrared band. The resulting orthoimagery will support high geometric accuracies and is compatible with existing softcopy environments.

The allowable RMSE<sub>x</sub> and RMSE<sub>y</sub> shall be less than or equal to 1.0 feet (2 pixels).

## Flight Season

The FDOR specified flight season will be from October 1st through March 15th. Every effort will be made to collect imagery prior to January 30th. Imagery collected outside of this flight season will require written approval from contracting agency.

## Image Quality

Imagery shall be acquired to minimize excessive tilt/lean in buildings, obstruction by shadows, image smear, environmental conditions (clouds, haze, smoke, glare, solar reflection over water bodies, etc.), vegetative conditions, etc. Every effort should also be made to acquire imagery under optimum low tide conditions. Radiometric and color balancing of the imagery is described in Section 5: Orthoimage Deliverables. All images must be collected with a sun angle no less than 30 degrees. Imagery shall be acquired at sufficient overlap coverage in "high-rise" urban areas to ensure all transportation infrastructure is clearly visible.

## Horizontal & Vertical Datum

Orthoimagery and other topographic products shall be referenced to the most current national datum, which presently is the NAD83 (2011). The map projection referenced shall be the appropriate Florida State Plane Coordinate System in units of USft. Orthoimagery and other topographic products shall be referenced to the NAVD88 in units of ft.

## Accuracy

Unless otherwise stated, the horizontal and vertical accuracy of orthoimagery products shall be meet the requirements of the **ASPRS Positional Accuracy Standards for Digital Geospatial Data**.

Horizontal accuracy of orthoimagery products shall be tested to meet 2.5 feet at the 95% confidence interval. The ASPRS standards require direct comparison to checkpoints from an independent source of at least three times greater accuracy. The minimum number of well distributed check points should meet the ASPRS recommendations. Some project conditions may dictate the need for greater or fewer checkpoints to satisfy the testing of project accuracy. When less than the minimum checkpoints are proposed, or when distribution of checkpoints is limited, an exception to the ASPRS recommendations may be requested in writing from FDOR. The request shall include a digital Google Earth© map file (\*.kml) displaying proposed locations of AT control and checkpoints, aerial imagery footprints, and a written explanation of why the exception is necessary.



## Digital Elevation Model

A DEM adequate to support orthoimagery accuracy specifications identified for this project must be created to accurately orthorectify the imagery. The consultant is responsible for evaluating the accuracy of the DEMs used in the orthorectification process and if necessary, collect supplemental data to further enhance the DEM. For the 2021 ortho project, Woolpert will utilize the latest lidar acquired as part of the USGS Statewide FL Lidar program. This lidar is QL1 accuracy and will support the orthorectification requirements for 6-inch and 3-inch orthoimagery, as well as contours.

Woolpert will submit information in the final survey report and metadata which documents the source, enhancements made, and density of the DEMs utilized for the orthoimage mapping project.

## Airborne GNSS/INS Corrections

Unless otherwise approved, all airborne GNSS/INS trajectory corrections shall be directly referenced to the FPRN.

## Ground Control

Ground control will be required to support aerial triangulation of the imagery. Woolpert will verify that the 2019 ground control is sufficient for the 2021 project and acquire any additional control if needed. It is understood that the control points will consist of photo identifiable points (PID). Woolpert will provide base station operations during the imagery acquisition process. Although not anticipated, should there be a need for the placement of targets Woolpert will maintain these targets until completion of all data acquisition. It is estimated that approximately 40 PID ground control points will need to be surveyed by Woolpert.

Woolpert will also verify the 2019 QA/QC points and collect any additional points if needed. Approximately 25 QA/QC control points will be used to verify the accuracy of the imagery. During the implementation phase of this project Woolpert and the county, together, may consider using Florida State Plane East, North American Datum of 1983/2011 adjustment (or the most current adjustment at the time) and North American Vertical Datum of 1988 (NAVD88), Geoid 12A (or most current geoid at the time).

For this project, locally based surveyor Jose Sanfiel, PSM certified by the Board of Surveyors and Mappers, pursuant to Chapter 472, Florida Statutes, will perform the surveying services for the project. Woolpert will work with the county to provide targeting and surveying. Additionally, Woolpert will provide airborne GPS using a procedure that encompasses these steps:

- Survey planning and preparation
- Ground control reconnaissance and targeting
- Airborne GPS

## Aerial Triangulation

Mensuration will be performed using Leica's Xpro software and ORIMA by Leica Geosystems Triangulation Software. We will use the multi-sensor triangulation software module, which incorporates automatic pass point selection, numbering, and measurement in one batch process. Pass point selection uses autocorrelation algorithms to select multiple pass points in an image strip. Any pass point exceeding tolerances will be filtered out, and the positional accuracy of the pass points will meet the State's accuracy requirements.

Woolpert will use the CAP-A module of ORIMA software for the initial blunder detection, to catch any obvious errors in data input or mensuration, corrects, and then reprocesses for the final bundle adjustment. Once any obvious problems have been solved, the software performs a series of quality assurance steps to detect any slight errors in mensuration.

Rigid body transformation parameters are computed for conversion of individual strips to the local coordinate system, using a three-dimensional least-squares transformation. The solutions for scale, the orientation parameters (omega, phi, kappa), and three translations (XL, YL, ZL) are computed. Next, a polynomial strip adjustment is performed to determine the root mean square (RMS) misclosures at horizontal and vertical control points and half residuals of tie points are printed in ground units. Most minor control errors are noted at this point, and edits or adjustments are made.

Finally, simultaneous adjustment of all analytical triangulation data (bundle adjustment) is performed and a multi-ray point intersection is run to refine the bundle solution. RMS misclosures in ground units are printed for horizontal and vertical ground control points as a final check for the overall solution. On completion of analytic triangulation, Woolpert will produce a copy of the aerial triangulation report.



Woolpert will use 25 test points as QC test points. The test control point coordinates will be withheld from Woolpert's initial aerial triangulation adjustment. Woolpert will produce aerial triangulation computed coordinates for the test control points and submit them to the county for comparison—fixing any errors and inserting the field-run coordinates of the test control points into the original control file and rerunning the aerial triangulation to further strengthen the final aerial triangulation adjustment.

## Digital Orthoimagery Production

Woolpert will produce new 8-bit, 4-band stacked color digital orthoimagery at 6-inch pixel resolutions, with accurate X, Y ground coordinates, and RGBN scale values from 0 to 255.

Woolpert will match the 2019 LiDAR derived DEM from the USGS/FDEM Florida Lidar project data to a photo image through Z/I ImageStation software to create a digital orthoimage. The relevant DTM data will be merged with the orientation parameters and the new digital imagery. A complete differential rectification is carried out with a set of algorithms that remove image displacement due to topographic relief and the tip and tilt of the aircraft at the moment of exposure. Rectification will be done as a batch process.

Woolpert will use Orthovista for tone balancing and image mosaicking. Tiles will be mosaicked so the images appear to be completely seamless, except at mosaic lines on bodies of water. Special attention will be given to the placement of mosaic lines in developed areas so as not to bi-sect buildings, bridges or other man-made structures not at ground level, Special care around bridges and overpasses to correct excessive distortion. Overpasses/bridges along roadways shall retain location and geometry. Radiometric adjustment will include color balancing, overall tone adjustment and brightness and contrast enhancements using the 2019 imagery as a starting point. Special attention and adjustments will be made for "Hot-Spots" or Reflections from water, automobiles and mobile homes and other homes with metal roofs.

