





*Continued from page 1...*

**Background and Justification:** In December 2011, contracts were established with Surdex Corporation, BAE Systems Inc., and Woolpert, Inc., to provide mapping services. On December 20, 2011 authorization was given to the County Administrator or his designee to negotiate and execute a series of task orders of less than \$100,000. All Task Orders in excess of \$100,000 must be approved by the Board of County Commissioners.

Planimetric mapping entails delineating a list of features, such as drainage, building outlines and edge of pavements, from aerial photos to within  $\pm 0.5$  foot accuracy. This  $\pm 0.5$  foot standard is applicable to developed areas and a  $\pm 1.0$  foot standard is applicable to undeveloped areas (e.g., sugar cane fields, vacant land).

Digital orthophotography is aerial photos rectified to match the earth's surface location. Global Positioning Satellite (GPS) technology is used to accurately map infrastructure on the face of the earth. Aerial photographs of Palm Beach County's land surface are accessible to the public via the My *GeoNAV* web application.

The mapping program and costs have been reviewed and approved by the GIS Policy Advisory Committee. The Palm Beach County Property Appraiser's Office is an active participant in the countywide GIS program and contributes funding each year towards these mapping initiatives.

AMENDMENT NO. 3 TO CONTRACT FOR  
CONSULTING/PROFESSIONAL SERVICES

This **AMENDMENT No. 3**, dated \_\_\_\_\_, 2015 to the contract of December 20, 2011, between Palm Beach County, a political Subdivision of the State of Florida, by and through, its Board of Commissioners, hereinafter referred to as COUNTY, and SURDEX CORPORATION, 520 Spirit of St. Louis Blvd., St. Louis, MO 63006, a corporation authorized to do business in the State of Florida, hereinafter referred to as the CONSULTANT, whose Federal I.D. is 43-0690641.

**WHEREAS**, the parties have entered into a Contract (R2011-2052) of December 20, 2011, under which the CONSULTANT furnishes professional/consultation services in the area of Planimetric and Digital Ortho Photography mapping goods and services on behalf of the COUNTY; and

**WHEREAS**, the parties mutually desire to extend the Contract until December 19, 2016.

**NOW THEREFORE**, in consideration of the mutual promises contained herein the parties agree as follows:

1. In Article 2, SCHEDULE, the expiration date of the contract of December 19, 2013 is deleted, and December 19, 2016 is substituted.

Except as expressly modified in Amendments No. 1 and No. 2, all the terms and conditions of the contract of December 20, 2011 are confirmed and remain in full force and effect.

**IN WITNESS WHEREOF**, the Board of County Commissioners of Palm Beach County, Florida has made and executed this Amendment on behalf of the COUNTY and CONSULTANT has hereunto set its hand.

**ATTEST**  
SHARON R. BOCK  
CLERK & COMPTROLLER

**PALM BEACH COUNTY**  
**BOARD OF COUNTY COMMISSIONERS**

By: \_\_\_\_\_  
Deputy Clerk

By: \_\_\_\_\_  
Shelley Vana, Mayor

**WITNESS**  
*Rachael Donaldson*  
Signature

**CONSULTANT**  
SURDEX CORPORATION

*RACHAEL DONALDSON*  
Name

*RC Hoffmann*  
Signature

*RON C. HOFFMANN*  
Name

Title: *PRESIDENT*

**APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY**  
*Paul F. [Signature]*  
County Attorney

**APPROVED AS TO TERMS  
AND CONDITIONS**  
*Steve Bordelon*  
Steve Bordelon, Director of ISS



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SHARON R. BOCK  
CLERK & COMPTROLLER

**PALM BEACH COUNTY**  
**BOARD OF COUNTY COMMISSIONERS**

By: \_\_\_\_\_  
Deputy Clerk

By: \_\_\_\_\_  
Shelley Vana, Mayor

**WITNESS**  
*Rachael Donaldson*  
Signature

**CONSULTANT**  
SURDEX CORPORATION

RACHAEL DONALDSON  
Name

*RC Hoffmann*  
Signature

RON C. HOFFMANN  
Name

Title: PRESIDENT

**APPROVED AS TO FORM**  
**AND LEGAL SUFFICIENCY**

*Paul F. J.*  
County Attorney

**APPROVED AS TO TERMS**  
**AND CONDITIONS**

*Steve Bordelon*  
Steve Bordelon, Director of ISS

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**WHEREAS**, the parties have entered into a Contract (R2011-2053) of December 20, 2011, under which the CONSULTANT furnishes professional/consultation services in the area of Planimetric and Digital Ortho Photography mapping goods and services on behalf of the COUNTY; and

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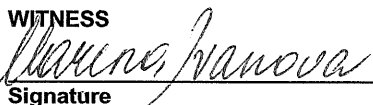
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**ATTEST**  
**SHARON R. BOCK**  
**CLERK & COMPTROLLER**

