



Virginia Information Technologies Agency

# Orthophotography Update

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Virginia Geographic Information Network

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April 9, 2013



# Topics

- The RFP Process for the VBMP
- Products and Pricing
- Marketing
- Locality upgrades
- Acquisition
- QA/QC



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# RFP Process for the VBMP 2013-2016





# The RFP Process

## **Purpose of Procurement:**

The purpose of this Request for Proposal (RFP) was to solicit proposals from suppliers in order to establish a statewide contract for acquiring statewide digital orthoimagery and digital terrain models.

## **Issuance of the RFP:**

The RFP was issued on July 03, 2012. Suppliers were notified of the solicitation through eVA and newspaper advertising.



# Technical Requirements

- High Quality Digital Orthoimagery
  - Based upon
    - ASPRS Class 1 Orthophotography standards
    - Virginia Map Accuracy Standards
    - Ongoing needs of localities and state agencies
- Delivery Schedule
  - Based upon past experience
  - Revised to have milestones based upon completed geographic delivery blocks



# Evaluation

- The following criteria list was used to evaluate the submitted proposals:
    - General Product
    - Imagery Acquisition
    - Project Ground Control and Orientation
    - Image Processing
    - Digital Terrain Model
    - Other Products and Services
    - Project Management
    - Data Services
    - Supplier Profile
    - Contract
- After evaluation and ranking the above, pricing was considered



## RFP Process

- An optional pre-proposal conference was held on July 17, 2012. It was well attended.
- Five proposals were received by 4:00 p.m., August 17, 2012.



## Review Process

- Initial proposal review for completeness.
- Distribute to evaluation team members.
- Initial scoring by team.



## Scoring

- Based on the round one scoring session, the Evaluation Team proceeded with oral presentations with the top 3 proposals.
- As a result of the oral presentations, the Evaluation Team reconvened for a round two scoring session.
- The suppliers were then requested to review their initial price submission and resubmit with additional consideration if possible.
- After receiving two further price considerations from each supplier, the total market basket amounts were entered into the Negotiated Price field for each of the suppliers. VITA then applied the value/cost ratio for each supplier's proposal.



## Awarding the Contract

- When the value/cost ratio for their proposals was calculated, the scoring determined which proposals would provide the best value to the Commonwealth.
- As a result of the value/cost ratio scoring the top supplier was chosen.
- After completing the value/cost ratio scoring, the Evaluation Team determined after careful evaluation that the proposal offered by Sanborn offered the best value solution to meet VITA's needs.
- Based on the data and responses provided by the above suppliers, VITA decided to make an award to Sanborn.



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# Products and Pricing



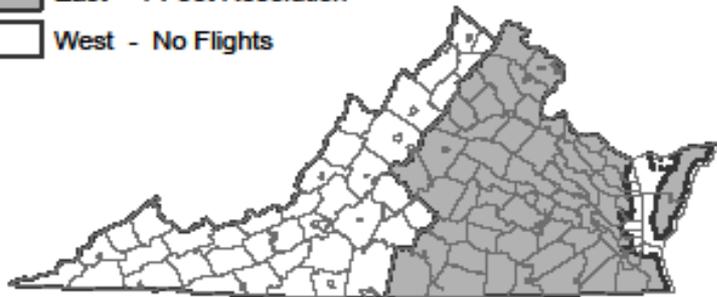
## VBMP Program 2013-2016

- Commonwealth contracted with the Sanborn Map Company to provide full color, leaf-off, digital orthophotography for the entire land base of Virginia.
  - Eastern portion of the State is being acquired this Spring 2013.
  - Western portion of the State will again be acquired in Spring 2015.

Appendix G  
Preliminary Flight Areas for 2013-2016 Orthophotography

2013 Flight Areas

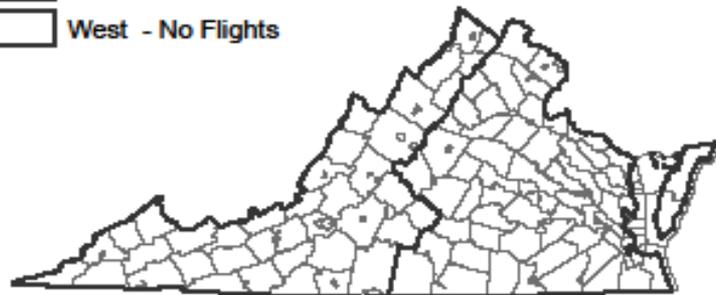
- East - 1 Foot Resolution
- West - No Flights



