December 15, 2016

Mr. Mike Edwards
GIS Manager
Department of Public Utilities
City of Columbus
910 Dublin Road, 3rd Floor
Columbus, Ohio 43215

RE: 2017 City of Columbus Ortho-Imagery Project

Dear Mr. Edwards:

Woolpert is pleased to submit our scope and fee proposal for the 2017 City of Columbus Ortho Project.

Project Boundary

The image to the right depicts the 2017 City of Columbus Service Project Area, which also includes the upground reservoir located in northwest Delaware County. The 2017 project area includes all of Franklin and portions of Delaware, Union, Licking, Fairfield, Pickaway and Madison Counties. In total, the Columbus Service Area is comprised of approximately 650 square miles, with the addition of 31 square miles of tiles completing the project extents (587 square miles – City of Columbus Service Area; 63 square miles – Reservoir Priority Areas; 31 square miles – "filler" tiles).

Project Services

Aerial Imagery Acquisition

Woolpert will acquire new 4-band, 8-bit aerial imagery covering the City of Columbus Service Area. Aerial imagery will be acquired during the months of March-April 2017 (leaf-off conditions, during the absence of snow, zero cloud cover, when rivers and streams are within their normal banks, unless otherwise negotiated with the City) with an average sidelap of 60%. The aerial imagery will support the generation of project area wide 1"=50' scale ortho-imagery with a pixel resolution of 3-

inches. The imagery will be acquired when the sun angle is 30-degrees or greater and with supplemental flights acquired over the Columbus downtown area when the sun-angle is at or near it's highest to minimize building shadows.

Ground Control

Woolpert will utilize existing ground control established for the Columbus 2011, 2013, 2015 Ortho and 2012 Contour Projects to support the 1"=50' scale ortho base mapping.

If any additional ground control is needed (i.e. due to an existing point being destroyed or obscured), Woolpert will perform the survey and supply a control diagram to the City of Columbus depicting the proposed location(s) of the new horizontal and vertical GPS control points. Each new control point (if necessary) will consist of a photo identifiable point (i.e. north edge of sidewalk at east edge of paved driveway).

The datums, coordinate system and units to be used for the project are as follows:

Datums
Horizontal: North American Datum 1983 (HARN)
Vertical: North American Vertical Datum 1988

Coordinate System
Ohio State Plane, South Zone

Geoid/Units
Geiod03/US Survey Feet

Aerial Triangulation

Woolpert will perform aerial triangulation on the newly acquired aerial imagery acquired during the spring of 2017. Triangulation extends and densifies the ground control and will subsequently support the 1"=50' scale ortho base mapping (meeting the ASPRS standard for 50 scale ortho base mapping).

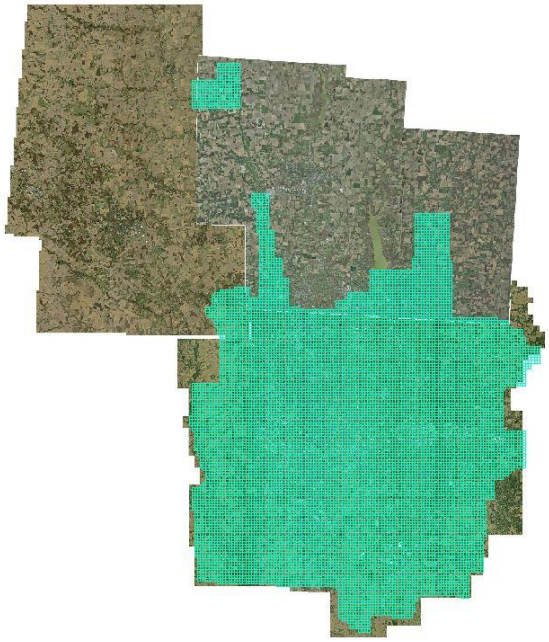
Ortho Base Mapping

Woolpert will produce project area wide (650 square miles) 1"=50' scale ortho-imagery, with a pixel resolution of 3-inches.

The existing Columbus LiDAR DEM (2015) will be used to rectify the new 3-inch aerial imagery. The final ortho tiles will be delivered as 4-band (RGBN), 8-bit geotiff imagery. Utilizing the existing tiling system (1,250' x 1,250' tiles), the ortho tiles will be approximately 100 megabytes in size.

A buffer zone of 250-feet beyond the city project boundary will be established and any location where an ortho tile touches or is within this buffer, a full image tile will be produced and delivered. For the City's Review, the new ortho-imagery will be cached to Woolpert's SmartView Connect Redline Server. Woolpert will provide user accounts and instructions on the use of the web server.

After the City has reviewed and accepted the orthoimagery, the imagery will be processed and delivered in geotiff format (with the appropriate tiff world files and metadata) and MrSID Image Format (based upon the MrSIDs previously delivered as part of the 2013 and 2015 ortho projects, unless the City requests a different configuration; the upground reservoir area will be delivered as a separate MrSID). An ESRI Image Cache (Web Mercator) will also be produced after the City has reviewed and accepted the ortho-imagery. The same parameters that were used for the image cache produced for the 2013 and 2015 3-inch ortho-imagery will be reused.



The image to the right depicts the ortho tiles which will be delivered as part of the ortho project. The full extent of the tiles cover ~681 square miles.

Schedule

Project Tasks

- Woolpert will acquire new aerial imagery on or before April 30, 2017.
- Woolpert will produce and cache the 3-inch ortho-imagery (for Columbus' Review) to Woolpert's SmartView Connect Server on or before July 31, 2017.
- Upon acceptance (by Columbus) of the base ortho-imagery, Woolpert will process the citywide SIDs (separate natural color and color infrared SIDs) and deliver all ortho data (SIDs and geotiffs) on an external hard drive. Woolpert will also provide an image cache referenced to the web Mercator projection. This process will require approximately 30 days from the date of acceptance by Columbus.

Estimated Fees

4-Band, 8-Bit Orthoimagery 1"=50' Scale Base Mapping	
Service	*Fee*
Citywide 3-Inch Ortho-Imagery (4-band, 8-bit)	**$229,682.00**

We appreciate the opportunity to present this price proposal and look forward to again working with you and your team. If you have any questions or need further clarification regarding the above, please call me at 614.827.6155. I can also be reached via my e-mail address: brian.stevens@woolpert.com.

Sincerely,

Woolpert, Inc.

Brian Stevens, CP
Project Manager

Woolpert, Inc.
One Easton Oval, Suite 310, Columbus, Ohio 43219
614.476.6000|www.woolpert.com