As part of the image processing procedure, Woolpert will provide a minimum of three different sample image data sets, each data set with various color balance, tone, density, contrast, and brightness qualities that include vegetation and beach shoreline. Woolpert will meet with the County to determine the appropriate image sample to be used as a guideline for the full implementation of the countywide project.

The tile index provided by the client is a 5,000'x5,000' tiling format that follows the layout index and labeled based on the concatenated lower left coordinates. The tile index for this resolution does not contain overlaps or duplicates.

The following list is Woolpert's QA/QC process used for digital orthoimagery:

- Woolpert will use cubic convolution algorithms for the rectification process. In contrast to nearest-neighbor interpolation, exponential interpolation, or bilinear interpolation, this process provides the best image clarity.
- Each digital orthoimage will be checked and corrected to ensure a proper and consistent tone, as well as density, contrast, and brightness qualities. Each image will be checked on the screen at the intended output scale for image defects or other blemishes.
- Each digital orthoimage will be checked for accuracy on screen. All control points that are visible on the imagery are visited on screen and the X, Y coordinates are displayed. This information is cross-referenced with the X, Y information provided by the ground survey.
- Client provided data will be used to verify bridge locations:
- Bridges and Roads are reposted to our Data Depot site whenever updated. A date value is shown.
- Bridge points are based on the list of bridges provided by Public Works and reflects all FDOT recognized bridges and a handful of larger culvert systems.

Online QA/QC Tool | Woolpert offers a streamlined QA/QC tracking application known as SmartView™ Connect (SVC). SmartView™ Connect is an Open Geospatial Consortium (OGC) compliant imagery and vector service that allows internet and WMS viewing access to all the project deliverables while the project is underway. SVC is a website that was built and is maintained by Woolpert. It continues to be used by current clients for preliminary imagery and QC process. It will preclude the need, cost, and time consumed for preparing and shipping of draft data products from Woolpert to the County and vice versa.

Within two weeks preceding the creation of the orthoimagery deliverable, our staff will publish the data to SmartView Connect and alert relevant parties that the data is ready for review. The County and its stakeholders will be provided login access to the site and immediately be able to access the orthoimagery via a browser without the need to install proprietary software. The main advantage of using this system, other than the time and cost savings, is that SVC has tools for issue tracking. In the event that the County encounters an error in the data while browsing the site, they will be able to markup the error on the screen using tools available in



SVC. Because each member of the County and its partners reviewing team will be granted a username to access the site, each issue created will be stored and tracked within the system and the Woolpert team will immediately respond to that issue.

Once all issues have been reported to Woolpert, we will work diligently to resolve each and every one. Upon completion of the issue resolution phase of the project, Woolpert will create an issue resolution report and post the final, revised data to the SVC website. After Woolpert and the County are satisfied that all issues and concerns have been addressed, Woolpert will package the final orthophotography for delivery. This final delivery will also contain a geodatabase of all issues, along with the history of each issue, to serve as a permanent record of what was reported to Woolpert, what fixes were made, and who accepted the final imagery.

## Schedule

We have confirmed our ability to meet or exceed delivery of final data products within 180 days of successful imagery acquisition.

- Imagery Acquisition: scheduled to start late -January 2021 and be completed by February 28, 2021 based on monitoring best leaf off conditions, weather conditions and low tide.
- Pilot Area Delivery: March 19, 2021
- Imagery Delivery for Client Review (SmartView Connect): May 31, 2021
- Final Imagery Delivery: July 16, 2021
- Final MrSID Image Delivery: August 15, 2021

## Deliverables

All deliverables will be the property of the contracting agency and are considered public record. The consultant will document all data deliveries with an itemized transmittal letter. Written permission from the agency must be obtained to release data to any party prior to final publication. Per Rule Chapter 5J-17, F.A.C., Woolpert shall keep a copy of the original data for a minimum of six (6) years. The consultant shall contact the agency before destroying the data.

The consultant shall deliver ortho-rectified, uncompressed four-band GeoTIFF image tiles. These image tiles shall consist of natural color (RGB) and near infrared (N) bands at a bit-depth of 8-bits per band, with valid projection header information. Orthoimagery tiles shall be produced using a four-band workflow meaning all processes affecting final orthoimagery tile shall be performed using the afore mentioned four-band imagery. Tiled orthoimagery shall meet the requirements set forth in the **Federal Geographic Data Committee FGDC-STD-014.2-2015 Geographic Information Framework Data Content Standard Part 2: Digital Orthoimagery.**

- *Natural Color Imagery* – The natural color, RGB, bands will be color balanced across the entire area of interest to allow viewing of the image tiles as a seamless mosaic. During radiometric processing care shall be taken to avoid loss of detail in shadows and overexposure on bright surfaces such as bare ground and light-colored building roofs.
- *Color Infrared Imagery* – The near infrared band will be radiometrically processed in a manner that preserves original image characteristics. Corrections for seasonal variations in ground cover are not to be performed. However, care should be taken to ensure appropriate coloration of different vegetation types (e.g. deciduous, evergreen, etc.) is evident.

One GeoTIFF file per tile matching approved index tile scheme is required. All orthoimages will be delivered according to the tile index provided.

Tiles will be contiguous and non-overlapping and will be suitable for creating a seamless image mosaic that includes no data void cells or gaps. Tile naming convention is as follows:

YYYY\_NNNNNN.TIF

Where:

YYYY = Ending year of the flying season that typically ends in March.

NNNNNN = Appropriate tile (cell) index number values from project tiling index provided.

Example: Orthoimage tile that was acquired during the 2016-2017 flying season.

2017\_200001.tif

The consultant will include a file "*ProjectName\_Seamlines*" in shapefile format, containing a feature class of non-overlapping polygons with no data voids for the area of interest. Each polygon will delineate images by capture date and time used in the mosaicking of images to produce orthoimagery. See *Figure 1*.



The feature class should conform to the area of interest, and have the following attributes:

FID	Shape	NAME	DOF	EXPOSURE	TIMESTAMP	HEIGHT
0	Polygon	035_0067	12-Feb-2016	6409_035_0067	19:14:59	4525
1	Polygon	033_0067	12-Feb-2016	6409_033_0067	19:40:01	4516
2	Polygon	016_0041	17-Feb-2016	6409_016_0041	16:09:09	4562
3	Polygon	017_0067	17-Feb-2016	6409_017_0067	15:53:49	4576
4	Polygon	019_0067	17-Feb-2016	6409_019_0067	15:27:24	4566
5	Polygon	023_0067	13-Feb-2016	6409_023_0067	17:14:11	4567
6	Polygon	018_0042	17-Feb-2016	6409_018_0042	15:42:43	4590
7	Polygon	015_0067	17-Feb-2016	6409_015_0067	16:20:22	4578
8	Polygon	032_0041	12-Feb-2016	6409_032_0041	19:55:05	4505
9	Polygon	029_0067	13-Feb-2016	6409_029_0067	15:53:47	4537
10	Polygon	022_0041	13-Feb-2016	6409_022_0041	17:29:45	4506
11	Polygon	021_0067	13-Feb-2016	6409_021_0067	17:40:42	4507

DOF = Date of Flight

EXPOSURE = Exposure filename  
TIMESTAMP = GNSS time in HH:MM:SS

HEIGHT = Approximate height of aircraft at time of exposure

Figure 1 – Image Seamline Feature Class

- Original source imagery shall be delivered as uncompressed four-band TIFF images consisting of natural color (RGB) and near infrared (N) at the native bit-depth per band of the sensor.
- A metadata file in XML format must be delivered for each GeoTIFF image file, the DEM used for orthoimage production, and any other relevant mapping files.
  - Metadata must be compliant with the FGDC CSDGM. CSDM validation can be performed with the USGS Metadata Parser.