East Zone - approximately 25,882 tiles

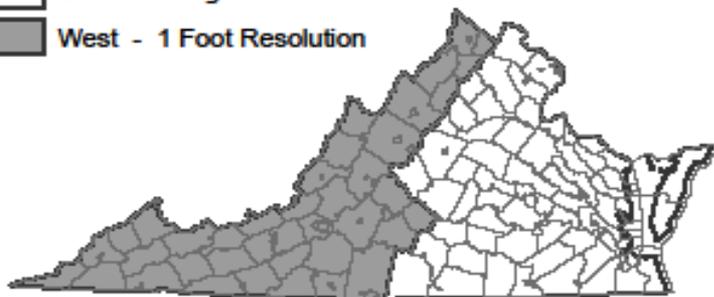
2014 Flight Areas

- East - No Flights
- West - No Flights



2015 Flight Areas

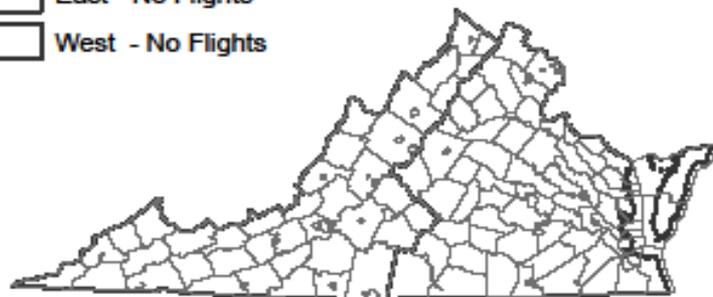
- East - No Flights
- West - 1 Foot Resolution



West Zone - approximately 22,320 tiles

2016 Flight Areas

- East - No Flights
- West - No Flights





## Code of Virginia

Pursuant to Section 54.1-402, paragraph C of the Code of Virginia, which is quoted below, this data may not be used for purposes listed in said paragraph C, since the data was not created, nor is it maintained under the supervision of a licensed land surveyor.

C. Persons utilizing photogrammetric methods or similar remote sensing technology shall not be required to be licensed as a land surveyor pursuant to subsection B of § 54.1-404 or 54.1-406 to: (i) determine topography or contours, or to depict physical improvements, provided such maps or other documents shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination, or (ii) graphically show existing property lines and boundaries on maps or other documents provided such depicted property lines and boundaries shall only be used for general information.



## Code of Virginia (continued)

Any determination of topography or contours, or depiction of physical improvements, utilizing photogrammetric methods or similar remote sensing technology by persons not licensed as a land surveyor pursuant to § 54.1-406 shall not show any property monumentation or property metes and bounds, nor provide any measurement showing the relationship of any physical improvements to any property line or boundary.

Any person not licensed pursuant to subsection B of § 54.1-404 or 54.1-406 preparing documentation pursuant to subsection C of § 54.1-402 shall note the following on such documentation: "Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination."

# Base Ortho Product



- State-wide Base product
- 1 foot GSD
- 4 band (R,G,B,NIR)
- 200 scale
- 5,000' by 5,000' tiles
- GeoTIFF and MrSID Formats
- JPEG2000 tiles/mosaics from VGIN upon request
- No cost to Jurisdictions



# Base Ortho Digital Terrain Model (DTM)

## DTM for orthoimagery:

- Masspoint and breaklines
- .dgn MicroStation format
- Suitable for ortho production at a given scale
- Densification/update needed for contour products
- Delivered with ortho for all areas – no additional cost.

# Optional Ortho Upgrades – 6" or 3"



- Additional cost for upgrade
- 6 inch or 3 inch resolution available
- 4 band (R,G,B,NIR)
- 100 scale
- 6" - 4 tiles to each 1' tile grid.
- 3" - 16 tiles to each 1' tile



# Orthoimagery Pricing

- Base Product (1' resolution)
  - 100% funded by VGIN Program – free to jurisdictions/partners
- 6" GSD upgrade resolution

