# West Virginia Statewide Imagery Contract

Prepared by Kurt Donaldson 11/19/2019

## INFORMATION SHEET

**West Virginia Statewide Imagery Program**

A statewide contract through the WV GIS Technical Center at West Virginia University is available for the acquisition of digital orthoimagery in West Virginia. As part of the Statewide Imagery Program (WVSIP), the imagery is unit priced so that participants can budget for imagery years in advance as well as pay over multiple budget cycles. To meet the needs of the largest number of potential participants, a variety of product options are available through the WVSIP program to include countywide unit pricing for 12-inch, 6-inch, 4-inch, and 3-inch spatial resolutions. This contract allows for municipalities, counties, state agencies, and the federal government to tap into an existing contract to acquire imagery at a known unit price that is usable during the four-year time period 2019-2022.

| Pixel Resolution (Detail Level) | 3-inch | 4-inch | 6-inch | 12-inch |
|---|---|---|---|---|
| Cost per square mile | **$62** | **$45** | **$36** | **$25** |
| Map Scale | 1" = 50' | 1" = 67' | 1" = 100' | 1" = 200' |
| Horizontal Accuracy (ASPRS 1) | 0.5 feet | 0.66 feet | 1.0 feet | 2.0 feet |

Note: 4-band stacked imagery that includes color infrared can be added at 25% of the acquisition cost

A target spatial resolution of 6 inches is recommended for counties that can afford this level of detail. The horizontal accuracy standard is ASPRS Class 1. The state contract was awarded to Blue Mountain Inc. which is now part of the Thrasher Group. The state contact and county unit prices can be viewed at the following link: http://data.wvgis.wvu.edu/pub/temp/FEMA/FRA/Contracts/WV_State_Aerial_Imagery_Contract_U19THRASHER_20190227.pdf

**Performance Period**

The total contracting period of this contract is for four years from February 1, 2019 to December 31, 2022. This time period includes four consecutive leaf-off seasons during the 2019-2022 quadrennium.

**How can you participate?**

Any organization can participate in the Statewide Imagery Program. A signed MOU of all parties involved that states the specifications and costs is all that is needed to participate in the program. For more information, contact one of the following program representatives:

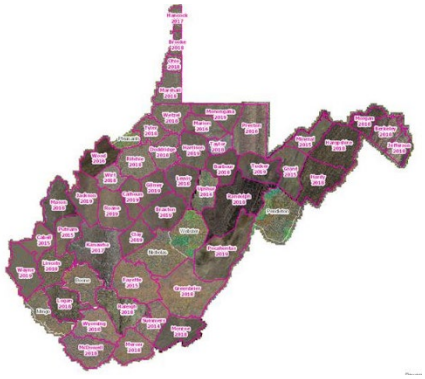
**Kurt Donaldson**, GISP, CFM
WVU GIS Technical Center
304.293.9467
kdonalds@wvu.edu

**Jacob Darrah**, GISP
Blue Mountain, part of The Thrasher Group
304.662.6486
jdarrah@thethrashergroup.com

**View 2019 Aerial Imagery Examples**

You can review the new 2019 imagery acquired at 4-inch resolution via the State Contract by linking to the statewide aerial imagery web service below. These counties include Braxton, Calhoun, Clay, Gilmer, Harrison, Jackson, Monongalia, Pocahontas, Roane, Tucker, and Wayne.