## Digital Submittals

Digital files shall be submitted on an external hard drive (USB version 3.0 or later) and be accompanied by an itemized transmittal letter. All deliverables will become the property of the agency.

## Contents

As required by FDOR Deliverables the hard drive shall contain:

- Digital copy of the orthoimagery survey report
- Digital copy of the control survey report (if separate from orthoimagery report)
- Four-band (RGBN) original source imagery
- Four-band (RGBN) orthoimagery image tiles
- Metadata XML file for each image tile
- Final elevation data used to rectify imagery
- Metadata XML for Digital Elevation Model
- Classified lidar data files (\*.LAS) (if applicable) Airborne sensor trajectory/exterior orientation report
- Image sensor calibration documentation
- Boresight calibration files
- Aerial triangulation control coordinates and aerial triangulation blocks along with statistical summaries
- Digital files (shapefile format) used for survey report map overlays:
  - All horizontal and vertical ground control identifying of which points were constrained during aerial triangulation and which points were used for check during NSSDA analysis
  - Outline polygon of each aero-triangulation block
  - Digital orthoimagery seamlines and dates associated with the photographs
  - Digital orthoimagery tile limits and layout
  - Scope of Work, aka Scope of Services, from contracting agency

The drive shall be labeled on the outside with the following information:

- Project title
- Consultant name and contact information
- Contracting agency contract number



- Date of survey
- Mobile Survey Tracking System (MSTS) number (FDOT)

As required by the County, Woolpert will produce the following 0.5-Foot Orthophotography deliverables:

- One set of 4-band digital orthoimagery tiles 0.5-foot pixel resolution in uncompressed GeoTIFF format with .tfw, covering the entire project area.
- Image cache in ESRI ArcGIS Server format
- One 3-band color digital orthoimage with a 0.5-foot pixel resolution in MrSID format, compression ratio of 20:1.
- One 3-band color infrared digital orthoimage with a 0.5-foot pixel resolution in MrSID format, compression ratio of 20:1
- Flight lines ESRI ArcGIS v10 shapefile or geodatabase format.
- Surveying and Mapping Report meeting the Florida Standards of Practice as per the Florida Administrative Code 5J17
- Each deliverable product will include FGDC compliant metadata.
- Final deliverables (all items listed above) of all digital data will be provided to St. Johns County, FL on an external USB 3.0 hard drive.

## Survey Report

The consultant PSM will prepare a digital survey report that documents all processes and is compliant with relevant **Standards of Practice** as set forth in **Rule Chapter 5J-17, F.A.C.**, pursuant to **Chapter 472, F.S.** and shall, at a minimum, include the following items:

- Project title and reference number
- Name and address of corporation
- Certificate of authorization number
- Surveyor in responsible charge, including contact information
- Abbreviations
- Data sources
- Final deliverable listing of files stating filename with extension and delivery date in the appendix of the survey report.
- Survey date(s) (first and last date of field measurements)
- Introduction, purpose and objectives
- Reference to ground control survey by title, survey date, corporation, and certifying PSM.
- Describe all equipment, software, etc.
- Image sensor description and factory sensor calibration and boresight calibration reports
- Digital orthoimage image acquisition dates and flight logs
- DEM acquisition (identify source and accuracy)
- If lidar data is collected, then the following items shall be included:
  - Data acquisition dates and logs
  - Sensor description and calibration report
- Digital orthoimagery image accuracy NSSDA analysis according to the **FGDC National Standard for Spatial Data Accuracy (FGDC-STD-007.3-1998)**.
- List of field and office personnel
- Map overlay which will display the following items:
  - All horizontal and vertical ground control identifying which points were constrained during aerial triangulation and which points were used for check during NSSDA analysis
  - Aerial triangulation blocks
  - Digital orthoimagery tile limits and layout
  - Lidar quality control locations and accuracy (if applicable)
  - Base map features (ex: county boundaries, cities, major roads, )



## Cost for Orthoimagery

The cost for this 2021 Orthoimagery Project is a lump sum fee based on \$165.52 per square mile for a total cost of \$128,443.52 for 776 square miles of orthophotography covering St. Johns County.

## Additional Services and Rates

As stated in Woolpert's response to RFQ No. 21-34 for Digital Orthophotography, Woolpert provides many additional services that may be of interest to St. Johns County. Below is a list of services and rates for each service should the county require or request any of the additional services listed.

Description:	Mobilization on Cost (fixed)	Processing Cost Square Miles 0-50	Processing Cost Square Miles 51-100	Processing Cost Square Miles 101-250	Processing Cost Square Miles 251-500	Processing Cost Square Miles 501-776
6" Pushbroom Orthophotography	\$ 18,993.00	\$ 364.00	\$ 315.00	\$ 266.00	\$ 216.00	\$ 165.52
1' Contours	N/A					\$ 451.00
3D Planimetric Updates	N/A					\$ 475.00
1' Contours and 3D Planimetrics	N/A					\$ 676.00
New Impervious Surface Layer Feature Extraction	N/A					\$ 1,100.00
Landcover/Landuse	N/A					\$ TBD

### Legend:

- Price for 2021 only. Subsequent years will be negotiated at that time. Includes Ground Control and use of existing DEM
- County-wide, Includes Hydro Layer Update of existing Hydro Layer using the most recent imagery and lidar data.
- County-wide, Includes Hydro Layer update if contours are not selected
- County-wide, Overall price reduction if contours and planimetrics are selected due to overlapping tasks when selected separately
- Based on single layer Impervious
- Based on County requirements.



# General Rates

Product Description	UOI	Offer Price
Flight Acquisition Mobilization	per mi	\$26.94
Ground Control Survey Mobilization	per mi	\$10.39
Supplemental Ground Control/QC Check Points, 10 - 20 points	Bundle Pricing	\$5,245.64
Supplemental Ground Control/QC Check Points, 21 - 30 points	Bundle Pricing	\$6,953.20
Supplemental Ground Control/QC Check Points, 31 - 40 points	Bundle Pricing	\$8,777.35
Supplemental Ground Control/QC Check Points, 41 - 50 points	Bundle Pricing	\$10,384.33
Supplemental Ground Control/QC Check Points, 51 - 60 points	Bundle Pricing	\$11,665.36
Supplemental Ground Control/QC Check Points, 61 - 70 points	Bundle Pricing	\$12,835.39
Supplemental Ground Control/QC Check Points, 71 - 80 points	Bundle Pricing	\$13,911.67
Supplemental Ground Control/QC Check Points, 81 - 90 points	Bundle Pricing	\$14,967.43
Supplemental Ground Control/QC Check Points, > 90 points	Per Point	\$161.31
Topographic LIDAR Data Collection, 8 PPSM, Complexity Level 2, CONUS	per sq mi	\$273.63
Topographic LIDAR Data Collection, 4 PPSM, Complexity Level 2, CONUS	per sq mi	\$195.47
Bathymetric LIDAR Data Collection, 5 Meter Resolution, Complexity Level 2, CONUS-IHO Order 1b	per sq mi	\$1,375.65
Bathymetric LIDAR Data Collection, 2 Meter Resolution, Complexity Level 2, CONUS-IHO Order 1a	per sq mi	\$2,751.24
Four Band Imagery Data Collection, 3-inch Resolution	per sq mi	\$207.77
Four Band Imagery Data Collection, 6-inch Resolution	per sq mi	\$103.88
Topographic LIDAR Data Finishing, 8 PPSM, Point Cloud/DEM/DSM	per sq mi	\$218.91
Topographic LIDAR Data Finishing, 4 PPSM, Point Cloud/DEM/DSM	per sq mi	\$156.36
Bathymetric LIDAR Data Finishing, 5 Meter Resolution, Point Cloud/DEM	per sq mi	\$820.20
Bathymetric LIDAR Data Finishing, 2 Meter Resolution, Point Cloud/DEM	per sq mi	\$1,640.40
Four Band Imagery Data Finishing, 3-inch Resolution, Orthophotos/Mosaic	per sq mi	\$145.43
Four Band Imagery Data Finishing, 6-inch Resolution, Orthophotos/Mosaic	per sq mi	\$72.73
Feature Extraction from LIDAR, 3D Buildings	per sq mi	\$141.65
Feature Extraction from Oblique Imagery, 3D Mesh Modeling	per sq mi	\$212.46
STREAM:RASTER cloud hosting for Geospatial raster data	Monthly Subscription	\$TBD