	Tile Range - Number of tiles per price/cost*	Contract Cost per 2,500' x 2,500' tile	Locality - Project Year	Locality - Off Year
1	1000+	\$44.00	\$ 44.00	\$ 44.00
2	500-999	\$50.00	\$ 49.50	\$ 50.00
3	250-499	\$53.00	\$ 49.50	\$ 53.00
4	100-249	\$90.00	\$ 49.50	\$ 90.00
5	50-99	Custom quote, not to exceed \$100.00	\$ 49.50	Custom



# Orthoimagery Pricing

- 3" GSD upgrade resolution

	Tile Range – Number of tiles per price/cost*	Cost per 1,250' x 1,250' tile
1.	450+	\$44.00
2.	300-449	\$45.00
3.	150-299	\$65.00
4.	70-149	\$96.00



## "Off-Year" Flights

- Orthoimagery/upgrades outside of the base program years (2013 for eastern half, 2015 for western half) can be acquired
- No VGIN contribution will be applied to off-year flights



## Upgrade Payments

- VGIN will be asking for locality upgrade payments at two milestones:
  - 50% after acquisition and
  - 50% after acceptance.
- VGIN is no longer able to carry the cost burden until final acceptance. We will of course, try to work with any localities that may have difficulty with this pricing structure.

# Optional Products - Contours



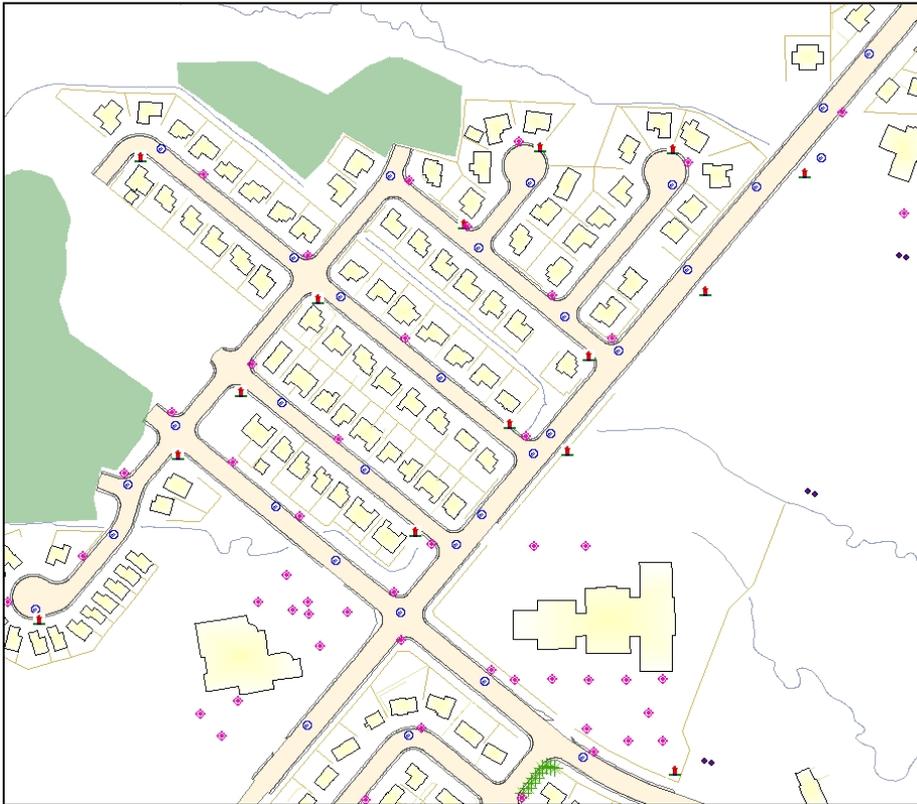
- Additional cost for upgrade
- 4' contour interval available from 200-scale imagery
- 2' contour interval only available from 100-scale imagery
- Geodatabase format deliverable



