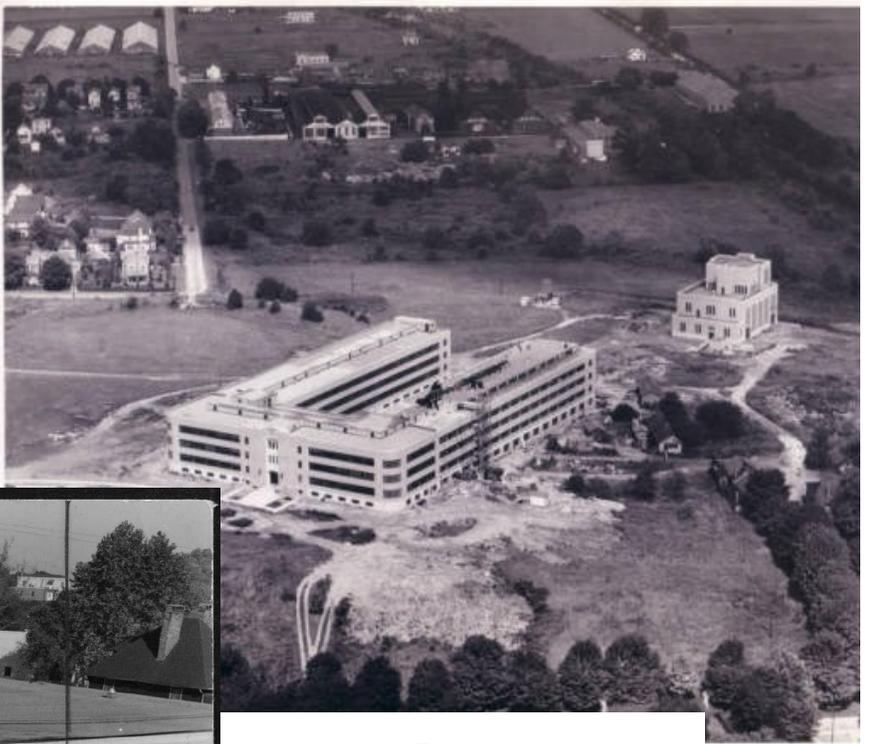


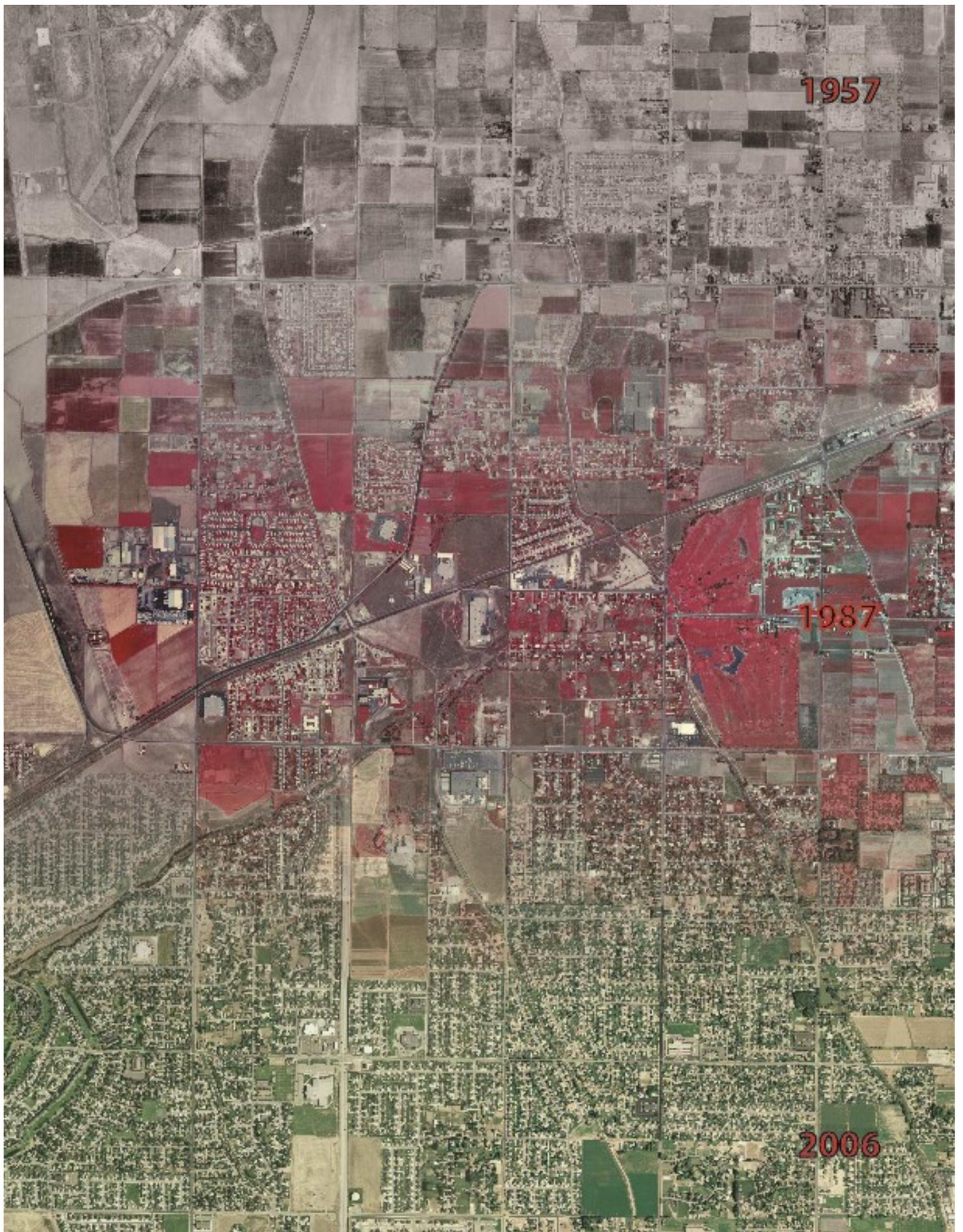
USDA



**Aerial
Photography
Field
Office**

*Annual
Report
2013*





This photo by Nathan Pugh, (GSB) shows how imagery has progressed over the years

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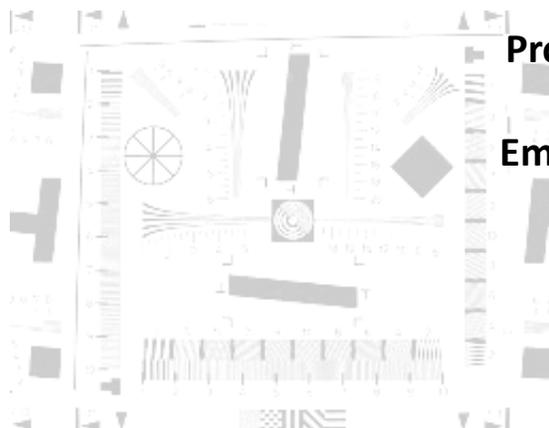
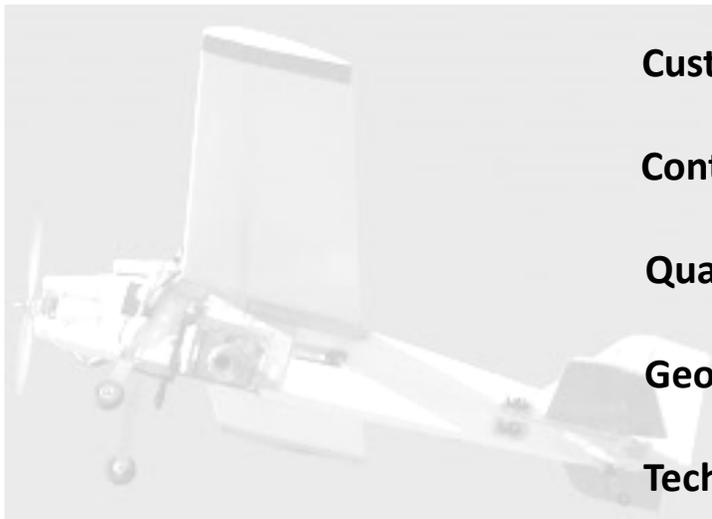
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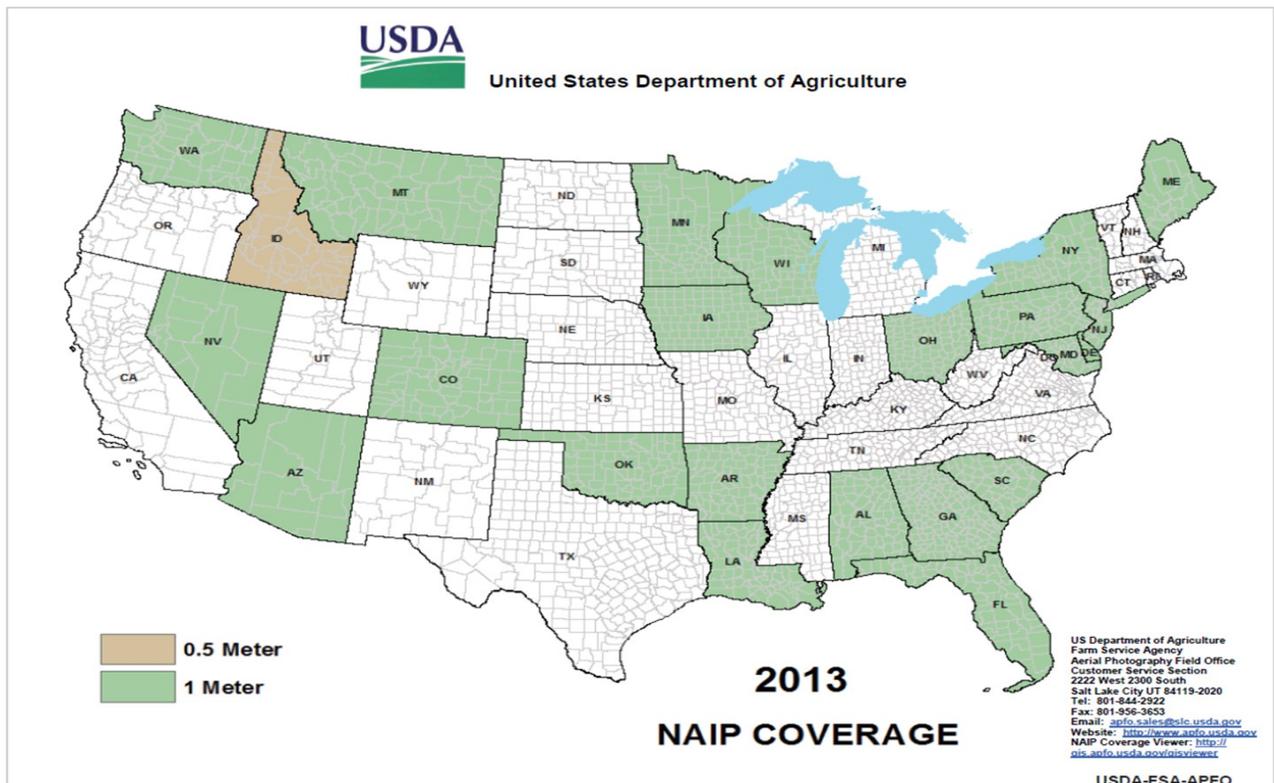


**UNITED STATES DEPARTMENT OF AGRICULTURE
FARM SERVICE AGENCY
AERIAL PHOTOGRAPHY FIELD OFFICE**

Agriculture is a vital sector of the U.S. economy. Every American benefits from a strong U.S. agricultural industry that provides the abundant food and fiber supply necessary to sustain a stable and prosperous country. The Farm Service Agency (FSA) of the U.S. Department of Agriculture (USDA) plays a critical role in maintain that strength. The Aerial Photography Field Office (APFO) supports the missions of the USDA and the FSA through various aerial imagery acquisitions and analysis programs.

In 1937 Agricultural Adjustment Administrator H.R. Trolley said in a radio interview *“Before we can make any payment, we have to find what each man has done to earn it.”* That year 36 photographic crews flew 375,000 square miles of American farmland to validate the claims of farming activity proving the usefulness of aerial images in saving time and money for compliance programs and solidifying our place in agricultural history. In the decades that followed, aerial imagery collected by the USDA would find its way into various other activities that assist the American Farmer and Rancher. Risk management, crop plotting, boundary verification and emergency management would be only a few ways that our images would assist both the government and the citizens we serve.