Aerial Oblique Camera	per hour	\$1,900.00
Aerial Digital Camera (Frame)	per hour	\$1,900.00
Aerial Digital Camera (Line Scanning)	per hour	\$700.00
Aerial Film Camera	per hour	\$500.00
Aerial Small Format POD Camera	per hour	\$250.00
Aerial LiDAR Sensor (Terrain Mapper)	per hour	\$2,600.00
Aerial LiDAR Sensor (Topographic)	per hour	\$1,300.00
Small UAS Digital Camera	per hour	\$25.00
UAS with Lidar Sensor	per hour	\$500.00
Small UAS Thermal Sensor	per hour	\$120.00
Mobile Mapping System	per hour	\$2,500.00
Twin Turbine Airplane (pressurized) - wet rate (includes fuel)	per hour	\$2,000.00
Twin Turbine Airplane (non-pressurized) - wet rate (includes fuel)	per hour	\$900.00
Twin Piston Airplane - wet rate (includes fuel)	per hour	\$700.00
Single Piston Airplane - wet rate (includes fuel)	per hour	\$300.00
Small UAS	per hour	\$150.00
Survey Truck	per hour	\$80.00
Terrestrial Laser Scanner	per hour	\$400.00
GPS Network Receiver	per hour	\$10.00
GPS Base Rover System	per hour	\$15.00
Total Station and Data Collection Device	per hour	\$10.00
Program Manager	per hour	\$263.31
Group Manager	per hour	\$234.95
Photogrammetrist	per hour	\$179.75
Project Manager	per hour	\$222.00
Sr. GIS Specialist	per hour	\$186.94
Sr. GIS DB Dev/Programmer	per hour	\$164.31
Professional Surveyor	per hour	\$144.97
GIS DB Dev/Programmer	per hour	\$146.63
GIS Pilot	per hour	\$133.41
GIS Specialist	per hour	\$126.19
LIDAR Specialist	per hour	\$126.19
Jr. GIS DB Dev/Programmer	per hour	\$123.57
Technical Writer	per hour	\$136.93
Photogrammetric Technician	per hour	\$87.04
Survey Crew Chief	per hour	\$95.40
GIS Technician	per hour	\$85.97
Administrative Assistant	per hour	\$85.27



## STREAM:RASTER Cloud-Hosted Map Tile Server for Raster Data

Woolpert offers a break-through cloud-based imagery data hosting platform known as STREAM:RASTER™. STREAM:RASTER is a map tile server that manages large-scale (petabytes) imagery datasets with superior performance and image quality with limitless storage capacities and bandwidth. Geared toward organizations that manage GIS data and infrastructure, the subscription software service is the next generation of image processing and hosting, reimagined with a cloud-first mindset.

When clients upload their Woolpert or 3rd party raster datasets, STREAM:RASTER creates tile caches of the data ready for use in GIS and web mapping software. Clients are then able to manage and control access to their proprietary imagery in STREAM:RASTER, with support and a service level agreement from Woolpert.

Harness the power of the STREAM platform to host data without on-premises infrastructure maintenance and data

administration expenses. Woolpert's Cloud Solutions team maintains critical basemap data in our highly available (<500ms response time, 95% uptime) and scalable cloud environment. The data pipeline leverages serverless technology, rapidly scaling up to process large data sets, then scaling back down to zero when not needed. The raster API is composed of containerized microservices that flex to meet demand. Cloud data storage has virtually unlimited capacity, and redundancy. This results in a reliable and cost-effective service for clients.

The true power of STREAM:RASTER is how easily it integrates into geospatial applications and mapping libraries. Built-in support for the Open Geospatial Consortium (OGC) Web Map Tile Service (WMTS) standard makes it easy to stream image tiles into GIS clients like ArcGIS Online, ArcGIS Desktop or QGIS. We also made sure you can quickly add layers to your web maps (like ArcGIS, Google Maps, Mapbox or OpenLayers) with a simple URL template.

### Cloud Platform

Woolpert decided to put STREAM:RASTER on an entirely public cloud platform because we needed the horizontal and elastic scale to process and serve massive quantities of data without affecting business-critical workflows inside Woolpert. This approach helped us avoid pushing our own production work onto a new platform without first proving its effectiveness. We decided to leverage managed services in the cloud for key "plumbing," e.g., Google Cloud SQL for metadata, Google Cloud Storage for multi-region scalable object storage, and Cloud Endpoints for baked-in security and reliability. Capitalizing on our strategic partnership, Woolpert chose the Google Cloud Platform (GCP) so Google could champion the cloud environment while we focused on the intricacies of our map projections.

### Pricing Plans

This software-as-a-service (SaaS) leverages a consumption-based pricing model based on the amount of TB's of data that the county is wanting to host in the cloud. Please note that historical imagery can also be hosted, along with current imagery data.

Reference <https://www.woolpert.com/stream-raster> for the most current pricing information.

or

Pricing for STREAM:RASTER fall into one of two common plans:

- **STANDARD SUBSCRIPTION** - \$800 per month | The Standard Subscription provides for up to 1TB of raster data storage and allows for up to 1M map tiles served per month. We find this is adequate for most smaller to mid-sized cities and counties.
- **MEDIUM SUBSCRIPTION** - \$1,200 per month | The Standard Subscription provides for up to 5TB of raster data storage and allows for up to 10M map tiles served per month. This plan is typically adequate for mid-to-large sized cities and counties.
- **LARGE SUBSCRIPTION** | The Large Subscription plan provides access to unlimited raster storage and allows for more than 10M map tiles to be served per month. This plan is custom tailored to a specific client based on their data storage and projected usage of the system.



## Project Management and Coordination

Woolpert follows a comprehensive and proven approach to managing tasks to be performed under this Digital Orthophotography project. The Woolpert team offers a logical and balanced approach that provides the requisite controls from the project management level and allows flexibility and clear lines of authority to initiate and successfully implement task orders. Our management approach also ensures consistency in business operations, contract management, project controls, and risk management. Specifically, our management approach includes a dedicated project manager with Florida experience and a balanced technical staff with years of relevant experience

We emphasize the use of proven management tools, techniques and processes to monitor progress and track resource spending, and ensure well-defined lines of communication and authority among members of our management team. Additionally, we continually refresh our project management approach and incorporate lessons learned to ensure best practices.