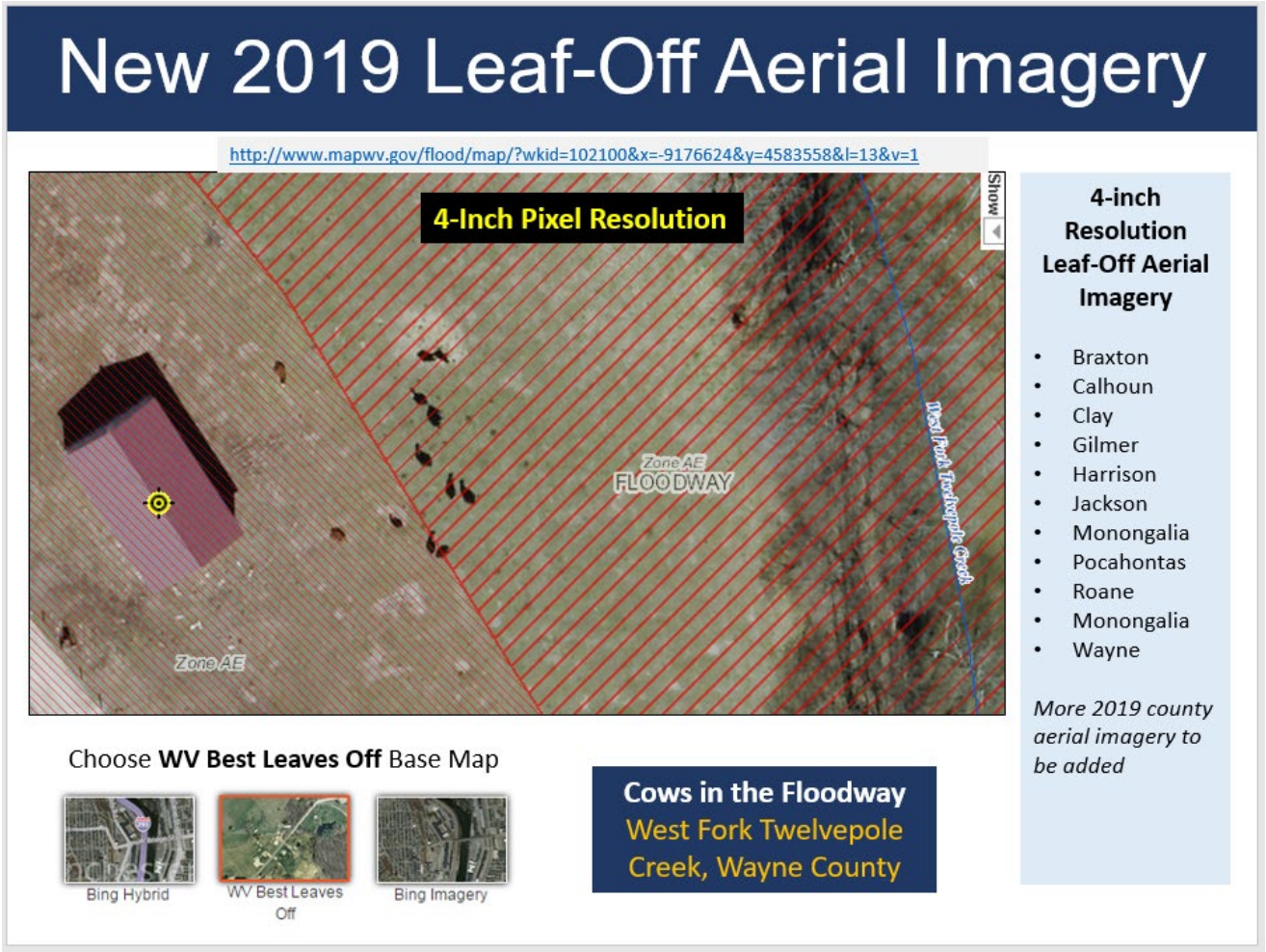
https://services.wvgis.wvu.edu/arcgis/rest/services/Imagery_BaseMaps_EarthCover/wv_imagery_WVGISTC_leaf_off_mosaic/MapServer



**Detailed Imagery Resolution**

The four-inch resolution imagery is high enough resolution to count cows on the imagery.