From cameras strung together under hot air balloons to fixed wing aircraft with co-pilot cameramen the evolution of the image and its process has been amazing. Almost as amazing as its uses across the countryside. Pioneered in 1935 using hot air balloons, the original units combined two synchronized cameras that covered 225 square miles. 75 years later APFO is using various types of cameras on contracted aircraft to image 1/3 of the United States agricultural lands annually and with the addition of cameras on satellites 438 miles above the earth we are reaching those hard to acquire areas like never before.



Office of the Director

Imagery and the Aerial Photography Field Office



The Aerial Photography Field Office (APFO) is part of the Farm Service Agency (FSA) and holds the largest depository of agricultural aerial imagery in the country. As a supporter to the mission of the United States Department of Agriculture (USDA), APFO assists the American Farmer and Rancher through its vast imagery acquisition and analysis programs. The USDA has been involved in the acquisition, use and distribution of aerial photography for more than 75 years. Even before there was an APFO, or FSA for that matter, the US government recognized the importance of documenting the farms and ranches across our land. The evolution of acquiring aerial imagery and its extensive uses have been exciting to see. I have personally been supporting this process for over 30 years as a member of the APFO Team and can say that I am as much in amazement today overseeing hundreds of terabytes of imagery data as I was when I first started printing 10 x 10 black & white photos.