Woolpert's management approach consists of a two-tier structure: an upper level Program Director/Contract Manager responsible for the business and programmatic functions of the work and for coordinating the project management of projects; and, task-level managers responsible for the planning and technical execution specific project tasks. This approach allows us to flex between overlapping and/or multiple assignments.

**Contract Level Management** | Woolpert's organization chart depicts a management structure designed to facilitate rapid communication within our team and with appropriate County staff while maintaining functional accountability. Woolpert's management approach focuses on meeting the contract and task order objectives through effective project organization and management; optimum selection and use of the team's aerial assets and personnel; continual monitoring of available resources to initiate emergency response/project expansion or acceleration, as needed; implementation of client communication and control systems, with emphasis on keeping St. Johns County informed; and a commitment to quality and excellence at all levels.

**Task Management** | Woolpert employs a repeatable and systematic process to manage individual task assignments. This process features a phased approach with emphasis on open communication, timeliness of deliverables and quality of performance. Upon issuance of this project, Woolpert's Project Manager, Eric Cole, will evaluate the requirements, develop a project plan then confer with the appropriate task leads to rapidly execute the plan. The project plan will include a technical approach, and sections for schedule, cost, quality, communications and risk management. A kick-off meeting with the appropriate staff will be held prior to project initiation.

**Risk Management** | Effective project management includes careful planning to identify and then remove or reduce potential risks to project success. Being open to change during the length of the project reduces certain risks but can bring with it new risks. Our staff understands the importance of identifying these risks at the beginning and during the project and to communicate these risks along with solid mitigation steps. As part of our risk management approach, each risk identified is assigned a criticality factor based on potential impact on the project, which helps to prioritize risk factors. Any significant risk factor will have a documented mitigation plan, and a risk registry will be maintained to aid in developing mitigation strategies as well as help ensure that any future task order risks are identified and mitigated before they occur.

**Reporting** | The project manager will generate a monthly contractual status report that is submitted to St. Johns County. Monthly progress reports will be submitted and will contain a status of all task requirements – data acquisition, data production, and QA/QC feedback. Upon completion of project tasks, we will conduct our own internal performance evaluation to document lessons learned that can be applied to future projects.

**Business Continuity Plan** | Our team offers the St. Johns County a highly stable corporate and production environment that facilitates on-going operations and service with minimal risk of disruption through team features and solutions that include a stable prime contractor. Woolpert was established in 1911 and has offices in 14+ states and nearly 1,000 employees.

## Quality Control Procedures

Woolpert is ISO 9001:2015 certified by the ANSI-ASQ National Accreditation Board (03/2000) for the acquisition, processing, and utilization of geospatial data through photogrammetric/remote sensing techniques (certificate #11-R8033). Woolpert will maintain this certification throughout the duration of the St. Johns County project. Woolpert was one of the first firms offering photogrammetry and mapping services to receive ISO 9001:2015 certification. Our certification demonstrates that we have coherent, documented QA/QC procedures in place to successfully complete all services in the required time.

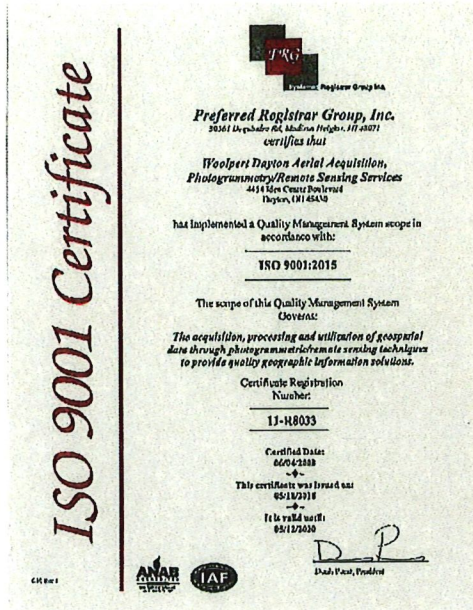


## Ensuring Product Quality

A professional Project Management Program—resulting in the ability to accomplish work (despite the timing or complexity of requirements) while delivering a quality product—begins with the understanding that management personnel must possess the qualities of planning, organizing, and managing resources in order to bring about successful project execution. Woolpert brings to the County a very experienced team that has successfully proven their ability to meet specific project goals and objectives leading to the successful completion of a variety of geospatial projects.

Woolpert has been ISO certified since May 2000, and through our ISO 9001:2015 QA/QC approach have established lines of authority and communication, levels of management oversight, coordination between work groups and subcontractors, synergistic QA/QC checks throughout all of our procedures and between work groups, project document control mechanisms, project tracking mechanisms, and experience and training needs for personnel.

As part of our Quality Management Program (QMP) program, Woolpert has developed and documented standards for work processes and procedures; implements the standards through training; establishes and documents QMP processes to help manage the standards; and prepares a Quality Manual that outlines the QMP. By modeling our Quality Control Plan for this effort after the requirements of our QMP, Woolpert demonstrates consistency of products and services that meets our clients' expectations and applicable governmental statutes and regulations.



**Our Quality Control Plan incorporates both Quality Assurance and Quality Control** | Quality assurance (QA) is process oriented and is used by Woolpert professionals to execute the right processes/procedures, with the right qualified staff, and at the right time in order to meet and exceed the listed quality expectations. Our QA efforts focus on the following seven areas: work processes and procedures; client quality requirements; quality policy and objectives; QMP leadership, resource allocation; project plans; and client satisfaction surveys.

Quality control is product oriented and designed to consistently produce a predictable result that meets the quality expectations of both Woolpert and the client. Quality control uses techniques (cross-checking and traceability) and activities to fulfill the requirements for quality. Woolpert uses the Deming cycle of Plan-Do-Check-Act (PDCA) in conducting our quality control, and we focus on the following seven areas: quality plan; quality procedure manual; quality processes and procedures; document and data control; verification of quality; notification; and remedial action.

**Quality Control and Corrective Actions** | The success of this contract will be realized through a combination of comprehensive planning and a highly structured approach to quality control that is designed to prevent the occurrence of errors, omissions, or blunders that could disrupt the production workflow and potentially impact the quality of the final geospatial products that will be produced for the County. A key component to the effectiveness of our quality management system is the ongoing process of auditing and updating production and management procedures and related tools. In a business where technology and the associated production processes are constantly changing and improving, it is imperative that procedures are constantly reviewed and updated.

**Criteria for Remedial Action** | Production processes are based on a history of successful completion of projects and contain elements that have been incorporated in response to both internal and client-specified requests. Any time a new specification or new production process is introduced, the criteria for remedial action is reviewed and modified to reflect a change in approach. Woolpert will work with the County to identify any specific requirements where criteria must be added or modified to ensure the success of a project.

**Verification Criteria** | Our quality management system contains an array of metrics which are used to monitor cycle times for each production process as well as time expended for rework. These tools will provide a means to verify that the quality issue has been successfully mitigated. The level of inspection can also be varied throughout the life of the project in response to different issues that may arise.




**Notification** | Woolpert's technical staff members will evaluate and solve any problems that occur throughout the life of the project to include documenting the nature of problems encountered and the process used to resolve the problem. In the vast majority of cases, the quality of the end product is not affected, and the delivery schedule is not disrupted. St. Johns County staff will be immediately informed of any quality issues that may affect the project schedule as the team is committed to delivering data products that meet all aspects of the project specifications.

**Safety** | It is our team's policy to conduct all of its operations and activities in a manner that ensures a healthy and safe work environment for all employees. The safety and health of employees is of the utmost importance to our firms' and we believe that a safe working environment leads to better productivity.