http://www.mapwv.gov/flood/map/?wkid=102100&x=-9176624&y=4583558&l=13&v=1



**State Contract Aerial Imagery Pricing**

## AERIAL IMAGERY PRICING

| Pixel Resolution (Detail Level) | 3-inch | 4-inch | 6-inch | 12-inch |
|---|---|---|---|---|
| Cost per square mile | **$62** | **$45** | **$36** | **$25** |
| Map Scale | 1" = 50' | 1" = 67' | 1" = 100' | 1" = 200' |
| Horizontal Accuracy (ASPRS 1) | 0.5 feet | 0.66 feet | 1.0 feet | 2.0 feet |

Notes:
4-band stacked imagery that includes color infrared can be added at 25% of the acquisition cost.
The county border buffer is 1000 feet unless otherwise noted.

| County | Square Miles | 12" @ $25 per square mile | 6" @ $36 per square mile | 4" @ $45 per square mile | 3" @ $62 per square mile |
|---|---|---|---|---|---|
| BARBOUR COUNTY | 343 | $8,575 | $12,348 | $15,435 | $21,266 |
| BERKELEY COUNTY | 322 | $8,050 | $11,592 | $14,490 | $19,964 |
| BOONE COUNTY | 503 | $12,575 | $18,108 | $22,635 | $31,186 |
| BRAXTON COUNTY | 516 | $12,900 | $18,576 | $23,220 | $31,992 |
| BROOKE COUNTY | 93 | $2,325 | $3,348 | $4,185 | $5,766 |
| CABELL COUNTY | 288 | $7,200 | $10,368 | $12,960 | $17,856 |
| CALHOUN COUNTY | 280 | $7,000 | $10,080 | $12,600 | $17,360 |
| CLAY COUNTY | 344 | $8,600 | $12,384 | $15,480 | $21,328 |
| DODDRIDGE COUNTY | 320 | $8,000 | $11,520 | $14,400 | $19,840 |
| FAYETTE COUNTY | 668 | $16,700 | $24,048 | $30,060 | $41,416 |
| GILMER COUNTY | 339 | $8,475 | $12,204 | $15,255 | $21,018 |
| GRANT COUNTY | 480 | $12,000 | $17,280 | $21,600 | $29,760 |
| GREENBRIER COUNTY | 1024 | $25,600 | $36,864 | $46,080 | $63,488 |
| HAMPSHIRE COUNTY | 645 | $16,125 | $23,220 | $29,025 | $39,990 |
| HANCOCK COUNTY | 88 | $2,200 | $3,168 | $3,960 | $5,456 |
| HARDY COUNTY | 584 | $14,600 | $21,024 | $26,280 | $36,208 |
| HARRISON COUNTY | 416 | $10,400 | $14,976 | $18,720 | $25,792 |
| JACKSON COUNTY | 471 | $11,775 | $16,956 | $21,195 | $29,202 |
| JEFFERSON COUNTY | 212 | $5,300 | $7,632 | $9,540 | $13,144 |
| KANAWHA COUNTY | 910 | $22,750 | $32,760 | $40,950 | $56,420 |
| LEWIS COUNTY | 389 | $9,725 | $14,004 | $17,505 | $24,118 |
| LINCOLN COUNTY | 439 | $10,975 | $15,804 | $19,755 | $27,218 |
| LOGAN COUNTY | 455 | $11,375 | $16,380 | $20,475 | $28,210 |
| MARION COUNTY | 311 | $7,775 | $11,196 | $13,995 | $19,282 |
| MARSHALL COUNTY | 312 | $7,800 | $11,232 | $14,040 | $19,344 |