To clearly understand where we are today you have to look at where we came from. Experiments in 1935 and 1936 had demonstrated that aerial photography provided cost effective, adequately precise measurements and saved considerable time over hauling measuring chains around the farm tract (methods of the time). In 1937, 36 photographic crews flew 375,000 square miles to validate the usefulness of these images in saving money and time in compliance programs that would later support the 1938 Farm Bill. The idea caught on and aerial imagery in the USDA would soon be embedded in many aspects of supporting farmers and ranchers across the country.

It didn't take long to realize this would be a huge undertaking; the entire agricultural countryside was being captured on film and flown to the new National Aerial Photography Laboratory in Washington DC. for processing then flown back out to the offices and states that needed the images. The use of aerial photographs to calculate acreage was quickly replacing the previously cumbersome and time consuming methods and in the 1940's the USDA, under then named Agricultural Stabilization and Conservation Service (ASCS), established two aerial photography labs; one in Asheville, North Carolina and another in Salt Lake City, Utah to divide the workload into east and west processes.



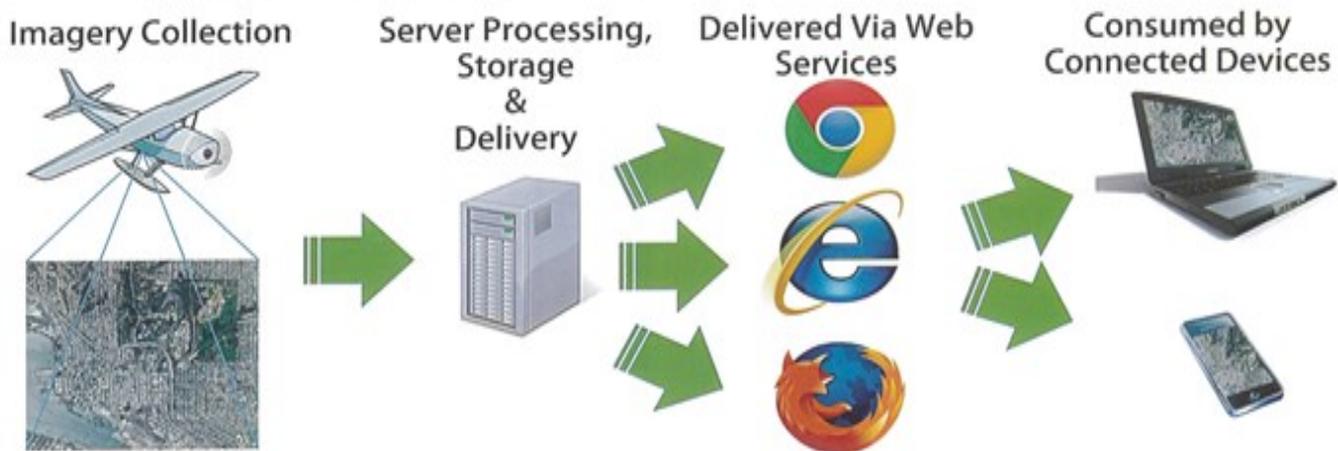
Disney World, Epcot Center, Florida (left to right—1969, 1980, 1998)

Office of the Director

In 1978, the USDA consolidated aerial photography efforts across the Department at a new facility in Salt Lake City, Utah – the Aerial Photography Field Office. For 35 years we have been collecting film that supported USDA programs during this period and archived them here at APFO, there are now over 10 million negatives and 750 Terabytes of imagery data.

The evolution of imagery programs has been interesting as well. Recognizing that one program does not fit all needs, the late 1980's to mid 1990's saw changes to try and coordinate aerial photography acquisition across a broader swath of the US Federal Government. The National High Altitude Aerial Photography Program (NHAP) and later, the National Aerial Photography Program (NAPP) both addressed the requirements of agencies within the Department of Interior as well as USDA. Today we administer the National Agriculture Imagery Program (NAIP). Today's NAIP imagery is broadly used to fill various needs to include as the base layer for many web based GIS applications throughout USDA. FSA implements Geographic Information Systems (GIS) to better manage geospatial data and agency data linked to the land.

Web Services (Image) (Visual Representation of the Process)



Today we acquire and deliver imagery in a digital format. A far cry from the days of film canisters and dark rooms. The imagery transition from a hard copy photograph (1930's – early 2000's) to media copy to Web Service delivery, has been a vital component of FSA program delivery success. The first digital imagery collection in FSA was made in 2003 as part of the NAIP program and today we have explored that even further with the AgSat BPA, collecting images of Alaska from cameras based on satellites circling the earth in the outer atmosphere.

APFO continues to look for more ways to get our images in the hands of our customers in the most cost effective and efficient ways possible. The future looks bright for imagery use and APFO is proud to be leading the way for FSA and its USDA partners.