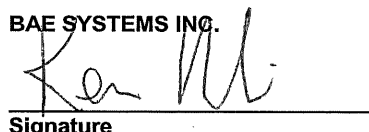
**PALM BEACH COUNTY**  
**BOARD OF COUNTY COMMISSIONERS**

By: \_\_\_\_\_  
Deputy Clerk

By: \_\_\_\_\_  
Shelley Vana, Mayor

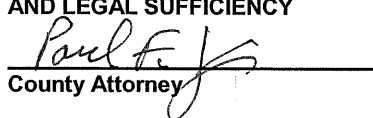
**WITNESS**  
  
Signature


MARINA IVANOVA  
Name

**CONSULTANT**  
BAE SYSTEMS INC.  
  
Signature

KEN MARTIN  
Name

Title: CONTRACTS

**APPROVED AS TO FORM**  
**AND LEGAL SUFFICIENCY**  
  
County Attorney

**APPROVED AS TO TERMS**  
**AND CONDITIONS**  
  
Steve Bordelon, Director of ISS

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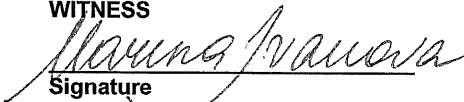
**ATTEST**  
**SHARON R. BOCK**  
**CLERK & COMPTROLLER**

**PALM BEACH COUNTY**  
**BOARD OF COUNTY COMMISSIONERS**

By: \_\_\_\_\_  
Deputy Clerk

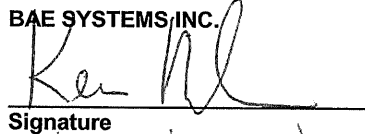
By: \_\_\_\_\_  
Shelley Vana, Mayor

**WITNESS**

  
Signature

MARINA NANOVA  
Name

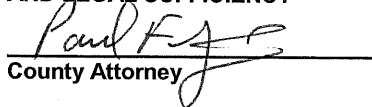
**CONSULTANT**

BAE SYSTEMS/INC.  
  
Signature

KEAR MARTIN  
Name

Title: CONTRACTS

**APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY**

  
County Attorney

**APPROVED AS TO TERMS  
AND CONDITIONS**

  
Steve Bordelon, Director of ISS

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WHEREAS, the parties have entered into a Contract (R2011-2054) of December 20, 2011, under which the CONSULTANT furnishes professional/consultation services in the area of Planimetric and Digital Ortho Photography mapping goods and services on behalf of the COUNTY; and

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ATTEST  
SHARON R. BOCK  
CLERK & COMPTROLLER

PALM BEACH COUNTY  
BOARD OF COUNTY COMMISSIONERS

By: \_\_\_\_\_  
Deputy Clerk


By: \_\_\_\_\_  
Shelley Vana, Mayor

WITNESS

  
Signature

Alberto Pisani  
Name


CONSULTANT

WOOLPERT, INC.  
  
Signature

JOHN CESTNICK  
Name

Title: SENIOR ASSOCIATE.

APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY

  
County Attorney

APPROVED AS TO TERMS  
AND CONDITIONS

  
Steve Bordelon, Director of ISS

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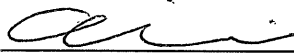
ATTEST  
SHARON R. BOCK  
CLERK & COMPTROLLER

PALM BEACH COUNTY  
BOARD OF COUNTY COMMISSIONERS

By: \_\_\_\_\_  
Deputy Clerk

By: \_\_\_\_\_  
Shelley Vana, Mayor

WITNESS

  
Signature

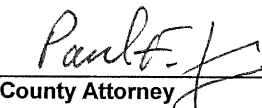
Alberto Pisani  
Name

CONSULTANT

WOOLPERT, INC.  
  
Signature

JOHN CESTNICK  
Name  
Title: SENIOR ASSOCIATE.

APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY

  
County Attorney

APPROVED AS TO TERMS  
AND CONDITIONS

  
Steve Bordelon, Director of ISS

2016 - 0100

BOARD OF COUNTY COMMISSIONERS  
PALM BEACH COUNTY, FLORIDA  
BUDGET AMENDMENT

FUND 3901 - INFORMATION TECHNOLOGY CAPITAL IMPROVEMENTS

BGRV 490 101515 \* 14  
BGEX 490 101515 \* 137

| ACCOUNT NAME AND NUMBER                         | ORIGINAL BUDGET | CURRENT BUDGET | INCREASE | DECREASE | ADJUSTED BUDGET | EXPENDED/ ENCUMBERED AS OF 10/14/2015 | REMAINING BALANCE |
|---|-----------------|----------------|----------|----------|-----------------|---------------------------------------|-------------------|
| <b>Revenues</b>                                 |                 |                |          |          |                 |                                       |                   |
| 491-M010-6690 Other Contributions and Donations | 0               | 0              | 131,104  | 0        | 131,104         | 0                                     |                   |
| <b>TOTAL RECEIPTS &amp; BALANCES</b>            | 11,390,176      | 11,140,686     | 131,104  | 0        | 11,271,790      |                                       |                   |
| <b>Expenditures</b>                             |                 |                |          |          |                 |                                       |                   |
| 491-M010-3401 Other Contractual Services        | 298,426         | 284,766        | 131,104  | 0        | 415,870         | 16,734                                | 399,136           |
| <b>TOTAL APPROPRIATIONS &amp; EXPENDITURES</b>  | 11,390,176      | 11,140,686     | 131,104  | 0        | 11,271,790      |                                       |                   |