| County | Square Miles | 12" @ $25 per square mile | 6" @ $36 per square mile | 4" @ $45 per square mile | 3" @ $62 per square mile |
|---|---|---|---|---|---|
| MASON COUNTY | 445 | $11,125 | $16,020 | $20,025 | $27,590 |
| MCDOWELL COUNTY | 535 | $13,375 | $19,260 | $24,075 | $33,170 |
| MERCER COUNTY | 420 | $10,500 | $15,120 | $18,900 | $26,040 |
| MINERAL COUNTY | 329 | $8,225 | $11,844 | $14,805 | $20,398 |
| MINGO COUNTY | 424 | $10,600 | $15,264 | $19,080 | $26,288 |
| MONONGALIA COUNTY | 366 | $9,150 | $13,176 | $16,470 | $22,692 |
| MONROE COUNTY | 473 | $11,825 | $17,028 | $21,285 | $29,326 |
| MORGAN COUNTY | 230 | $5,750 | $8,280 | $10,350 | $14,260 |
| NICHOLAS COUNTY | 654 | $16,350 | $23,544 | $29,430 | $40,548 |
| OHIO COUNTY | 109 | $2,725 | $3,924 | $4,905 | $6,758 |
| PENDLETON COUNTY | 698 | $17,450 | $25,128 | $31,410 | $43,276 |
| PLEASANTS COUNTY | 134 | $3,350 | $4,824 | $6,030 | $8,308 |
| POCAHONTAS COUNTY | 941 | $23,525 | $33,876 | $42,345 | $58,342 |
| PRESTON COUNTY | 651 | $16,275 | $23,436 | $29,295 | $40,362 |
| PUTNAM COUNTY | 350 | $8,750 | $12,600 | $15,750 | $21,700 |
| RALEIGH COUNTY | 609 | $15,225 | $21,924 | $27,405 | $37,758 |
| RANDOLPH COUNTY | 1039 | $25,975 | $37,404 | $46,755 | $64,418 |
| RITCHIE COUNTY | 454 | $11,350 | $16,344 | $20,430 | $28,148 |
| ROANE COUNTY | 483 | $12,075 | $17,388 | $21,735 | $29,946 |
| SUMMERS COUNTY | 367 | $9,175 | $13,212 | $16,515 | $22,754 |
| TAYLOR COUNTY | 176 | $4,400 | $6,336 | $7,920 | $10,912 |
| TUCKER COUNTY | 421 | $10,525 | $15,156 | $18,945 | $26,102 |
| TYLER COUNTY | 261 | $6,525 | $9,396 | $11,745 | $16,182 |
| UPSHUR COUNTY | 355 | $8,875 | $12,780 | $15,975 | $22,010 |
| WAYNE COUNTY | 512 | $12,800 | $18,432 | $23,040 | $31,744 |
| WEBSTER COUNTY | 556 | $13,900 | $20,016 | $25,020 | $34,472 |
| WETZEL COUNTY | 361 | $9,025 | $12,996 | $16,245 | $22,382 |
| WIRT COUNTY | 235 | $5,875 | $8,460 | $10,575 | $14,570 |
| WOOD COUNTY | 377 | $9,425 | $13,572 | $16,965 | $23,374 |
| WYOMING COUNTY | 502 | $12,550 | $18,072 | $22,590 | $31,124 |

Note: A countywide buffer of 1000 feet is flown beyond the county border.

Vendor agrees to not exceed the countywide unit rates or price schedule listed for the services rendered:

**FAQs**

## FREQUENTLY ASKED QUESTIONS

**What is Aerial Imagery?**

Aerial imagery refers to digital pictures taken from the air. These pictures are normally taken from a vertical perspective looking straight down from the airplane onto the rooftops. Digital aerial imagery requires bright sunlight and cloud free conditions for good results. Digital orthoimagery is the foundation for GIS, forming the base layer from which many additional data layers are created. It combines the characteristics of an aerial image with the geometric qualities of a map. This allows GIS and CAD software to accurately measure all visible ground features in their true geographic position and lets users:

- Make accurate distance and area calculations across the entire image mosaic
- Measure the true position of any feature observed in the orthoimage

**What is the best resolution for your needs?**

Your organization should capture aerial imagery at the smallest feature and highest positional accuracy that you require, while not to paying for more than you need if there is no benefit. Refer to the table below to choose the best resolution. Digital aerial imagery can vary greatly in accuracy and pixel resolution. Pixel resolution (a single point in a graphic image) refers to the actual distance on the ground each pixel represents in the orthoimagery. For example, one-foot pixel resolution means each pixel in the image covers one foot on the ground.