Office of the Director

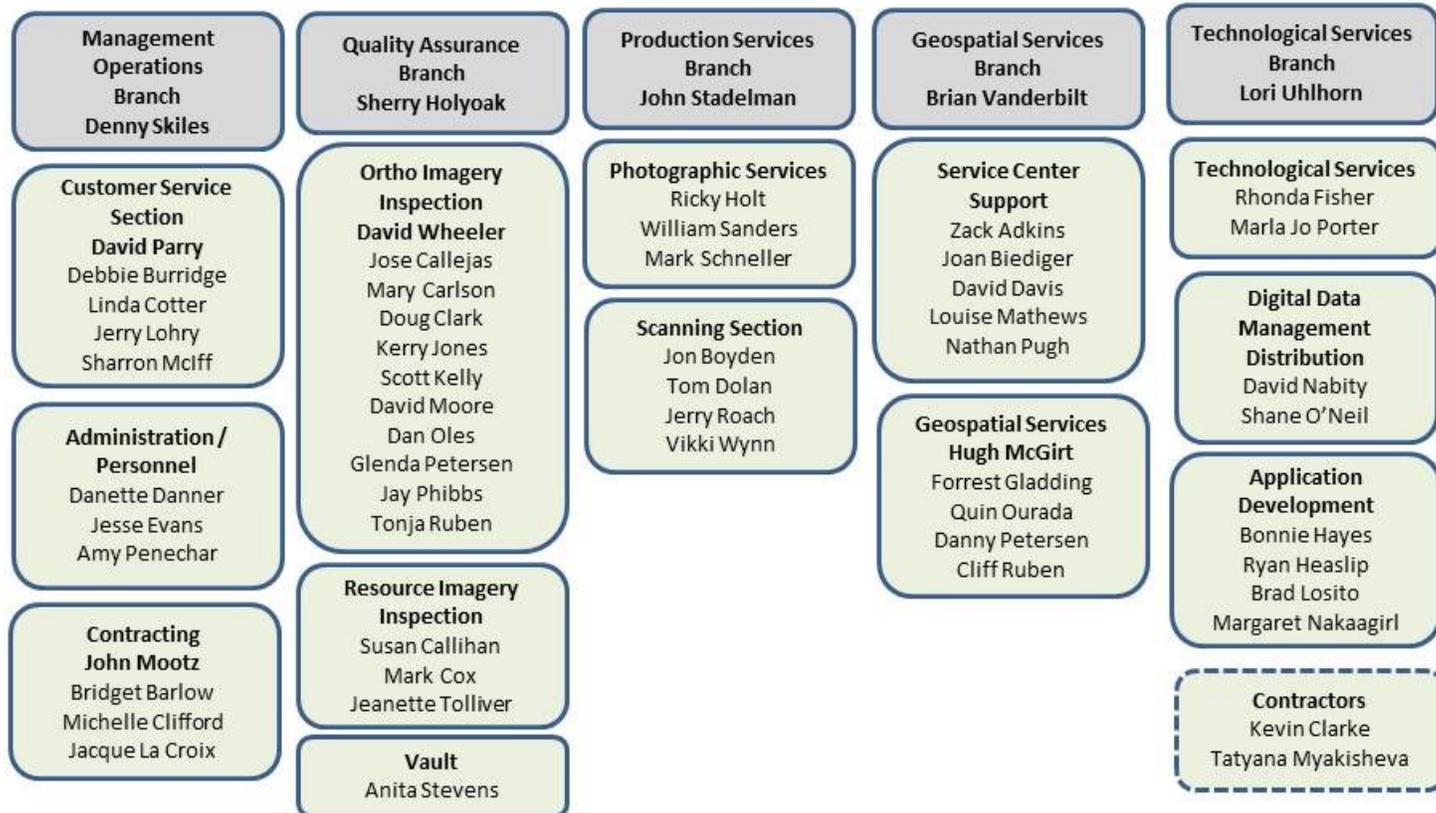


USDA – FSA Aerial Photography Field Office Salt Lake City, UT



Office of the Director
Ronald B. Nicholls
 Kent Williams

FTEs – 58
 Contractors - 2



As of 08/08/13

Office of the Director

Imagery Program Management

Through FY13, APFO continued to provide leadership in acquiring current, high quality imagery for FSA and other USDA agencies. In a year marked by a challenging federal budget climate, our primary customers within FSA, US Forest Service, and NRCS, found ways to continue funding NAIP, USFS Resource, NRCS National Resource and Stewardship Lands Imagery program at sustainable levels. That speaks not only to the continued value of the imagery programs to USDA agencies, but also to formal partnerships between agencies and to the many positive, working relationships between people at APFO and our counterparts in other federal agencies.

Cost share partnerships show direct benefits by lowering overall costs for partner agencies in terms of data acquisition, and also create opportunities to minimize duplication of effort in terms of data management and distribution as well. Long term, cost reimbursable work for USDA customers leads to skill development and technology transfer that benefit APFO staff and can lead to improvement in data and services provided to FSA. A few examples of benefits resulting from partnerships in FY13 include:

- Approximately 34% (\$4.89 million of \$14.52 million) of the 2013 NAIP acquisition was funded through cost share partnerships. This resulted in the collection of an additional 8 states in 2013 from what would have been acquired with funding from FSA alone. Another way to look at it is this: funding from cost share partners has moved NAIP from collecting imagery for the continental US on a 3 year cycle, to a 2 year cycle.
- Experience gained from supporting USFS Resource Imagery program requirements has been applied to developing standards and processes for a half meter resolution product in the NAIP program, which was piloted in Idaho in 2013.
- Provided copies of compressed NAIP imagery, a result of an internal production process, to USGS on a cost reimbursable basis. This has allowed USGS to eliminate a duplicative process.
- Participation in the National Digital Ortho Photography Program (NDOP) led to coordination with the Department of Defense related to imagery collection near military restricted areas. This did not lead to an increase in coverage in areas adjacent to restricted areas in 2013, but did lay the ground work for better communication and coordination in the future.

A partnership also exists in terms of cooperation between USDA and commercial geospatial data providers. For example, stable funding for NAIP over the past 10 years, and continuing through 2013, has allowed NAIP vendors to make capital investments in new camera systems, computer infrastructure, and aircraft, that have provided a platform for innovation leading to increased value in imagery products and decreased prices over that time period. In 2003, when NAIP began, the price for a 1 meter, 3 band quarter quad averaged \$157.27. In 2013, the average price for a 1 meter, 4 band quarter quad, with an increase level of confidence in horizontal accuracy, and with pixel level image metadata, was \$141.69.



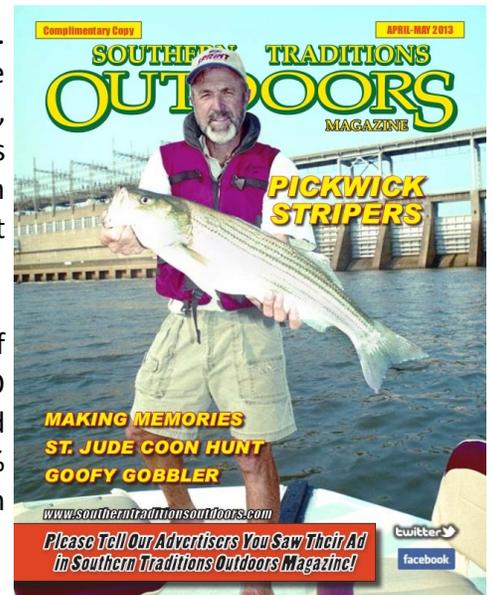
Kent Williams
Deputy Director

Operations

“OPERATIONS” is another word for “whatever it takes to keep us going”. Several major functions fall within the Operations Branch; Administrative Services, Human Resources, Customer Service, Facility Management, Budget, Supply, Property/Shipping and Receiving/Warehouse Management; various procurement actions, physical security of the building and Program Management of the Intermountain LincPass Activation and Enrollment Center.

FY 2013 was a good year for getting the internal measures taken care of within APFO. As budgets across the board got a little smaller in FY 13, APFO was able to recover \$503,306 in reimbursable fees from both contracted services and customer sales. To become more efficient, APFO started a 100% organizational assessment which looks at each position in the organization and updates the skill sets and functions we need for a more positive future.

Getting the word out about what we do is also important. A continuous Public Information Campaign highlights our services and products on a wider basis and paid off big when the *Southern Traditions Outdoors* magazine ran an article on the success one family had in tracing their 1300 acre dream property and its 50 year evolution.



APFO appears in this April—May 2013 national issue which highlighted our research abilities and historical imagery vault.

It is a combined effort of programs and projects that keeps APFO a desirable place of employment was a tough year for budgets everywhere and APFO was no exception. But with the challenges of providing our services with less resourcing, came some innovative approaches that helped us meet our mission and come in under budget.