Office of Financial Management and Budget

Signatures & Dates

BY BOARD OF COUNTY COMMISSIONERS  
AT MEETING OF

INITIATING DEPARTMENT/DIVISION  
Administration/Budget Department Approval  
OFMB Department - Posted

Stev Bordelon, Director, ISS

*Stev Bordelon* *[Signature]*

November 3, 2015

Deputy Clerk to the  
Board of County Commissioners

*[Handwritten initials]*  
10/14/15

**TASK ORDER**

TASK ORDER # 3

CONSULTANT **Woolpert, Inc.**

ACCOUNT # **ERM BAS**

CONTRACT R2011-2054

COUNTY PROJECT MANAGER **Kelly Ratchinsky** PHONE **355-4252**

PROJECT NAME 2015 Countywide Coastal Aerial Program

LOCATION **Palm Beach County Coasts and Inlets**

TASK DESCRIPTION **Color Digital Orthophotos 1"= 100' horizontal accuracy, 0.5 foot ground resolution with additional ground control per attached proposal.**

DELIVERABLES +/- **See attached**

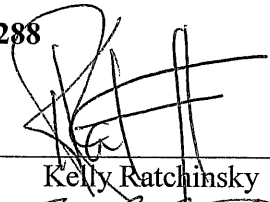
DUE DATE **December 31, 2015**

TASK ORDER TYPE **Lump Sum**

RETAINAGE **10%**

TOTAL AMOUNT **\$88,288**

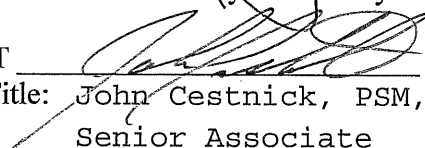
PROJECT MANAGER

  
Kelly Ratchinsky

DATE

7/16/15

CONSULTANT

  
Printed Name/Title: **John Cestnick, PSM,**  
**Senior Associate**

DATE 2015.07.13

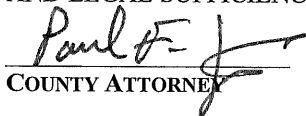
**Project Manager**

**PALM BEACH COUNTY  
BOARD OF COUNTY COMMISSIONERS**



**Steve Bordelon, Director of ISS**

APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY

  
COUNTY ATTORNEY

APPROVED AS TO  
TERMS AND CONDITIONS

  
ISS DEPARTMENT DIRECTOR



June 17, 2015

Penny L. Anderson  
Sr. Coordinator  
Palm Beach County ISS

RE: 2015 Coastal Orthophoto Proposal

Dear Penny:

Thank you very much for the opportunity to once again propose on the coastal orthophoto development. The 2015 Technical Specifications were followed to develop our fee estimate, as well as the understanding that Palm Beach County wants to receive virtually the same service and deliverables as Woolpert provided in 2011, 2013, and 2014. Some items to note with our work plan are as follows:

- 1) As in past years, Woolpert proposes to acquire the RGB aerial imagery using a digital sensor – a Leica ADS80. This is a push-broom sensor, so it does not collect individual frames of imagery, but rather, collects imagery in continuous strips the length of the flight lines. Where the Technical Specifications define acquisition and delivery parameters in terms of a film or a frame camera, we'll fly and deliver as those criteria apply to the ADS80 sensor. More specifically:
  - a) Raw ground pixel resolution is specified to be 0.33 feet as captured with film at 1"=600' scale (3,600 feet above ground level). We are proposing the same option that was contracted in previous years, and that was to use Woolpert's ADS80 sensor and collect at the specified 0.33 feet raw ground pixel resolution (flown at 3,165 feet above ground level). This option will result in imagery that meets the final 0.5-foot ground resolution and will meet 1"=100' NMAS horizontal accuracy.
    - i) Publication scale: 1"=100'
    - ii) Pixel Resolution: 0.5-foot
    - iii) Photo type: Natural Color
    - iv) Horizontal Accuracy: +/-3.33' at 90 Percent
    - v) Imaging Sensor: ADS80 Digital Imaging Sensor
  - b) Specifications relating to 80% forward overlap do not apply because the push-broom sensor collects continuously. All orthophoto imagery is collected at nadir.