# Contour Pricing

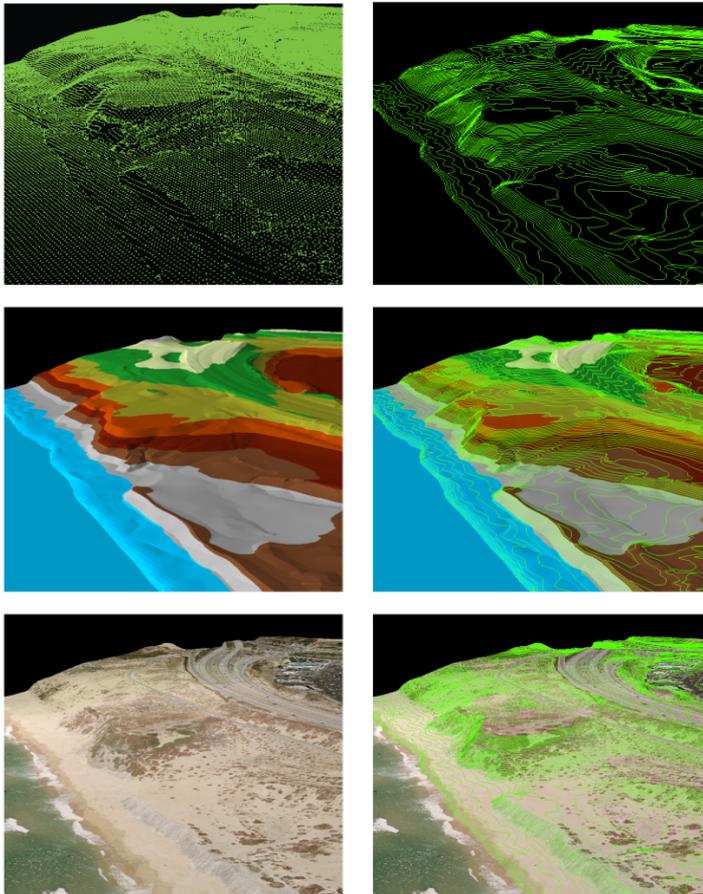
- 4' contours (from 1' GSD ortho)
  - \$3,340 setup charge per area
  - \$19.50 per 1' tile
- 2' contours (from 6" or 3" GSD ortho)
  - \$1,208 setup charge per area
  - \$27.27 per 6" tile in areas with legacy 6" ortho/DTM
  - \$96.59 per 6" tile in areas without legacy 6" ortho/DTM

# Optional Products - Planimetrics



- Vector mapping of visible features
- Structures only  
\$408.00 setup charge per area  
\$0.21 per structure
- Geodatabase format deliverable
- New Planimetric Capture includes a \$2807 setup fee and per tile pricing

# LiDAR



- USGS NGP Base LiDAR Specification Version 13, ILMF 2010 compliant
- QL3 (1-2m NPS 18.5 cm RMSEz) or QL2 (0.7 NPS 9.5 cm RMSE) products available
- Deliverables include Metadata, raw point cloud, classified point cloud, bare earth DEM, and breaklines
- With the exception of hydro flattening, the items identified as Common Data Upgrades in Appendix 1 to the V.13 specification are not included as deliverables, unless separately negotiated



# LIDAR Pricing

Cost per tile – Upgrade Option – Quality Level 3 LiDAR 1-2m NPS 18.5 cm RMSE

	Tile Range - Number of tiles per price/cost*	Cost per 5,000' x 5,000' tile
1.	10,000+	\$106.62
2.	5,000-9,999	\$107.87
3.	1,000-4,999	\$120.21
4.	500-999	\$126.67
5.	200-499	\$162.29
6.	100-199	\$254.06
7.	50-99	\$414.70



# LIDAR Pricing

Cost per tile – Upgrade Option – Quality Level 2 LiDAR 0.7 NPS 9.5 cm RMSE

	Tile Range - Number of tiles per price/cost*	Cost per 2,500' x 2,500' tile
1.	40,000+	\$52.31
2.	20,000-39,999	\$52.65
3.	4,000-19,999	\$58.29
4.	2,000-3,999	\$62.24
5.	800-1,999	\$86.31
6.	400-799	\$105.41
7.	200-399	\$128.48



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# Marketing





## Marketing the VBMP!!

- A series of information sessions were conducted in conjunction with Sanborn in the month of January.
- These sessions were an opportunity to share the VBMP program with stakeholders.
- Pricing and product information was announced on our Website and via the listserve.



## Information Seminars

- Regional Coordinators attended and supported the informational event in their respective regions.
- An invitational e-mail was sent to GIS managers, coordinators, stakeholders, etc. throughout the state.
- Sessions were well attended.



## Informational Seminar Dates

- 1/7 – Fairfax
- 1/9 – Fredericksburg
- 1/14 – Norfolk
- 1/15 – Richmond
- 1/16 Blacksburg
- 1/21 Charlottesville



## What did participants receive?

- Packets of information (product sheets, specs, etc) in hardcopy at the meetings.
- PDF versions were also be sent to interested parties who are not able to attend.



