



## National Agriculture Imagery Program (NAIP) INFORMATION SHEET July 2006

### **What is the National Agriculture Imagery Program (NAIP)?**

NAIP is a program to:

1. Acquire peak growing season “leaf on” imagery, and
2. Deliver this imagery to USDA county Service Centers in order to
  - a. Maintain the common land unit (CLU) boundaries and
  - b. Assist with crop compliance and a multitude of other farm programs.

The goals of NAIP are to:

1. Collect 1 and 2 meter natural color and color infrared imagery for the entire continental United States on a 5-year refresh cycle, and
2. Deliver imagery in the year of acquisition.

### **Who acquires the imagery?**

1. Contractors. There are currently 10 primary contractors flying imagery for the USDA Aerial Photography Field Office (APFO).
2. Contractors are selected via “best value” criteria. Contract bids are evaluated on past performance, ability and capacity to perform the work, and cost.
3. A downloadable PDF of the contract can be found on the APFO website (<http://www.apfo.usda.gov>), under the Contract Services link.

### **How is the imagery acquired?**

NAIP imagery is acquired from aircraft that have camera systems meeting rigid specifications. Imagery is flown on a grid like system at specific elevations; the cameras take photographs at specific intervals. This is all to meet the standards as identified in the contract.

### **Aircraft...what about satellites?**

Commercial satellite imagery may also be used in NAIP contracts. In 2004, the contract specified spatial resolution of 1 meter or less in all color bands. For the 2 meter NAIP deliverables, commercial satellite

imagery would meet this requirement. In 2005, the requirement was changed to allow PAN sharpening of color bands to reach a resolution of 1 meter ground sample distance (GSD). Although commercial satellite can be used, it hasn’t been to date.

### **What resolution is the imagery?**

NAIP imagery can be acquired under two sets of specifications:

1. A 1 meter ground sample distance (GSD) with a horizontal accuracy that matches within 5 meters of reference ortho imagery, and
2. A 2 meter GSD image that matches within 10 meters of reference ortho imagery.

### **What’s reference ortho imagery?**

The reference ortho imagery is mosaicked digital ortho quarter quads (DOQQs) used to digitize USDA Farm Service Agency (FSA) common land unit (CLU) boundaries.

The horizontal accuracy of NAIP products is specified in terms of existing imagery to protect the investment made by USDA FSA and partner organizations in developing vector data from existing DOQQs from the National Digital Ortho Photo Program (NDOP).

In order to measure how accurate deliverable imagery is, analysis must be done in comparison to some type of control imagery/points. The control imagery is the baseline existing imagery, and to date is the most efficient means of measuring the accuracy of newly developed imagery.

### **Is the imagery reviewed to make sure it is accurate?**

APFO has stringent imagery compliance guidelines, and all deliverables are checked via proven methods to ensure accuracy and compliance with the contract. Because NAIP is an annual program with short flying seasons, some minor defects such as 10% cloud cover, are accepted.

## ● Why is some imagery 1 meter and some imagery 2 meter?

1 meter imagery is intended to provide updated digital ortho photography.

2 meter imagery is intended to support USDA programs, such as crop compliance, that require current imagery acquired during the agricultural growing season but do not require a higher resolution.

## ● How long has NAIP been going on?

NAIP pilot projects began 2001-2002. NAIP Contract Awards:

1. 2003 - \$9.5 million
2. 2004 - \$20 million
3. 2005 - \$24 million
4. 2006 - \$28.5 million

Much of this money is provided by other federal, state, and regional governments. This is a testimony to the importance of partnering on an endeavor such as NAIP so as to not allow duplication of effort and fiscal waste, and testament to the importance of the program in the customers' eyes.

## ● Can I get NAIP imagery?

1. Compressed County Mosaics (CCMs) are available for delivery 60 days after imagery acquisition, through the USDA Geospatial Data Gateway (<http://datagateway.nrcs.usda.gov>). Downloads are at no charge.
2. Full resolution quarter quads (QQs) are available on media only. Media options include hard copy, CD/DVD and portable hard disc drives (firewire and USB2).

Orders for CCMs and QQs on media can be placed at the Aerial Photography Field Office (APFO) in person, or at <http://www.apfo.usda.gov/>.

\*Note that imagery is considered "interim" in nature until a full QA/QC process is complete, usually within 1 year after acquisition.

## ● How much does it cost?

Costs vary greatly by product and volume. Contact the APFO Sales Section at [apfo.sales@slc.usda.gov](mailto:apfo.sales@slc.usda.gov) or at 801-975-3503 for detailed information.

## ● What formats can I get the imagery in?

Imagery comes in two main formats:

1. Compressed County Mosaic (CCM)
  - a. Mosaics are generated by compressing digital ortho quarter quads (DOQQs) scanned from natural color positive aerial film, color infrared positive aerial film, or digital copy into a single mosaic.
  - b. Compression for 2005 and 2006 NAIP is MrSID MG3 at a ratio of 15:1. Compression for 2004 NAIP and earlier is MrSID MG2 at a ratio of 50:1 or 20:1 for 1m or 2m resolution imagery respectively.
  - c. Coverage of the CCM extends up to 1 mile beyond the county boundaries.
  - d. The mosaic may cover all or portions of an individual final product.
2. Digital Ortho Quarter Quad (DOQQ)
  - a. Each individual image tile (DOQQ) within the mosaic covers a 3.75 x 3.75 minute quarter quadrangle plus a 300 meter buffer on all four sides.
  - b. The DOQQs are available in GeoTIFF format

All individual DOQQs and the resulting mosaic are rectified to the UTM coordinate system, NAD 83 and cast into a single predetermined UTM zone. See the NAIP contract for a map of zones by county, at <http://www.apfo.usda.gov/contracting/current%20contract%20-%20mod%205.pdf>

## ● Do I need special software to view the imagery?

1. If you want CCMs from 2005 or 2006 NAIP, you will need software that reads the MG3 format. A list of viewing software is available at <http://www.apfo.usda.gov/viewers.htm>. This list is provided for convenience; USDA-FSA-APFO does not support or endorse these products or services.
2. Most image viewing software will open and view GeoTIFF files.

## ● Who do I contact for more information?

1. For sales information, contact USDA-FSA-APFO at 2222 W 2300 S, Salt Lake City UT, 84119-2020, call 801-975-3503, or visit [www.apfo.usda.gov](http://www.apfo.usda.gov).
2. For further information contact the APFO NAIP Program Manager, Kent Williams, at 801-975-3500, X261, or GIS Specialist, David Davis, X278.