Woolpert, Inc. . . . .  
10900 NW 25th Street, Suite 100 . . . . .  
Miami, FL 33172-1922 . . . . .  
305.418.9370 . . . . .



- c) Raw digital orthorectified imagery will be provided in images strips as collected. We will break the strips down into multiple segments so the file sizes are no larger than approximately 1GB.
  - d) For the Photo Mosaic Index, we will provide MrSID format mosaics of the image strips as collected. We may wish to either increase the level of compression (1:100, for example) or break the area into multiple MrSID mosaics to keep file sizes manageable.
  - e) As provided in previous years, Woolpert will include the Statistical Validation Report identified within the deliverables, within our Aerial Triangulation Report.
- 2) As provided in previous years, for the Spot Index Map, we will provide a layout for each imagery product showing the outlines of each image file – an orthophoto index in both AutoCAD .dwg and ArcGIS .shp file formats.
- 3) Survey Control & Targeting: Woolpert will need approximately ten (10) new photo control stations, evenly spaced throughout the project area, to properly complete the aerial triangulation. If Palm Beach County can provide the necessary control, Woolpert will utilize it so that no additional fieldwork will be necessary. However, if the necessary control does not already exist, Woolpert can provide the field surveying service to set and survey ten new photo control stations. The fee to provide the necessary survey ground control is \$4,360.
- 4) Imagery Acquisition: Woolpert's fee proposal includes no more than two mobilizations to the project site by the flight team. If additional mobilizations to the project site are necessary to complete the imagery acquisition, additional fees will have to be authorized. The fee for each additional site mobilization will be a lump-sum fee of \$18,250. This fee includes all costs including: aircraft, ADS80 sensor, fuel, labor, imagery acquisition and on-site direct expenses.

Woolpert, Inc. . . . .  
10900 NW 25th Street, Suite 100 . . . . .  
Miami, FL 33172-1922 . . . . .  
305.418.9370 . . . . .

Woolpert's Fee Proposal Breakdown:

|                                      |                         |
|--------------------------------------|-------------------------|
| • Imagery Acquisition and Processing | \$ 43,575               |
| • Film scanning                      | Not Applicable          |
| • Aerial Triangulation               | \$ 9,857                |
| • Orthophoto Mapping                 | \$ <u>30,496</u>        |
| <b>TOTAL PROPOSAL FEE</b>            | <b>\$ <u>83,928</u></b> |

OPTIONS / ADDITIONAL SERVICES:

|   |           |
|---|-----------|
| • Ground control survey & targeting     | \$ 4,360  |
| • Additional Mobilization (flight team) | \$ 18,250 |

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.



John.Cestnick, PSM  
*Senior Associate*

Woolpert, Inc.  
10900 NW 25th Street, Suite 100  
Miami, FL 33172-1922  
305.418.9370



**Palm Beach County  
Environmental Resources Management**

**INTERDEPARTMENTAL BUDGET AVAILABILITY STATEMENT**

REQUEST DATE: 06/30/2015

REQUESTED BY: Andy Studt

PHONE: 233-2539

PROJECT TITLE: Countywide Coastal Aerial Photography

PROJECT NO:

SITE: Countywide

ACTIVITY: Coastal Orthophoto

CONTRACTOR/CONSULTANT NAME: Woolpert, Inc

SCOPE OF SERVICES: Provide digital orthophotography in the coastal areas as describe on the attached specifications.

BUDGET ACCOUNT NUMBER(S):

| <u>Fund</u> | <u>Dept</u> | <u>Unit</u> | <u>Obj</u> | <u>SObj</u> | <u>Program</u> | <u>PPC</u> | <u>(Proj)<br/>Task</u> | <u>(Site)<br/>Sub Task</u> | <u>(Activity)<br/>Task Ord</u> | <u>Amount</u> |
|-------------|-------------|-------------|------------|-------------|----------------|------------|------------------------|----------------------------|--------------------------------|---------------|
| 3652        | 381         | M040        | 3120       |             | E040           | CIP        | S011                   | CCOC                       | 14                             | \$3,678.67    |
| 3652        | 381         | M045        | 3120       |             | E045           | CIP        | S019                   | CJUC                       | 14                             | \$2,710.60    |
| 3652        | 381         | M028        | 3120       |             | E028           | CIP        | S032                   | CJUB                       | 14                             | \$5,033.96    |
| 3652        | 381         | M037        | 3120       |             | E037           | CIP        | S015                   | CSII                       | 14                             | \$3,678.67    |
| 3652        | 381         | M044        | 3120       |             | E044           | CIP        | S013                   | CSPB                       | 14                             | \$1,936.14    |
| 3652        | 381         | M015        | 3120       |             | E015           | CIP        | S027                   | COCR                       | 14                             | \$5,033.96    |
| 3652        | 381         | M046        | 3120       |             | E046           | CIP        | S017                   | CSLW                       | 14                             | \$4,840.35    |
| 3652        | 381         | M041        | 3120       |             | E041           | CIP        | S012                   | CDEB                       | 14                             | \$6,002.04    |
| 3652        | 381         | M039        | 3120       |             | E039           | CIP        | S010                   | CBOR                       | 14                             | \$3,097.82    |
| 3652        | 381         | M051        | 3120       |             | E051           | CIP        | S016                   | CBOR                       | 14                             | \$2,710.60    |
| 3652        | 381         | M016        | 3120       |             | E016           | CIP        | S002                   | CBOR                       | 14                             | \$2,323.37    |
| 3652        | 381         | M034        | 3120       |             | E034           | CIP        | S007                   | CPAB                       | 14                             | \$24,395.37   |
| 3652        | 381         | M045        | 3120       |             | S102           | M100       | X007                   | CCTY                       | 14                             | \$22,846.46   |