**Methods for Identifying, Preventing and Resolving Deficiencies** | A key component of our quality management system is the ongoing process of auditing and updating production and management procedures and related tools. No final product will be shipped, delivered, or otherwise communicated to the County until all required quality documentation has been reviewed and found complete via the final inspection process. The project manager will have ultimate responsibility to implement this requirement. Detailed quality records will be maintained of all nonconforming products, including the procedures utilized to correct them. Each task lead will provide a procedure for resolution of quality problems and nonconformities that result in corrective actions designed to prevent their reoccurrence. The project manager has primary responsibility for monitoring the quality of production and ensuring that corrective measures are taken. The project manager will summarize nonconformities for review at the regularly scheduled quality meetings, including discussion of County QA/QC feedback. During these sessions, participants will investigate the cause(s) of such quality problems; determine the corrective actions needed; verify that corrective actions are taken and produce desired results; and review the actions taken on quality problems considered in previous staff meetings.

**Client Satisfaction** | Ensuring our clients' complete satisfaction with our service offerings has always been a high Woolpert priority. As a part of standard project closeout procedure, Woolpert provides clients with a questionnaire for gauging satisfaction with the firm's performance. Analysis of the forms helps the firm determine its strengths and identify areas for improvement.



**WOOLPERT**  
SINCE 1988

Office: \_\_\_\_\_  
 Service Line: \_\_\_\_\_  
 Date: \_\_\_\_\_

**PLEASE TELL US HOW WE ARE DOING.**

Client: \_\_\_\_\_

Project Name: \_\_\_\_\_ Project Number: \_\_\_\_\_

Project Evaluation:  Excellent  Good  Fair  Poor  N/A Project Manager: \_\_\_\_\_

Please rate the following:

<p>1. Woolpert's ability to meet your needs for this project <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p> <p>2. Technical expertise of the project team <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p> <p>3. Quality of submittals <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p> <p>4. Woolpert's understanding of the scope of work <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p> <p>5. Woolpert's ability to meet the project schedule <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p> <p>6. Woolpert's ability to meet the project budget <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p> <p>7. The value of service Woolpert rendered <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p> <p>8. Innovative use of technology to meet the project needs <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A</p>	<p>Please rate the Project Manager on the following:</p> <table border="0" style="width: 100%; font-size: x-small;"> <tr> <td style="width: 20%;"></td> <td style="width: 10%; text-align: center;">Excellent</td> <td style="width: 10%; text-align: center;">Good</td> <td style="width: 10%; text-align: center;">Fair</td> <td style="width: 10%; text-align: center;">Poor</td> <td style="width: 10%; text-align: center;">N/A</td> </tr> <tr> <td>9. Availability</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>10. 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**Related Services**

Were you greeted in a courteous manner when calling or visiting us?	Yes	No	Other	Yes	No
Were your concerns raised correctly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Would you recommend Woolpert to others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
May we contact you to review your responses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Your Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Comments: Please add any additional comments here. If you prefer, please call Michael R. Flannery, President and CEO, toll free at 800-414-1365. Return response electronically to: [msr@woolpert.com](mailto:msr@woolpert.com)

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# FDOR Ground Control Specifications

## ATTACHMENT A – GROUND CONTROL SURVEY REQUIREMENTS

### 1. PURPOSE

The purpose of this document is to specify the requirements for a geodetic control survey to support 0.5-foot ground sample distance resolution county aerial orthoimagery mapping. The positional accuracy required for this imagery resolution is 2.5 feet at the 95% confidence level.

All surveying and mapping work performed shall meet the *Standards of Practice* set forth in *Chapter 5J-17, F.A.C.*, pursuant to *Chapter 472, F.S.*

### 2. SURVEY CONTROL

- GNSS techniques shall be used to establish horizontal and vertical positions on targeted and/or well-defined photo identifiable points that will be used as control for aerial photogrammetric mapping. New photo control point positions shall be identified in the field by a survey mark.
- When aerial panels are used, the vertical offset from top of mark to the panel surface shall be measured and recorded.
- Ground control shall be referenced to NAD83(2011) based on redundant ties to the FPRN.
- The photogrammetric ground control network shall meet the horizontal and vertical accuracies necessary to support the required map accuracy of the orthoimagery. The ASPRS standards require direct comparison to checkpoints from an independent source of at least three times greater accuracy.
- A sufficient number (minimum four) of published NAVD88 benchmarks shall be included in the control network to ensure accurate elevations can be computed from GNSS measurements through local network adjustment using the latest *FPRN Geoid Model*.
- Where conditions dictate differential leveling may be used to establish elevations on photo control points from the nearest ground control network station or published NSRS vertical station within a 5-mile radius from the photo control point. Leveling procedures adequate to support vertical accuracy specifications of orthoimagery shall be observed and documented.
- In rare circumstances where the photo identifiable control point cannot be occupied directly, either horizontally and/or vertically, offset distances of less than 0.5 feet from the occupied survey mark may be used. Field survey measurements of sufficient precision must be collected and recorded to allow accurate coordinate computation of the photo identifiable point from the offset mark.
- With prior approval of the orthoimage project surveyor, ground control points may be moved from their original proposed locations to ensure safety, or if the proposed point is ambiguous or no longer exists. Such control points shall be documented as moved.

A-1



- A field sketch with survey date, GNSS satellite visibility and weather conditions at the time of GNSS data collection shall be prepared for each ground control and check point site.
- Digital photo(s) shall be taken showing the exact location of the ground control and check point, preferably while the point is occupied by the GNSS unit setup. Digital photo filenames shall include the control point name.

### **3. SUBMITTAL ITEMS**

#### **3.1. SURVEY REPORT**

The PSM will prepare a certified digital control survey report that shall at a minimum include the following items:

- Project title and reference number
- Name and address of corporation
- Certificate of authorization number
- Surveyor in responsible charge, including contact information
- Abbreviations
- Data sources
- Final deliverable listing of files stating filename with extension and delivery date in the appendix of the survey report.
- Introduction, purpose and objective
- Description and scope of work
- Describe equipment, software, etc.
- Describe the accuracy standards and specifications, procedures and methodology for establishing ground control
- Describe and list the geodetic control (existing and newly established), displaying the horizontal and vertical coordinates, datum used, geoid model and error estimates (95% confidence level)
- List the field and office personnel
- Survey dates (first and last date of field measurements)
- Describe monumentation recovered and set
- Map overlay which will display the following items:
  - GNSS baseline network, indicate repeated measurements
  - Existing horizontal and vertical geodetic control
  - Newly established photogrammetric control
  - Base map features (ex: county boundaries, cities, major roads,)

#### **3.2. DIGITAL SUBMITTALS**

Digital files shall be packaged and delivered with the final orthoimagery submittal as described in *Section 1.15* of this document and shall include:

- Digital copy of the control survey report

A-2



- Existing geodetic control recovery/to-reach descriptions. Condition of NSRS marks should be reported to the National Geodetic Survey.
- All ground control and check point documentation as stated in *Section 2.0* above.
- Copies of GNSS data logs and a listing of GNSS occupations
- All GNSS data observed and produced during the survey (digital format), including the raw observation data, processed baselines, loop closures and least squares adjustments (free and fixed)
- A Microsoft EXCEL spreadsheet file list of final control with datum header information along with point name, geographic (Latitude, Longitude), grid (State Plane Zone Northing and Easting), and elevation values for control points. Grid coordinates and elevations shall be in units of USft. Any horizontal and vertical mark offsets measured shall be identified and applied to the aerial panel or photo identifiable feature position and/or surface. Offset measurements shall be included to verify computations. See example in *CONTROL TABLE EXAMPLE*.