- **Recycled material and Waste Prevention**— by purchasing refillable items and post consumer recycled items we saved on waste as well as reutilizing shipping material such as boxes and bubble wrap (this effort alone saves over \$1000 annually). Additionally APFO makes an environmental impact by recycling approximately 51,000 lbs of material in FY 13 diverting it from landfills.
- **Community Involvement**— facilitated the donation of over 875 lbs of food to local charities.
- **Teleworking Program**— this initiative has many benefits for not only APFO employees (reduced transportation costs) but also for APFO as an organization (reduced energy consumption, increased productivity) as well as benefiting the surrounding community by reducing our carbon footprint and helping to reduce airborne pollutants.
- **Increased Cost Accountability and Streamlining**— APFO continues to analyze internal processes to better capture costs associated with projects. Each section participating in a given project sees the entire process described in the cost estimate and can help identify duplications and streamlining that could lead to cost and time savings. Lessons from previous years help us become better at what we do the next time.

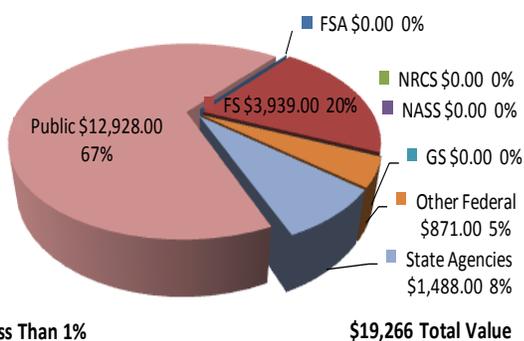
Customer Service

As a major part of the Operations Branch, the **Customer Service Section (CSS)** is responsible for the receipt, preparation, and releasing of work orders and coverage requests for aerial photography, digital imagery, and common land unit products and services. CSS is the liaison for the Aerial Photograph Field Office to outside government agencies and the general public.

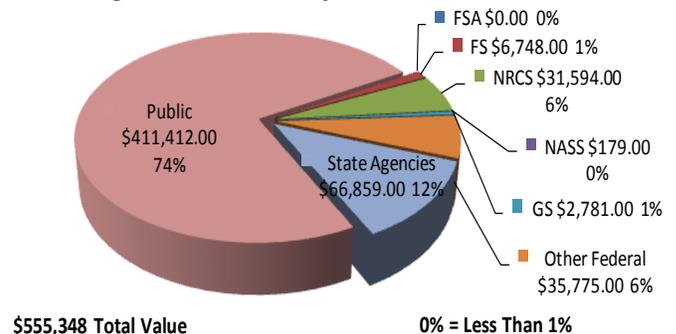
Coverage research is preformed utilizing Geographic Information System (GIS) tools to identify historical imagery and attributes needed for traditional and custom digital photographs. The CSS assists customers with and updates GIS content for maintaining the National Agriculture Imagery Program (NAIP) Coverage Viewer, Interactive Coverage Status Map, and downloadable quarter quad and film center shape files on the APFO website.

The most important asset we have at APFO is the employee, CSS Customer Service Representatives have consistently ranked well in satisfaction surveys because of the time they take with the customer and the level of service they provide. Each CSS representative makes themselves available as the primary source of technical information concerning USDA related aerial photography, digital imagery, and common land unit data of the United States and its territories. Additionally, CSS accounts for and reconciles funds from all government agencies and the general public while maintaining and monitoring all fiscal activity as it pertains to aerial photography and digital imagery. FY 2012 orders processed exceeded \$574,574 with digital products and service outselling film based by an average of 3 to 1. One highlight of the year came as CSS completed the **NAIP Film Center Coverage Map & Shape file** corrections which enabled thousands of NAIP images to be *accurately* identified.

Film Products by Dollar Value FY13



Digital Products by Dollar Value FY13



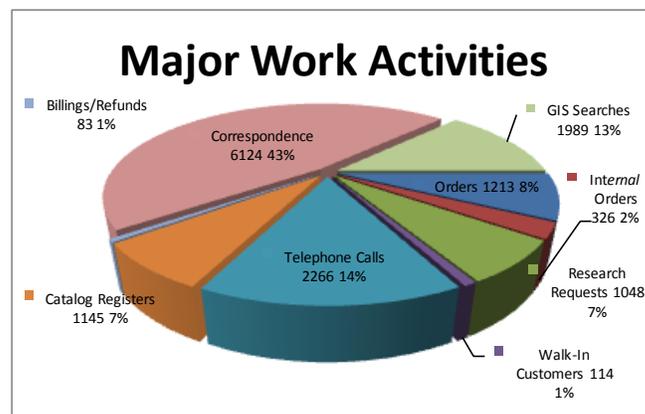
Customer Service

Accomplishments & Noteworthy Activities

GIS Dataset Viewer – Significant changes:

- USDA Branding – Compliance using USDA logo only completed
- Comprehensive Catalog Listing – Added APFO catalog listing for quick reference to years of availability
- Alaska High Altitude Program (AHAP) – Added film center layer
- 2002 NAIP – Added film center layer
- Order Online Link – Replaced with Ordering Instructions link
- Downloads Link – Renamed to Shape File Downloads

One USDA Branding – Compliance using only one USDA logo instead of multiple agency and office logos completed for letterheads, NAIP coverage maps, ordering and GIS Dataset Viewer instructions, APFO brochure, order forms, price list, and service quality survey.



APFO Service Quality Survey Results –

- A total of 90 surveys were collected from 1,512 customer opportunities for an overall response rate of 5.9%.
- 76% of surveys were submitted online.
- 78% of surveys were promoted from the form included with shipments.

Customer Satisfaction: Communication 92%, Research/Assistance 90%, Coverage/Quality 94%, and Delivery Time 91%.

OMB Approved Renewal of Form FSA-441 – Order forms, price list, and survey includes compliance with USDA branding directive and update of the nondiscrimination statement.

New Digital Pricing Structure – Cost for digital imagery and data reduced significantly effective February 1, 2013.

USDA Data Gateway Media Orders – Received 21 orders and \$5,250.00

OTCnet – Installed hardware and established connection for required electronic depositing of customer checks.

GIS Research – GIS Project Searches: 1,989

Comprehensive Catalog Listing – The USDA aerial imagery catalog listing on the APFO website has been geo-enabled and is now available on the GIS Dataset Viewer.

NAIP DISTRIBUTION REPORT - FY13 NAIP imagery distribution data, collected from the USDA Geospatial Data Gateway and APFO. Information includes historical and agency NAIP imagery distribution.

Service Time – Average order service time was 27 days with percentage of orders serviced under 30 days or less at 97%.

Contracting

APFO **Contracting** is responsible for aerial imagery procurement and coordination of cost share agreements for the Farm Service Agency (FSA) and the U.S. Department of Agriculture (USDA) Agencies. Several national level programs are procured through the Contracting Branch including the National Agriculture Imagery Program (NAIP) for FSA, USDA Service Center Agencies, and partnering agencies; the National Resource Inventory and Stewardship Lands Programs for the National Resources Conservation Service (NRCS); and the Resource Imagery Program for the U.S. Forest Service and other participating agencies.