BAS APPROVED BY: S. Neary DATE: 7/1/15

ENCUMBRANCE NUMBER: KPO -

**TASK ORDER**

TASK ORDER # 4

CONSULTANT **Woolpert, Inc.**

ACCOUNT # **WUD BAS**

CONTRACT R2011-2054

COUNTY PROJECT MANAGER **Kelly Ratchinsky** PHONE **355-4252**

PROJECT NAME 2015 GIS/GPS Utility Mapping Pilot Project

LOCATION **Section 30, Township 43, Range 42 and Okeechobee Blvd/Military Trail**

TASK DESCRIPTION **Provide services to accurately map water and wastewater networks**

DELIVERABLES +/- **See attached**

DUE DATE **December 31, 2015**

TASK ORDER TYPE **Lump Sum**

RETAINAGE **10%**

TOTAL AMOUNT **\$63,000**

PROJECT MANAGER


  
Kelly Ratchinsky

DATE

8/15/15

CONSULTANT

Printed Name/Title:

  
JOHN CESTNICK  
SENIOR ASSOCIATE.

DATE

2015-8-13

PALM BEACH COUNTY  
BOARD OF COUNTY COMMISSIONERS

  
Steve Bordelon, Director of ISS

APPROVED AS TO FORM  
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TERMS AND CONDITIONS

  
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# SCOPE OF SERVICES

## GIS/GPS UTILITY MAPPING PILOT PROJECT

Palm Beach County, Florida

August 12, 2015



**WOOLPERT**  
DESIGN | GEOSPATIAL | INFRASTRUCTURE



## Scope of Services

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### GIS/GPS UTILITY MAPPING PILOT PROJECT

**Palm Beach County, Florida**

Prepared by:

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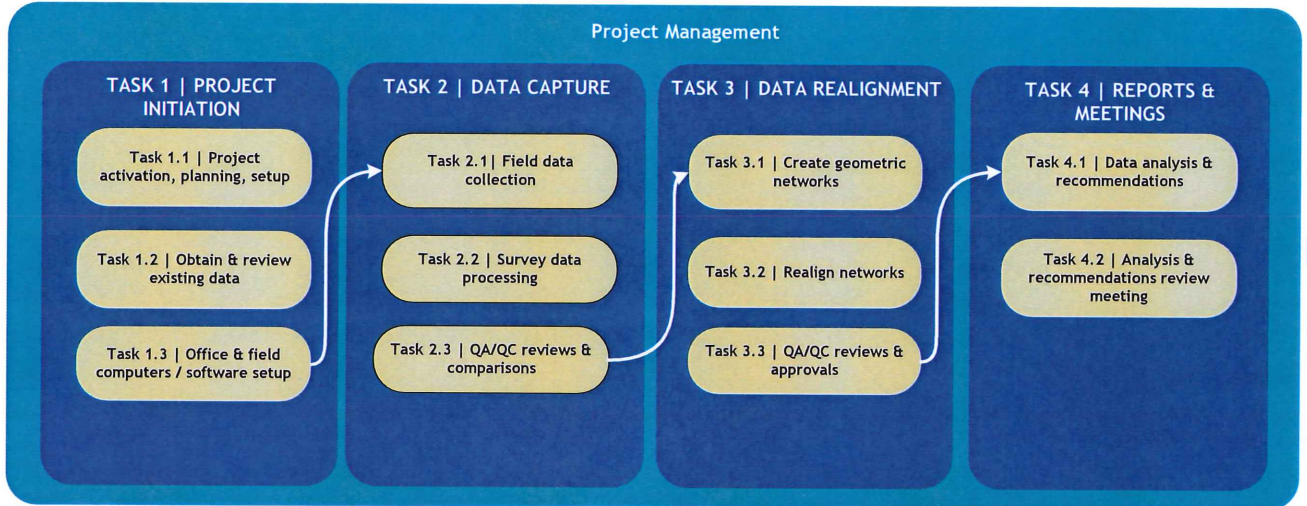


## SCOPE OF SERVICES

This document identifies the services and activities that will be provided by Woolpert to support Palm Beach County (PBC) with a GPS/GIS Utility Mapping Pilot Project.