A-3





# Ground Control Table Example

## GROUND CONTROL TABLE EXAMPLE

FINAL ADJUSTED HORIZONTAL AND ORTHOMETRIC HEIGHT VALUES FOR MARION COUNTY (PD6027) POST FLIGHT PHOTO POINT  
 UNITS ARE US Survey Feet (USft)  
 HORIZONTAL DATUM IS NAD 83 (2011)  
 STATE PLANE ZONE IS FLORIDA WEST ZONE 0902  
 ORTHOMETRIC HEIGHT DATUM IS NAVD 88  
 ALL CONTROL STATION VALUES ARE DERIVED BY STATIC GNSS OBSERVATIONS FROM PUBLISHED NGS CONTROL

PHOTO_ID	GNSS Control Station - Geographic			GNSS Control Station - USft			Offset from GNSS Station to Photo ID Point - USft			FINAL Photo ID Control - USft		
	LATITUDE	LONGITUDE	ELLIP_HGT (meters)	NORTHING	EASTING	ORTHO_HGT	Offset North	Offset East	Offset Vertical	NORTHING	EASTING	ORTHO_HGT
D510S010	29 29 44.73172	-82 24 24.26473	1.757	1876786.20	526773.97	97.18	0	0.5	0	1876786.20	526774.47	97.18
D510S011	29 28 42.07552	-82 03 20.32535	-4.497	1870232.35	638460.51	77.18	-0.5	-0.5	0	1870231.85	638460.01	77.18
D510S012	29 30 29.98811	-81 51 49.10517	10.530	1881156.88	699540.72	127.11	0	0	0	1881156.88	699540.72	127.11
D510S013	29 19 32.46883	-81 58 11.18511	-5.832	1814716.87	665798.44	72.96	0	0	0.5	1814716.87	665798.44	73.46
D510S014	29 21 52.50874	-81 44 25.40237	-16.367	1828952.74	738861.52	39.27	0	0	0	1828952.74	738861.52	39.27
D510S015	29 17 40.65095	-81 39 09.97229	-27.655	1803585.22	766847.02	2.34	0.5	0.3	0.5	1803585.72	766847.32	2.84

B-1

**RFQ NO: 21-34; DIGITAL ORTHOPHOTOGRAPHY**  
**Master Contract #: 21-MCC-WOO-13032**

**EXHIBIT "B" – SCOPE OF SERVICES PER RFQ DOCUMENTS**

**A. PROJECT DESCRIPTION**

The project consists of providing professional services for digital orthophotos for St. Johns County, Florida. The project area consists of 866 - 5,000' x 5,000' tiles for a total of 776 square miles. All tiles are full tiles where specific coastal tiles shall be collected within +/- 2 hours of Mean Lower Low Water (MLLW). At a minimum, the project must meet the most current "Florida County Digital Orthoimagery Program Standards" from the Florida Department of Revenue (DOR) found at [https://floridarevenue.com/property/Pages/Cofficial\\_GIS.aspx](https://floridarevenue.com/property/Pages/Cofficial_GIS.aspx). Should the DOR and County scope conflict, the more stringent shall apply.

**B. SCOPE OF SERVICES**

The scope of services for this project shall include providing all of the following:

Aerial Services

- Obtain new 4-band (RGB/NIR) aerial imagery at nominal 0.5-foot ground sample distance (GSD).
- Use existing LiDAR data acquired by the County in 2019 for ortho-rectification
- Produce new 4-band digital orthoimagery with a 0.5-foot pixel resolution.
- Metadata – FGDC Compliant

Ground Control

Airborne GPS and IMU systems or equivalent methodology, along with ground GPS reference station and ground survey are required to meet the horizontal accuracy specification. Consultant is responsible for determining the design and extent of new ground survey, and/or the application of past ground surveys to meet the horizontal accuracy specification.

The consultant is responsible for any ground GPS reference station operations during the imagery acquisition phase of the project, targeting and obtaining x, y, z values on targets and/or photo id points.

The 2019 Orthophoto project was based on a horizontal datum of Florida State Plane East, North American Datum of 1983/2011 adjustment. The vertical datum was referenced to North American Vertical Datum of 1988 (NAVD88), Geoid 12A. Units are US Survey Feet. During the project implementation phase the County and the Consultant will consider using Florida State Plane East, North American Datum of 1983/2011 adjustment (or most current adjustment) and North American Vertical Datum of 1988 (NAVD88), Geoid 12A (or most current geoid).

The County must approve any proposed control methodology and datum references prior to image acquisition.

Aerial Imagery

During January/February 2021 the Consultant is to acquire new color and near-infrared imagery simultaneously across the project area.

All imagery shall be collected during optimal leaf-off conditions relative to vegetation cover, sun angle, and client approval. The sun angle shall be 30-degrees or greater, and streams should be within their normal banks, unless otherwise negotiated. During flight planning and acquisition, a significant effort should be made to limit clouds, snow, fog, haze, smoke, or other ground obscuring conditions in the imagery. In no case shall the maximum cloud cover exceed 5% per image.

In addition, the Consultant shall limit flight planning and acquisition to +/- 2 hours of MLLW tide for specific coastal beach flight lines. Images are to be captured using an end lap of 60 percent, and side lap of 30 percent, and maximum tilt of 3 degrees if using a framing sensor. If a push broom sensor is used, side lap may be reduced to 20%.

Consultant shall provide a flight line layout plan prior to the commencement of the acquisition phase. Consultant shall also be responsible for providing all the pertinent information required such as flight maps, flight log, aircraft,

ABGPS, etc. as part of the Surveying and Mapping Report meeting the Florida Standards of Practice as per the Florida Administrative Code 5J17.

Image Quality

Digital imagery shall be uniform in contrast without abrupt variations between image frames/strips. Imagery shall be free of blemishes and artifacts that obscure ground feature detail.

Aerial Triangulation

The ground control network and digital aerial imagery shall undergo softcopy aerial triangulation to extend and densify the ground control across the entire project area.

Digital Orthoimagery

Consultant shall produce 4-band digital orthoimagery with a 0.5-foot pixel resolution. The images shall be mosaicked to produce imagery with consistent tone, contrast, and color balance. Special attention shall be given to the placement of mosaic lines in developed areas so as not to bisect buildings, bridges or other man-made structures not at ground level. Special care around bridges and overpasses shall be given to correct excessive distortion. Overpasses/bridges along roadways should also retain location and geometry.

Digital Orthoimagery files will be delivered as uncompressed GeoTIFF with world file (.tfw). The imagery shall be delivered based upon the County's modular system of 5,000' X 5,000' tiles and will be labeled based on the concatenated lower left coordinates. Full tiles are to be delivered, partial tiles shall not be provided.

Digital Orthoimagery files will also be delivered as an image cache to be loaded into ArcGIS Server with the following specifications:

- Projection: WGS 1984 Web Mercator Auxiliary Sphere
- Image Format: Mixed or jpeg
- Storage Format: Exploded
- Number of Levels: 21
- Tile Height & Width: 256
- DPI: 96

In addition, a compressed image dataset of the entire county is required in MrSID format with a 20:1 compression ratio. Both color and color infrared datasets are required. During the project implementation phase the County and the Consultant will finalize the breakdown of the areas for deliverables.