Table 1. Comparison of Aerial Imagery Resolution

| Resolution | 3-inch | 4-inch | 6-inch | 12-inch |
|---|---|---|---|---|
| **Cost per square mile** | $62 | $45 | $36 | $25 |
| **Mapping of:** | Utilities and public works | Utilities and public works | Urban and more developed areas | Rural and less developed areas |
| **Mapping Scale** | 1:600 Map Scale<br>1” = 50’ | 1:800 Map Scale<br>1” = 67’ | 1:1200 Map Scale<br>1” = 100’ | 1:2400 Map Scale<br>1” = 200’ or 1” = 400’ |
| **Positional Accuracy** | Very High | Higher than 6”<br>Lower than 3” | Higher than 12”<br>Lower than 4” | Lowest |
| **Key Features Visible** | *Very Small Infrastructure*<br>▪ Fire Hydrants<br>▪ Manhole Covers<br>▪ Individual people and animals<br>▪ Finer details on roads including markings and skid marks | *Smaller Infrastructure*<br>▪ Clearer Road Markings<br>▪ Power Lines | *Infrastructure*<br>▪ Property line fences<br>▪ Utility Poles<br>▪ Individual Trees<br>▪ Vehicle Types<br>▪ Road markings | *Large Infrastructure*<br>▪ Buildings<br>▪ Paved Roads<br>▪ Railroads<br>▪ Vehicles<br>▪ Tree/shrub line |
| **Tax Parcel Conversion Projects or Re-mapping** | Identifiability of small features somewhat improved over 4”. Lower cost-to-benefit ratio | Ideal for mapping fences and other survey features at a higher positional accuracy than 6” | Ideal for mapping fences, survey features, and land divisions (e.g., fences, walls, tree lines, roads) | Satisfactory for conversion projects |
| **Other Notes** | More building lean may be noticeable at 3” resolution for taller structures | 2-foot contours for engineering grade maps generated at this resolution | | |

**What is Uncorrected versus Corrected (Ortho) Aerial Imagery?**
If you are planning to measure ground features or to create maps from your aerial images, then orthorectified imagery is necessary. Orthorectification corrects for tip or tilt of the aircraft and displacement in the photograph caused by changes in the ground elevation.

**How often should aerial imagery be purchased by your organization?**
We would like to see all counties flown once every five years at a minimum resolution of 12 inches. Rapidly growing counties or developing areas may choose to fly every year.

**How is a client billed for the imagery?**
Clients are billed upon the complete delivery of the imagery products. Organizations may be able to pay the aerial imagery company over more than one budget cycle.

**When is leaf-off aerial imagery flown in West Virginia?**
Leaf-off aerial imagery is flown during late February to early April when there is neither no snow on the ground nor flooding.

**When will the aerial imagery be delivered?**
For spring flights, all ensuing deliverables must be completed before the end of the calendar year, and preferably before October 1.

**What is color-infrared imagery?**
Color-infrared imagery is a false-color image that includes the near-infrared spectral band. Color infrared imagery is good at penetrating atmospheric haze and for determining the health of vegetation.

**What is oblique imagery?**
Oblique imagery is aerial photography that is captured at approximately a 45-degree angle with the ground and thus allows viewers to see and measure not only the top of objects but the sides as well. Typically, oblique imagery requires proprietary software to view.

**What are Benefits of a Statewide Imagery Program?**
A coordinated statewide imagery program employs a collective approach where partners share imagery acquisition costs in an equitable manner and based on the available funding of organizations.

- Excellent value through:
  - economy of scale
  - partner funding
  - efficiency in implementation
- Data-sharing among members
- Specifications and QA/QC support
- RFP and contract administrative support

**Business Case for Aerial Imagery. What is it used for?**

- Aerial imagery is used throughout West Virginia to meet daily business needs. Imagery has many uses, including providing a common operating picture and accurately mapping the locations of natural and man-made features.
- Access to current imagery improves business efficiency and informs decision making.