Sections within this document correspond to specific tasks identified in the Project Schedule. Tasks have been described in detail and will focus on addressing the County's initial goals.

In order to successfully complete this Scope of Services, Woolpert will undertake the project in the manner depicted in the following flowchart and Work Breakdown Structure (WBS).



## PROJECT MANAGEMENT

Woolpert will provide the following general project management services:

- Develop, in cooperation with the County's Project Manager, a Project Management Plan (PMP) and Schedule.
- Proactively manage and update PMP and schedule, as required, throughout the duration of the project.
- Coordinate project events with the County's Project Manager and Woolpert team members.
- Author, edit, review, and distribute project documentation and technical reports as required.
- Facilitate in-process review meetings with the County's Project as scheduled, and appropriate, throughout the duration of the project.
- Perform miscellaneous project administration (e.g. schedule, internal project updates, project setup, and close-out).
- Anticipate problem areas and propose and facilitate solutions.





## **Project Kick-Off Meeting (on-site)**

As soon as is reasonably feasible, following receipt of the Written Task Authorization, Woolpert's Project Manager will work with the County's Project Manager to schedule the Kick-off Meeting. This meeting will be facilitated on-site at County offices for the purpose of: 1) establishing the necessary Project Management protocols to be adhered to by all stakeholders, 2) reviewing the County's project goals and objectives with all team members, 3) identifying any County-owned source documentation necessary to support the Project, 4) identifying all critical path schedule milestones, and 5) addressing any outstanding scope or schedule questions that County stakeholders may have.

## **Project Schedule Coordination**

Project schedule coordination and management will be managed using Microsoft Project. The project schedule will be monitored and adjusted as needed. An updated Project schedule delineating resources, scheduled tasks, and completed tasks will be maintained and available to all Woolpert and County project participants.

## **Deliverables**

- Project Management Plan (PMP) in Adobe PDF format.
- Kick-off Meeting agenda in Adobe PDF format.
- On-site project Kick-Off Meeting.
- Weekly status emails for the duration of the project.
- On-going project management, including resource allocation, invoicing and general consulting.
- Project Tracking Log.

## **Assumptions**

- Woolpert's invoice will be accompanied by an updated schedule with updated percent completes. Monthly invoiced fee will be generated via updated MS Project fee schedule.

## **County Responsibilities**

- Provide a point of contact for all project management issues and questions.
- Provide review, comment, and written acceptance of all deliverables.
- Schedule with staff and provide facilities for on-site meetings and off-site conference calls.
- Review and accept project status reports.
- Schedule meeting space appropriate for the kick-off meeting.

# **1 | PROJECT INITIATION**

---

## **1.1 | Project activation, planning, & setup**

Once the project has been approved to begin, Woolpert's Project Manager (PM) will create the Project Management Plan (PMP) and a detailed project schedule, as partially described under the previous Project Management section. Both the PMP and the schedule will be



reviewed internally so that the proper project files can be created, and so the proper project team will be scheduled and assigned to the project. An internal project meeting will be held to inform all project team members of the scope of services, and their individual role within the project.

### **Deliverables**

- Project Management Plan (PMP) in Adobe PDF format
- Microsoft Project schedule in Adobe PDF format
- Internal review meeting

### **Assumptions**

- None

### **County Responsibilities**

- None

## **1.2 | Obtain & review existing data**

Woolpert will request the most recent version of the County source documentation and project data to be used on the project. Expected data to be received include:

- Digital orthophotography
- Roadway and parcel ArcGIS files
- Water and sewer geodatabase files (for editing)
- Scanned digital water and sewer as-builts
- Finalized surveyed utility assets (e.g. water valves) and associated final files, and tables

Woolpert will review the provided files to become familiar with the project area, data sets, and how each will be used on the project.

### **Deliverables**

- Data request email

### **Assumptions**

- None

### **County Responsibilities**

- Provide the project files as necessary in a timely manner as to not delay the agreed upon schedule.

## **1.3 | Office & field computers / software setup**



Prior to any field data collection, project computers will be setup and configured for this particular project. An ArcGIS project will be created to display the desired project information, and datasets checked to ensure they are aligned correctly.

Field computers will be loaded with background files, set to the appropriate coordinate systems and communication channels. Data collection files will be prepared and tested prior to use on the project.

Data collection files will be designed so that field crews will be able to inventory various utility feature types, each with specific attribution to be related to the specific feature.

Feature Types will include:

- Water System Valves
- Fire Hydrants
- Water Meters
- Sewer System Valves
- Sewer Manholes

Attribution is expected to include:

- ID (open text field)
- Inventory Status (GPS, Not Found, Obscured, Impeded)
- New (Y/N)
- Comment (open text field)

### Deliverables

- Internal computer and software setup and testing

### Assumptions

- Existing data files provide by the County will be set relative to the same horizontal coordinate system, with the same units, and will align properly

### County Responsibilities

- None

## 2 | DATA CAPTURE

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### 2.1 | Field data collection

Woolpert field crews will use Trimble, Real-Time Kinematic (RTK) GPS technology to locate utility features within the pilot area. Expected horizontal accuracy will be 1 foot at 95% confidence level.