APFO Contracting Services by the numbers:

\$26,404,788.00 – Total amount of imagery & IT contracts awarded

1,599,750 – Total number of square miles of imagery contracted

1,471,543 square miles of NAIP

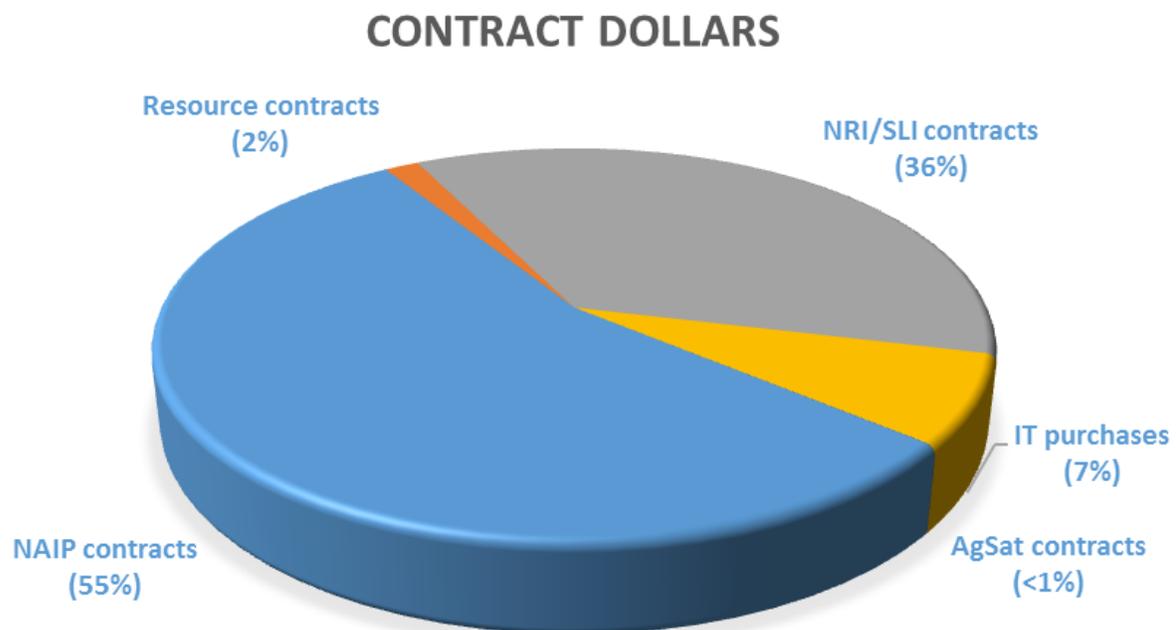
98,159 sites/exposures supporting NRCS programs

12,898 square miles of U.S. Forest Service lands

193 square miles of AgSat satellite imagery

\$338,189.66 – Revenue generated through administrative fees.

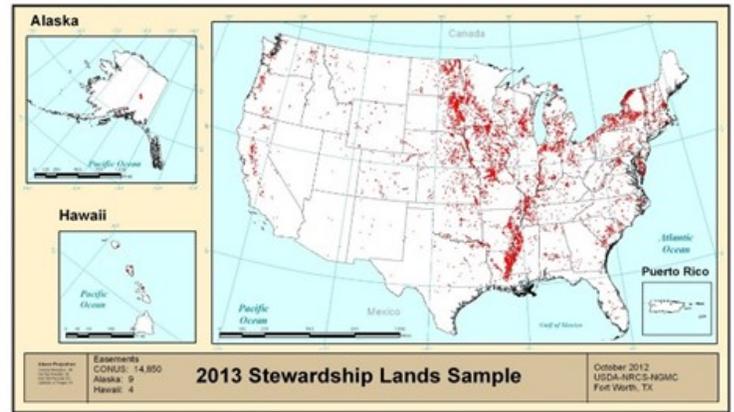
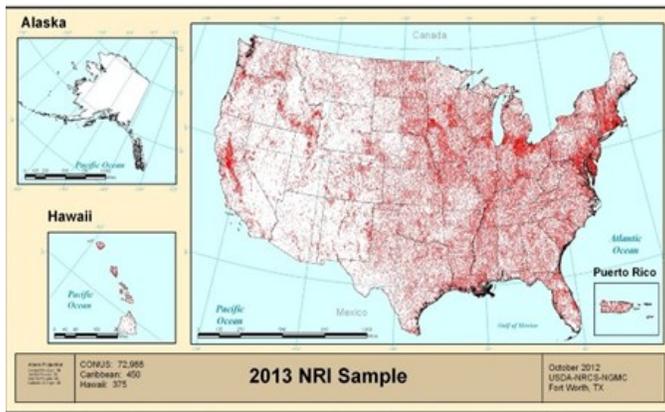
27.6% of all contracts awarded went to small businesses.



Contracting

National Resource Inventory (NRI) and Stewardship Lands Imagery (SLI)

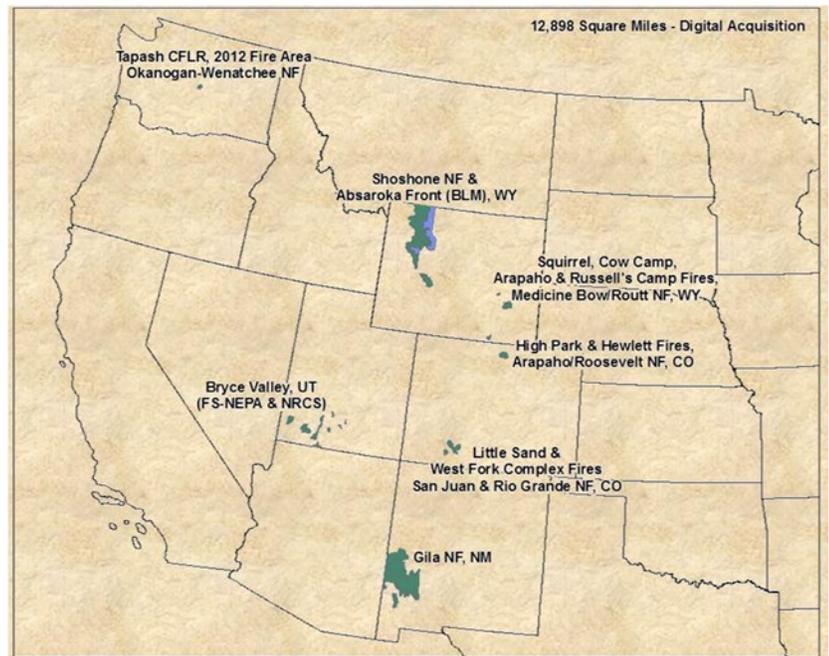
APFO provided contracting services to NRCS to acquire the National Resource Inventory (NRI), Stewardship Lands Imagery (SLI), and the Highly Erodible Lands (HEL) programs. Aerial photography and related services for 98,159 sites and easement exposures in the 48 CONUS states, Hawaii, and Puerto Rico & Virgin Islands.



Resource Aerial Photography

Provided contracting services to the Forest Service (USFS) for a total of 12,898 square miles of digital resource aerial photography for a total value of \$414,094.63. A combined total administrative charge of \$51,909.53 was assessed.