Accuracy Standards

The orthoimagery shall meet or exceed American Society for Photogrammetry and Remote Sensing (ASPRS) Positional Accuracy Standards for Digital Geospatial Data as follows:

Table 1 – Absolute Accuracy Requirement	
RMSE	Horizontal Accuracy at 95% Confidence Level
1.0 feet	2.4 feet

QA/QC

Consultant will provide an online QA/QC tool to be used to review the Digital Orthophotography. This tool will allow the user to view the imagery and create redline markups for review and to receive feedback. The tool will also allow the user to add additional layers that can be overlaid with the imagery to assist in the review process.

Orthophoto Deliverables

- One set of 4-band digital orthoimagery tiles 0.5-foot pixel resolution in uncompressed GeoTIFF format with .tfw, covering the entire project area.
- Image cache in ESRI ArcGIS Server format
- One 3-band color digital orthoimage with a 0.5-foot pixel resolution in MrSID format, compression ratio of 20:1.
- One 3-band color infrared digital orthoimage with a 0.5-foot pixel resolution in MrSID format, compression ratio of 20:1

- Flight lines ESRI ArcGIS v10 shapefile or geodatabase format.
- Surveying and Mapping Report meeting the Florida Standards of Practice as per the Florida Administrative Code 5J17
- Each deliverable product will include FGDC compliant metadata.
- Final deliverables (all items listed above) of all digital data will be provided to St. Johns County, FL on an external USB 3.0 hard drive.

Ownership

All data received from the Consultant will become the property of St. Johns County, Florida.

**RFQ NO: 21-34; DIGITAL ORTHOPHOTOGRAPHY**  
**Master Contract #: 21-MCC-WOO-13032**

**EXHIBIT "C"**

**FEMA PUBLIC ASSISTANCE PROGRAM REQUIRED CONTRACT CLAUSES**

**1. Equal Employment Opportunity.**

If this contract meets the definition of a "federally assisted construction contract" as provided in 41 C.F.R. § 60-1.3, the following shall apply to the Consultant's performance under this contract:

- a. The Consultant will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Consultant will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Consultant agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- b. The Consultant will, in all solicitations or advertisements for employees placed by or on behalf of the Consultant, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.
- c. The Consultant will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Consultant's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. The Consultant will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- e. The Consultant will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- f. In the event of the Consultant's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Consultant may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- g. The Consultant will include the portion of the sentence immediately preceding paragraph (a) and the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or subconsultant or vendor. The Consultant will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event a Consultant becomes involved in, or is threatened with, litigation with a subcontractor or subconsultant or vendor as a result

of such direction by the administering agency the Consultant may request the United States to enter into such litigation to protect the interests of the United States.”

For the purposes of this section, “federally assisted construction contract” means any agreement or modification thereof between any applicant and a person for construction work which is paid for in whole or in part with funds obtained from the Government or borrowed on the credit of the Government pursuant to any Federal program involving a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, or any application or modification thereof approved by the Government for a grant, contract, loan, insurance, or guarantee under which the applicant itself participates in the construction work.

For the purposes of this section, “construction work” means the construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.

## **2. Compliance with the Copeland “Anti-Kickback” Act.**

- a. **Consultant.** The Consultant shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.
- b. **Subcontracts.** The Consultant or subcontractor shall insert in any subcontracts the clause above and such other clauses as FEMA may by appropriate instructions require, and also a clause requiring subcontractors to include these clauses in any lower tier subcontracts. The prime Consultant shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.
- c. **Breach.** A breach of the contract clauses in subsections (a) and (b) above may be grounds for termination of the contract, and for debarment as a Consultant and subcontractor as provided in 29 C.F.R. § 5.12.

## **3. Contract Work Hours and Safety Standards Act.**

- a. This section applies to all contracts in excess of \$100,000 that involve the employment of mechanics or laborers as provided in 40 U.S.C. § 3701.
- b. As provided in 40 U.S.C. § 3702, the Consultant shall compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week.
- c. The requirements of 40 U.S.C. § 3704 shall apply to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
- d. No Consultant or subconsultant contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- e. In the event of any violation of the clause set forth in paragraph (d) of this section the Consultant and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Consultant and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated

damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (d) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (d) of this section.

- f. The County shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Consultant or subcontractor under any such contract or any other Federal contract with the same prime Consultant, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Consultant, such sums as may be determined to be necessary to satisfy any liabilities of such Consultant or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (e) of this section.
- g. The Consultant or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (c) through (f) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Consultant shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (c) through (f) of this section.

#### **4. Compliance with Clean Air Act.**

- a. The Consultant agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.
- b. The Consultant agrees to report each violation to the County and understands and agrees that the County will, in turn, report each violation as required to assure notification to the state of Florida, Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
- c. The Consultant agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FEMA.

#### **5. Compliance with Federal Water Pollution Control Act.**

- a. The Consultant agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.
- b. The Consultant agrees to report each violation to the County and understands and agrees that the County will, in turn, report each violation as required to assure notification to the state of Florida, Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
- c. The Consultant agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FEMA.

#### **6. Debarment and Suspension.**

- a. This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such the Consultant is required to verify that none of the Consultant, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).
- b. The Consultant must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
- c. This certification is a material representation of fact relied upon by the County. If it is later determined that the Consultant did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in

addition to remedies available to the state of Florida and the County, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

- d. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

#### 7. Byrd Anti-Lobbying Amendment

Consultants who apply or bid for an award of \$100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient.

#### APPENDIX A, 44 C.F.R. PART 18: CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements (To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Consultant] certifies, to the best of his or her knowledge, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form- LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Consultant, \_\_\_\_\_, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Consultant understands and agrees that the provisions of 31 U.S.C. § 3801 et seq., apply to this certification and disclosure, if any.

Signature of Consultant's Authorized Official



Name and Title of Consultant's Authorized Official

Date

**8. Procurement of Recovered Materials.**

- a. In the performance of this contract, the Consultant shall make maximum use of products containing recovered materials that are EPA- designated items unless the product cannot be acquired—
  - i. Competitively within a timeframe providing for compliance with the contract performance schedule;
  - ii. Meeting contract performance requirements; or
  - iii. At a reasonable price.

**9. DHS Seal, Logo, and Flags.**

The Consultant shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.

**10. Compliance with Federal Law, Regulations, and Executive Orders.**

This is an acknowledgement that FEMA financial assistance will be used to fund the contract only. The Consultant will comply will all applicable federal law, regulations, executive orders, FEMA policies, procedures, and directives.

**11. No Obligation by Federal Government.**

The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, Consultant, or any other party pertaining to any matter resulting from the contract.

**12. Fraud and False or Fraudulent or Related Acts.**

The Consultant acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Consultant's actions pertaining to this contract.



## St. Johns County Board of County Commissioners

Purchasing Division

January 26, 2021

Woolpert, Inc.  
4454 Idea Center Boulevard  
Dayton, OH 45430-1500

RE: RFQ No. 21-34; Digital Orthophotography  
Master Contract No: 21-MCC-WOO-13032

Dear Mr. Lovin:

Enclosed, please find a fully executed original copy of your Master Contract Agreement for your files.

Please feel free to contact me at (904) 209-0160 or email at [abacon@sjcfl.us](mailto:abacon@sjcfl.us) with any questions you may have.

Sincerely,  
**St. Johns County, FL**  
**Purchasing Department**

A handwritten signature in blue ink that reads "April Bacon".

April Bacon  
Purchasing Buyer  
(904) 209-0160 – Direct  
(904) 209-0161 – Fax  
[abacon@sjcfl.us](mailto:abacon@sjcfl.us)

CC: SJC Minutes & Records  
SJC Purchasing RFQ No: 21-34 Master Contract File