The following table summarizes the features counts within the PBC utility geodatabase, and is the basis for the level of work within this scope of services.

|                    | AREA 1 | AREA 2 |
|--------------------|--------|--------|
| WATER SYSTEM VALVE | 175    | 48     |





|                    |     |    |
|--------------------|-----|----|
| FIRE HYDRANT       | 172 | 3  |
| WATER METER        | 5   | 1  |
| SEWER SYSTEM VALVE | 71  | 28 |
| SEWER MANHOLE      | 268 | 0  |
| Sub-Total Counts = | 691 | 80 |
| Total Count =      | 771 |    |

### “Inventory Status” Attribute

| Inventory Status | Notes   |
|------------------|---|
| GPS              | Will be used when the horizontal accuracy from GPS is classified as good, and within the 1 foot tolerance.  |
| Obscured         | Will be used when suitable GPS observations cannot be made due to some interference with the GPS signal caused by overhead foliage, nearby buildings, or other cause. When a feature is given an inventory status of Obscured, the feature will be digitized to provide an approximate position.                        |
| Impeded          | Will be used when a feature is not accessible due to such reason as a parked vehicle, buried, paved over, or for any other reason that prohibits the field crew from obtaining direct access. When a feature is given an inventory status of Impeded, the feature will be digitized to provide an approximate position. |
| Not Found        | Will be used when a feature cannot be found in the field after a two minute search, but the feature is show within the existing geodatabase. When a feature is given an inventory status of Not Found, the feature will be digitized to provide an approximate position.  |

### “New” Attribute

For each feature located in the field, an attribute of “New” will be populated. This attribute will be a domain pick-list of YES or NO. If the feature located in the field is a feature that corresponds to one within the existing geodatabase, the attribute of NO will be used. If a feature is found in the field that is not shown within the existing geodatabase, the attribute of YES will be used. This will assist in identifying possible new features that were found within the field that does not exist within the current utility mapping.

### Deliverables

- Raw Trimble field data collector files for approximately 771 utility features.

### Assumptions

- Count for water system valves in Area 1 only includes hydrant isolation valves. Main isolation valves within Area 1 were collected by PBC field crews, and are not a part of the field data collection effort within this scope of services.
- If a feature cannot be GPS’ed for any reason, the feature’s position will be digitized by the field crew to provide an approximate location. All non-GPS’ed features will be re-aligned in the office during task 3.2.



## County Responsibilities

- None

## 2.2 | Survey data processing

After the field data collection is complete, data will be downloaded in the office and backed up for storage. Raw data files will be loaded within Trimble Business Center (TBC) office processing software for review and analysis.

- Control observations will be compared to published values.
- Field observations will be compared to those existing within the utility geodatabase to ensure completeness.
- Attribution will be reviewed for anomalies and completeness.
- Final data points will be exported from TBC, and imported to ArcGIS.

### Deliverables

- Final data points ready for import to ArcGIS.

### Assumptions

- None

## County Responsibilities

- None

## 2.3 | QA/QC reviews & comparisons

To get a comparison of location accuracy between Woolpert's field data collection and the field data collection by PBC, Woolpert will locate a few dozen main isolation water valves within Area 1 that were previously surveyed by PBC. A direct comparison of horizontal location will be made to determine the consistency between the two sets of data measurements.

### Deliverables

- Field data collection of a sample of main water isolation valves, and positional comparison to PBC positions.

### Assumptions

- One to three dozen water valves will be surveyed for comparison.

## County Responsibilities

- Provide Woolpert with all PBC final surveyed water valves within the pilot area.

## 3 | DATA REALIGNMENT

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### 3.1 | Create geometric networks

Woolpert will use the PBC utility geodatabase and create geometric networks within ArcGIS. This will be done to assist with the realignment of the utility systems to the updated feature positions.

#### Deliverables

- None

#### Assumptions

- The PBC utility geodatabases are capable of having geometric networks created.

#### County Responsibilities

- None

### 3.2 | Realign networks

Using the available as-built source documentation and the collected survey field data, Woolpert will realign the water and wastewater utility networks. Utility point features within the existing geodatabases will be moved to match the surveyed location of those features.

Based on the new locations of the utility point features, Woolpert will shift and move the associated piping network so that the apparent alignment as shown within the as-built source documentation is maintained. This will be accomplished by geo-referencing the source documentation using three or four GPS'ed features, matched to the corresponding source document feature. After the source documentation is geo-referenced, all features within the geodatabase that were not survey located will be moved to align with the geo-referenced source document.