APFO Contracting continues to provide support and assistance in developing standard specifications for digital imagery and support of other digital acquisition requirements and procedures.



Quality Assurance

Quality Assurance Branch

The Quality Assurance Branch has spent this year developing operational plans to exploit both new technology and processes designed to efficiently support the Department of Agriculture's mission to provide leadership on food, agriculture, natural resources, and related issues based on sound public policy, the best available science, and efficient management, and the Farm Service Agency mission to equitably serving all farmers, ranchers, and agricultural partners through the delivery of effective, efficient agricultural programs for all Americans by insuring that quality imagery and geospatial products are available for its programs.

QAB's primary mission is to inspect for contractual compliance imagery obtained for the National Agriculture Imagery Program (NAIP), Resource Aerial Photography, Common Land Unit (CLU) updates, National Resources Inventory (NRI) and Stewardship Land Inventory (SLI).

Accomplishments

We invested significant time and resources to ensure the viability of inspection systems for APFO. We accomplished the first part of a two part plan by designing and implementing ArcMap 10.x interim inspection tools for NAIP and Resource Programs. Additionally we completed the design and implementation of inspection tools for historical film scan project which will eventually in compass the scan inspection and acceptance of over 65,000 rolls of historic film. Additional benefit to this project was the development of procedures to rectify known errors in the imagery database by manually reviewing rolls of film and correcting database to reflect actual vault content.

We thoroughly developed and tested work flow processes as part of the overall DCCI project. We also developed a new inspection process for Agsat and Early Access pilot projects. We trained two additional employees to assist with (SLI) flight planning to meet Customers timeline. We have also made continual advancements in vault scan index project making 18 states available for public access.

QAB continues to maintain an archive of over 65,000 rolls of historic imagery. Our major accomplishment this year was to complete a sample test totaling 1,000 rolls of archived film to determine the overall stability of the imagery. We found that there were 21 rolls from our sample that showed significant degradation. We have determined that all rolls of film need to be tested and develop a priority list for future scanning.

QAB is responsible for the APFO Safety program completing two safety inspections that result in the repair of a dysfunctional eye wash station and implementation of second eye wash station. The safety team was trained on OSHA work place standards and developed a safety continuity binder that resulted in proper reporting of 2 employee injuries and the development of APFO



Historic Imagery in the APFO Film Vault

Quality Assurance

Branch Goals

Looking forward, we will develop our FY2014 operation plan which will include the barcoding of over 65,000 rolls of historical film and the scanning of millions of paper documents comprising the historic film reports. This will assist us in the relocation of APFO to new building FY2016.

We will continue with the goal to complete part two of 10.x imagery inspection tool set. The result of this will enable APFO inspection viability for many years in our future. We also have made a priority to complete the vault index scans project and when completed it will be a tool for our customers to research areas of interest.

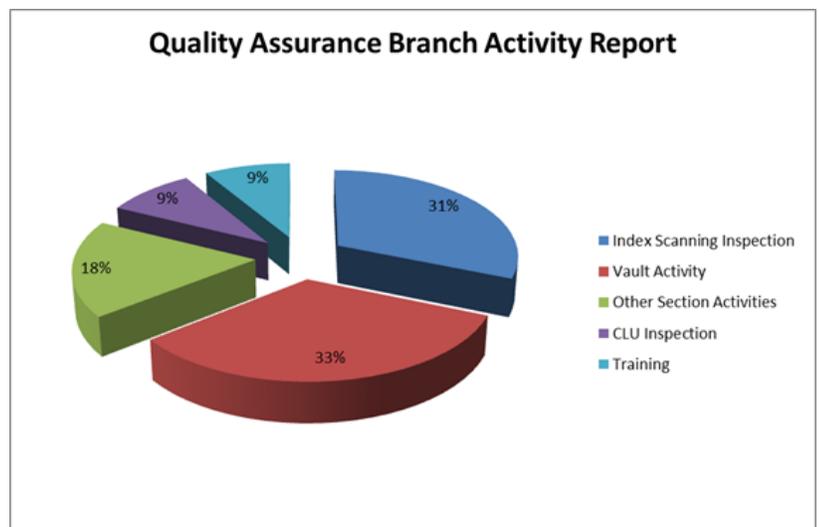
We will contribute to the GIS community through presentation of our areas of responsibility at USDA Planning Meeting and two QA employees will participate this year in the Western ESRI conference by discussing the NAIP inspection process. We hope to support the Department of Labor's higher of Veterans program and utilize that individual to help us accomplish our goals and at the same time provide work experience for an American veteran.

Quality Assurance Branch Activity Report



Anita Stevens inspecting historical vault index scans.

	Hours	Percentage
Index Scanning Inspection	502	31%
Vault Activity	532.9	33%
Other Section Activities	289	18%
CLU Inspection	144.75	9%
Admin/Training	139.1	9%
Totals	1607.75	100%



Quality Assurance

Quality Assurance Branch

ORTHO IMAGERY INSPECTION SECTION

The Ortho Inspection team accomplished its goals as outlined in the Aerial Photography Filed Office Strategic plan through the successfully completion of all day-to-day operation as well as the accomplishment of several major initiatives designed to improve image inspection workflow and task efficiency. The most important of which was the implementation of an interim quality assurance inspection program as part of the ArcMap 10.x migration, and second to that was the implementation of the Historic Vault inspection system. Additionally, OIIS developed an inspection and tracking system for a new agriculture satellite imagery program (Agsat), as well as started preparation for the future consolidation of APFO's IT equipment (DCCI) by fully developing test scenarios of our inspection operations for that transition.

Accomplishment 1: Because project inspection cycles split between calendar years, OIIS reports that for year 2012/2013 over (177,361) imagery units was inspected.