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2013 > 2016  
**VIRGINIA**  
BASE MAPPING PROGRAM

# VBMP

**GEOSPATIAL  
PRODUCTS, SERVICES,  
AND DATA**

**Program  
OVERVIEW**

For more information, send email to: [vgin\\_sominae@sandorn.com](mailto:vgin_sominae@sandorn.com) or call 1.866.726.2676

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2013 > 2016  
**VIRGINIA**  
BASE MAPPING PROGRAM

The 2013-2016 Virginia Base Mapping Program (VBMP) fulfills VGIN's charge of developing a statewide orthophotography base map and managing it as an ongoing, four year program that is a resource for state and local government entities, both public and private. This product is the basis that enables consistency for the development of geospatial products and data that are produced in the Commonwealth.

The VBMP includes other geospatial framework data beyond the orthophotography base map. The VGIN/Sandorn Team, via the 2013-2016 VBMP, supports coordination of statewide GIS at all levels of government, and the development of enterprise geospatial services on behalf of the Commonwealth of Virginia. State and local government entities have come to depend upon VGIN to provide quality base orthophotography and supporting DIM through the VBMP.

A high-level overview of the base products, optional products, delivery options and participation information for the 2013-2016 VBMP can be found below.

Additional products and services sheets are available that contain more detailed information about the program's various geospatial offerings and options.

**Flight Year**  
■ 2013 ■ 2015



**Base Products**

Flights will occur in 2013 in the eastern portion of the state and in 2015 for the western portion of the state. Off-year flights are available during 2014 and 2016, or out of the core flight areas during 2013 and 2015.

Program base products are listed below.

<b>Standard:</b>		
1-foot resolution orthophotography	200 Scale	
<b>Upgrade:</b>		
6-inch resolution orthophotography	100 Scale	
<b>Upgrade:</b>		
3-inch resolution orthophotography	100 Scale	

**Optional Products and Services**

In addition to the base products, partners may also select from any of the following optional products and services:

- Resolution Upgrades (see Upgrades on next)
- Contacts
- Structures
- Planimetric Data
- True Orthophotography
- Additional "Off-Year" Flights- 2014 and 2016, or outside of core 2013 and 2015 flight areas
- Extended Upgrade Selection Period
- 3D Buildings
- Rapid Response
- Land Cover Mapping
- LIDAR
- Forestry Applications
- Oblique Imagery

**Delivery Options**

Core products will be delivered within six months upon completion of the flights. In addition, Allegheniala county mosaics will be delivered within 60 days.

For more information / Participation to learn more about the program, please contact us by one of the methods below.

**VGIN Project Manager:**

**Wendy Stout**  
 VGIN Geospatial Program Manager  
 Office: 804.416.5203  
 Email: [Wendy.Stout@vita.virginia.gov](mailto:Wendy.Stout@vita.virginia.gov)  
<http://www.vita.virginia.gov/topdataa1a.sps?14-12096>

**For a complete program overview, please contact:**  
 Shawn Bankam  
 Customer Liaison - Sandorn  
 Phone: 719.500.1296  
 Email: [sbankam@sandorn.com](mailto:sbankam@sandorn.com)



## Sanborn “Kick Off” Event

- VGIN and Sanborn met on 12/17 to formally kick off the new contract.
  - This meeting detailed flight planning, marketing and workshop planning, communication planning, and budgeting planning as well as an overview of the contract for mutual understanding.



## Other Marketing Efforts

- News release
- Working with VITA communications
- Website updates
- Working with Regional Coordinators to follow up with localities
- Listserv announcements



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# Locality Upgrades



# 2013 Acquisition

## Upgrades

### 3-inch orthos

Alexandria  
Arlington

### 2-ft Contours

Alexandria city  
Fairfax City  
Spotsylvania County  
Farmville Town  
Charlottesville

### 4-ft Contours

Albemarle County  
Greensville County

### Impervious

Stafford County  
Fairfax city

### Structure Planimetrics

Spotsylvania County  
Farmville Town  
Goochland County  
New Kent County

### 6-inch orthos

Albemarle County\*  
Charlottesville  
Fairfax City  
Farmville Town  
Hopewell city  
James City County  
New Kent County  
Richmond City  
Scottsville