Lift stations will not be surveyed in the field. Lift station network structures will be re-aligned visually by placing the features at the center of the lift station using the provided digital orthophotography.

#### Deliverables

- Draft realigned water and wastewater geodatabases for internal review, edits, and approval.

#### Assumptions

- This process will be based on a visual best fit, realizing that it will not exactly replicate how the system is shown within the as-built source documentation.
- Coordinate geometry (COGO) data entry for the creation, or re-creation, of the utility networks is not a part of this scope of services. No COGO geometry data entry is included.





## County Responsibilities

- Assist Woolpert with any questions pertaining to specific questions or conflicts that may arise during the realignment of the networks.

### 3.3 | QA/QC reviews & approvals

Following the realignment services, a production manager will review the work performed and the resulting realigned networks. Spot checks will be made by comparing the resulting networks to available source documentation. If areas are found where apparent improvements can be made, the networks will be revised to better represent the system documented within the source files.

#### Deliverables

- Final realigned water and wastewater geodatabases for the pilot area.

#### Assumptions

- Some field surveyed utility features may not match with the available source documentation. This may result in some found utility features not being used during the realignment of the networks.

## County Responsibilities

- Review deliverable and provide acceptance or written comments.

## 4 | REPORTS & MEETINGS

### 4.1 | Data analysis & recommendations

Woolpert will document the results from previous tasks within a Final Analysis & Recommendations Memorandum. It will include such items as:

- Summary of services
- Accuracy comparison between Woolpert and PBC located features
- Discussion of any “new” features found
- Problems encountered
- Recommendations on the process for additional service areas

#### Deliverables

- Final Analysis & Recommendations Memorandum in Adobe PDF format

#### Assumptions

- None



### **County Responsibilities**

- Review deliverable and provide acceptance or written comments.

## **4.2 | Analysis & recommendations review meeting**

Woolpert and PBC project participants will meet at a PBC office location to review the results of the project.

### **Deliverables**

- One project close-out and review meeting not lasting more than two hours.

### **Assumptions**

- Meeting will be located at a PBC facility.

### **County Responsibilities**

- Coordinate a meeting location, and ensure proper participation by PBC project staff.





## PROPOSED PROJECT SCHEDULE

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Assuming a Notice to Proceed by August 14<sup>th</sup>, 2015, the project duration is expected to be 12 weeks. The actual planned duration is calculated to be nine weeks, however a few additional weeks have been added to account for scheduling conflicts.

## PROJECT FEE

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| Task Item    | Project Task   | Fee             |
|--------------|--|-----------------|
| 1.0          | Initiate Project <ul style="list-style-type: none"><li>Obtain and review existing data</li><li>Office and field computers / software setup, configure, test, and approve</li><li>Project planning and define tasks and roles to project team</li></ul> | \$6,930         |
| 2.0          | Data Capture <ul style="list-style-type: none"><li>Field data collection</li><li>Survey data processing</li><li>QA/QC reviews, comparisons, and approvals</li></ul>  | \$32,783        |
| 3.0          | Data Realignment <ul style="list-style-type: none"><li>Create geometric networks for both water and sewer geodatabase</li><li>Realign networks to fit Woolpert and PBC field data</li><li>QA/QC reviews, edits, and approvals</li></ul>                | \$16,372        |
| 4.0          | Reports & Meetings <ul style="list-style-type: none"><li>Project status meetings, updates</li><li>Final Analysis &amp; Recommendations Memorandum</li></ul>  | \$6,915         |
| <b>TOTAL</b> |  | <b>\$63,000</b> |

**PALM BEACH COUNTY  
WATER UTILITIES DEPARTMENT  
BUDGET AVAILABILITY STATEMENT**

REQUEST DATE: August 13, 2015

REQUESTED BY: Danny Thorpe

PHONE#: 307-3750

PROJECT TITLE: GIS/GPS UTILITY MAPPING PILOT PROJECT

BAS AMOUNT: \$63,000.00

CONSULTANT: Woolpert, Inc.

**PROVIDE A BRIEF STATEMENT OF THE SCOPE OF SERVICES TO BE PROVIDED  
BY THE CONSULTANT/CONTRACTOR/VENDOR:**

GIS/GPS UTILITY MAPPING PILOT – GPS utility assets and realign existing utility infrastructure using GPS data to improve positional accuracy.

AMOUNT REQUESTED ON THIS BAS:

|       |             |
|-------|-------------|
| TOTAL | \$63,000.00 |
|-------|-------------|

BUDGET ACCOUNT NUMBER (IF KNOWN)

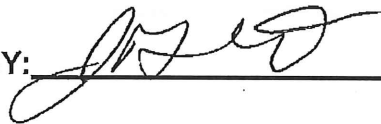
FUND: 4001

DEPT: 720

UNIT: 2425

OBJECT: 3401

BAS APPROVED BY:

*Delena M. Vest*  


DATE:

*8/13/15*

*8/13/15*