Spotsylvania County  
York County\*

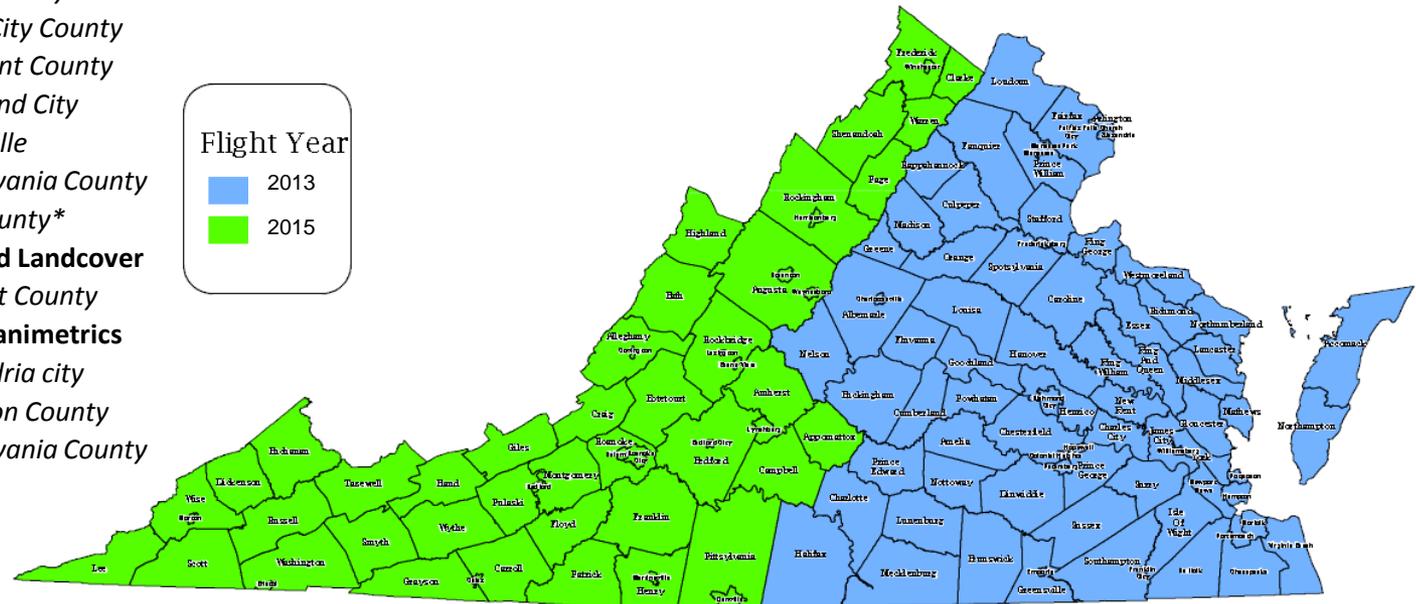
### Enhanced Landcover

New Kent County

### Other Planimetrics

Alexandria city  
Arlington County  
Spotsylvania County

\*partial





## 2013 Contract Value

Base VGIN Costs	\$491,380.35
Upgrades	\$731,578.04
Total Value	\$1,222,958.39



# Base Program

## Orthophotography

<b>1-ft Base Imagery</b>	<b>Tiles</b>	<b>Cost/tile</b>	<b>Amount</b>	<b>Subtotals</b>
North SP	5,067	\$ 20.59	\$ 104,329.53	
South SP	18,798	\$ 20.59	\$ 387,050.82	
<b>subtotal</b>	<b>23,865</b>	<b>\$ 20.59</b>		<b>\$ 491,380.35</b>



# 6 inch Upgrades North

## 6-in Imagery Upgrades - North SP

<i>Fairfax City</i>	26	\$ 44.00	\$ 1,144.00	
<i>Fairfax County</i>	2,055	\$ 44.00	\$ 90,420.00	
<i>Spotsylvania County</i>	2,205	\$ 44.00	\$ 97,020.00	
<b>subtotal</b>	<b>4,286</b>	<b>\$ 44.00</b>		<b>\$ 188,584.00</b>



# 6 inch Upgrades South

<b>6-in Imagery Upgrades - South SP</b>			
<i>Farmville Town</i>	252	\$ 49.50	\$ 12,474.00
<i>Albemarle County</i>	254	\$ 49.50	\$ 12,573.00
<i>Charlottesville</i>	137	\$ 49.50	\$ 6,781.50
<i>ACSA</i>	120	\$ 49.50	\$ 5,940.00
<i>Scottsville</i>	50	\$ 49.50	\$ 2,475.00
<i>RWSA</i>	22	\$ 49.50	\$ 1,089.00
<i>Hopewell city</i>	112	\$ 49.50	\$ 5,544.00
<i>James City County</i>	884	\$ 44.00	\$ 38,896.00
<i>New Kent County</i>	1200	\$ 44.00	\$ 52,800.00
<i>Richmond City</i>	404	\$ 49.50	\$ 19,998.00
<i>True Orthos</i>	8	\$ 876.00	\$ 7,008.00
<i>VITA</i>	8	\$ 50.00	
<i>York County</i>	348	\$ 44.00	\$ 15,312.00
<b>Subtotal</b>	<b>3,799</b>		<b>\$ 180,890.50</b>



# 3 inch Upgrades

## 3-in Imagery Upgrades - North SP

<i>Alexandria city</i>	<i>317</i>	<i>\$ 44.00</i>	<i>\$ 13,948.00</i>	
<i>Arlington County</i>	<i>595</i>	<i>\$ 44.00</i>	<i>\$ 26,180.00</i>	
<b>subtotal</b>	<b>912</b>	<b>\$ 44.00</b>		<b>\$ 40,128.00</b>



# Contours

<b>Contours</b>				
North SP				
2-ft				
<i>Alexandria city</i>	334	\$ 27.27	\$ 10,316.18	
<i>Fairfax City</i>	76	\$ 27.27	\$ 3,280.52	
<i>Spotsylvania County</i>	2205	\$ 27.27	\$ 61,338.35	
4-ft				
South SP				
2-ft				
<i>Farmville Town</i>	80	\$ 27.27	\$ 3,389.60	
<i>Farmville Town NEW</i>	12	\$ 96.59	\$ 1,159.08	
<i>Charlottesville</i>	49	\$ 27.27	\$ 1,940.23	
<i>UVA</i>	54	\$ 27.27	\$ 2,076.58	
4-ft				
<i>Albemarle County</i>	905	\$ 19.50	\$ 20,987.50	
<i>Greensville County</i>	46	\$ 19.50	\$ 4,237.00	
<b>subtotal</b>				<b>\$ 108,725.04</b>



# Structures

<b>Structures</b>				
North SP				
<i>Spotsylvania County</i>	1	\$ 3,457.00	\$ 3,457.00	
South SP				
<i>Farmville Town</i>	92			
<i>Goochland County</i>	1	\$ 2,580.00	\$ 2,580.00	
<i>New Kent County</i>	1	\$ 2,246.00	\$ 2,246.00	
<b>subtotal</b>				<b>\$ 8,283.00</b>



# Planimetrics

<b>Planimetrics</b>				
North SP				
<i>Alexandria city</i>	1	\$ 57,920.00	\$ 57,920.00	
<i>Arlington County</i>	1	\$ 47,200.00	\$ 47,200.00	
<i>Spotsylvania County</i>	1	\$ 34,100.00	\$ 34,100.00	
South SP				
<b>subtotal</b>				<b>\$ 139,220.00</b>



# Impervious

<b>Impervious</b>				
North SP				
<i>Stafford County</i>	1	\$ 14,199.00	\$ 14,199.00	
<i>Fairfax city</i>	1	\$ 5,464.00	\$ 5,464.00	
South SP				
<b>subtotal</b>				<b>\$ 19,663.00</b>



# Enhanced Landcover

<b>Enhanced Landcover</b>				
North SP				
South SP				
<i>New Kent County</i>	1	\$ 37,475.00	\$ 37,475.00	
<b>subtotal</b>				<b>\$ 37,475.00</b>



# Statistics

## Final deliverables from the 2013 acquisition

- 80 Counties and Independent Cities
- 6 Towns
- NASA Wallops (not reflected in totals)

## Tiles: 30,340 total

- 12 inch 23,865 tiles
- 6 inch 8085 tiles
- 3 inch 912 tiles

## Upgrades:

- Contours – seven jurisdictions (Albemarle, Alexandria, Charlottesville, Fairfax City, Farmville Town, Greensville, Spotsylvania)
- True Orthos – City of Richmond (portion)
- Structures – Spotsylvania, Farmville Town, Goochland, New Kent)
- Planimetrics – Alexandria, Arlington, Spotsylvania
- Impervious surfaces – Stafford, Fairfax City
- Enhanced Landcover – New Kent County



## Historical Contract Value

- VBMP 2002 \$ 7,000,000 (approximate)
- VBMP 2006/2007 \$ 5,898,475 base project
- VBMP 2009/2011 \$ 2,894,520 base project
- VBMP 2013/2015 \$ 993,303 base project



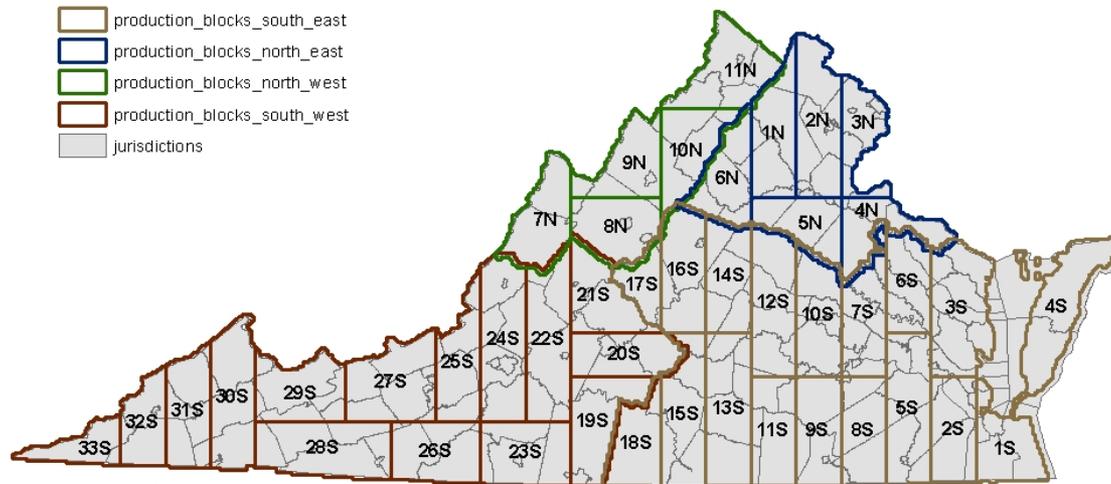
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# Acquisition



# Production Blocks

Appendix F  
VBMP 2013-2016 Production Blocks





# Challenges to Acquisition

- Weather
  - The weather this year has not been very cooperative on many fronts, including decent weather for aerial imagery acquisition.
  - Even though image acquisition began in February we have had very few good flying days.
  - The biggest factors that prevent flying are: high winds, cloud cover/rain and snow cover.
- Due to the above factors above, we faced a difficult challenge to finish acquisition before the outbreak of leaves on the trees.
- Status of Acquisition today: Complete with the exception of NASA Wallops and a few re-flights.



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QA/QC





## QA/QC Process

- VGIN posted the Statement of Requirements for the QA/QC through the state CAI Contract
- Two responses were received
- The responses were evaluated by a VGIN team based on ability to meet content requirements and price.
- Both vendors were deemed qualified to meet requirements.



## QA/QC Selection Process

- On February 10, 2013 we selected Dewberry as the QA/QC vendor for the 2013 acquisition
- QAQC Kickoff meeting with Dewberry, Sanborn and VGIN on Wednesday February 27<sup>th</sup>



## QA/QC Notes

- Change from 100% QA/QC to a more pointed approach
- Contours and structures do not go through the independent QA/QC process so we are relying on localities to review those datasets thoroughly.



# QA/QC Requirements

- Aerotriangulation (AT) Review
- Ground Control Review
- Digital Terrain Model – Upgrade areas only, 4547 tiles (3-inch and 6-inch counts in D.a-b below)
- Digital Orthophotography – Upgrade Areas and Urban Areas – 100% review, and 10% sampling of rural areas.
  - 6-inch Upgrades : 3,635 tiles
  - 3-inch upgrade: 912 tiles
  - Additional Urban areas 2,043 tiles
  - Rural areas, 10% of 1-ft 2,360 tiles
  - Total tiles 8,950 tiles
- Final Deliverable Packaging – same as before, with clarification that this includes review and shipping of final packages to localities.



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Questions?

Thank you!