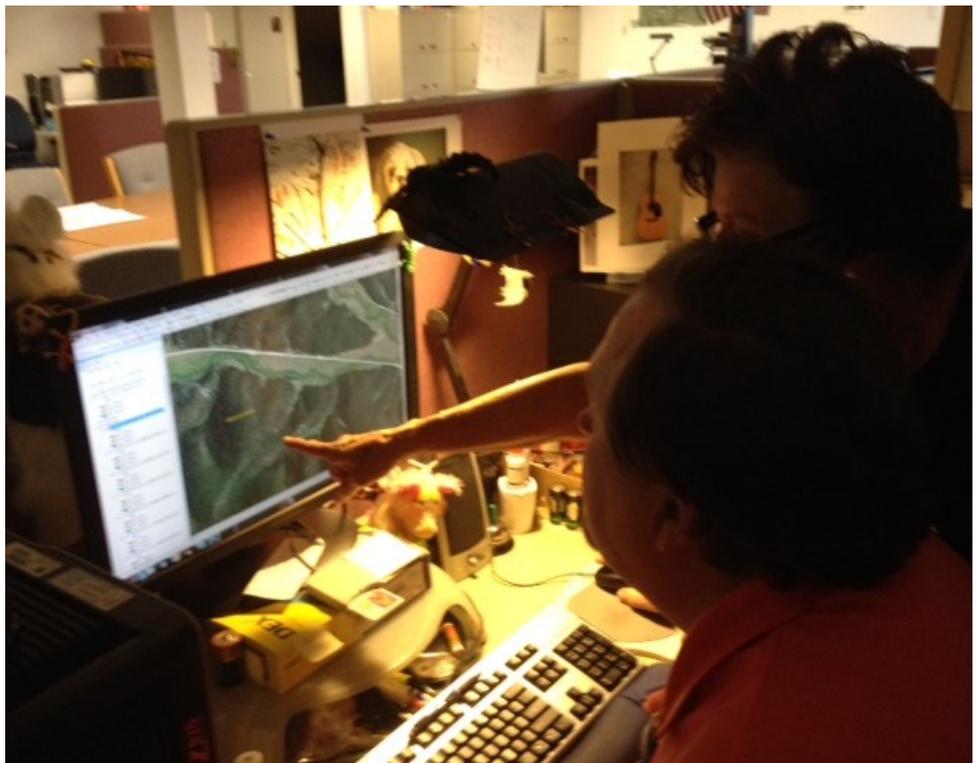
Accomplishment 2: Tested and implemented an interim quality assurance inspection program as part of the ArcMap 10.x migration.

Accomplishment 3: The full design and implementation of the Historic Vault Film inspection system.

Accomplishment 4: The full design and implementation of the Agriculture Satellite (Agsat) inspection and tracking system.

Accomplishment 5: Developed imagery inspection test scenarios for the future DCCI consolidation.

Mary Carlson and Doug Clark inspecting NAIP Imagery.

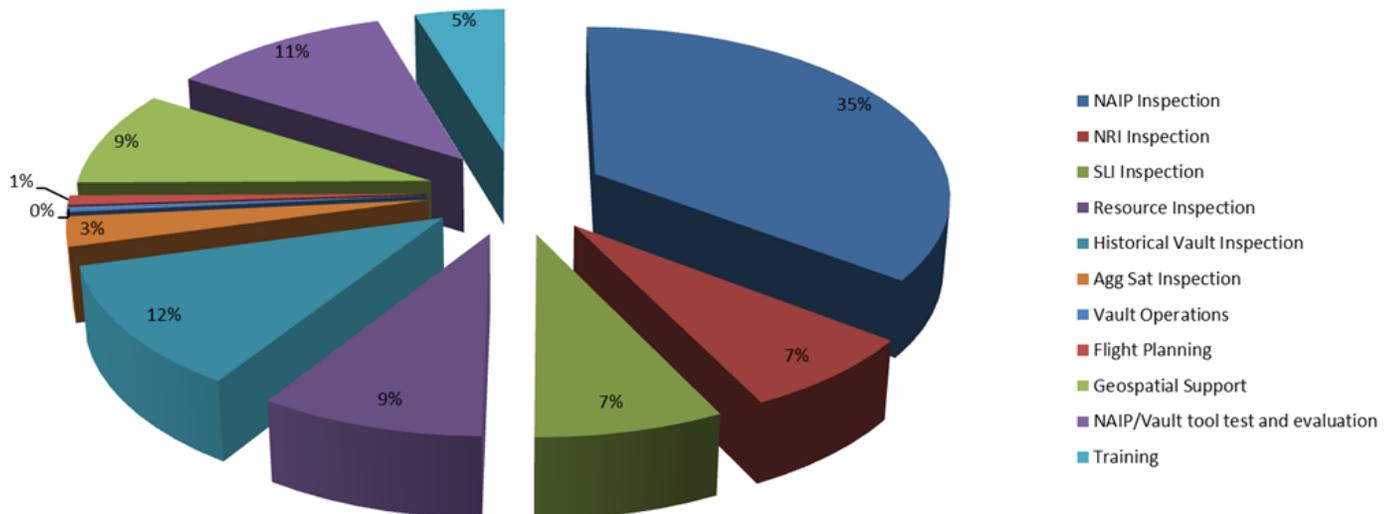


Quality Assurance

ORTHO IMAGERY INSPECTION SECTION BY THE NUMBERS

NAIP Inspection	7593.5	35.4%
NRI Inspection	1578.75	7.0%
SLI Inspection	1600	7.5%
Resource Inspection	1900	8.9%
Historical Vault Inspection	2500	11.6%
Agsat Inspection	600	2.8%
Vault Operations	100	0.5%
Flight Planning	195.25	0.9%
Geospatial Support	1945	9.1%
NAIP/Vault tool test and evaluation	2453.35	11.4%
<u>Training</u>	<u>1000</u>	<u>4.7%</u>
<i>Total</i>	<i>22819.2</i>	<i>100%</i>

Ortho Imagery Inspection Services Activity Report



Quality Assurance

Quality Assurance Branch

Resource Imagery Inspection Section

Mission Statement: To assure customer needs are met by providing quality assurance inspection, monitoring, and disseminating of imagery and geospatial data for the Resource Aerial Photography, National Resources Inventory (NRI), and Stewardship Lands Imagery (SLI).

Flight Planning

In FY2013 the section provided flight planning for 31,868 NRCS SLI sites and prepared four digital imagery based projects that covered 12,545 square miles including the inspection of contractor submitted flight plans.

Digital Imagery

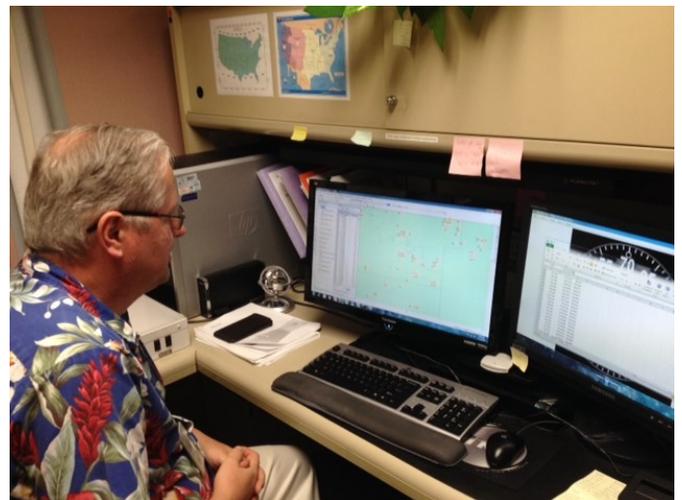
Inspection of four out of five National Forests, two of which were 100% completed totaling of 18,605 square miles consisting of approximately 44TB of data. Inspection deliverables included Digital Ortho Quads (DOQ), Digital Ortho Quarter-Quads (DOQQ), Digital Ortho Quarter-Quarter-Quads (DOQQQ), GeoTIFFs, Stereo Imagery and Compressed Project Mosaic (CPM).

National Resources Inventory (NRI) Inspection

2013 NRI CONUS sites/scans inspected: 73,813 sites and 73,813 scans

Stewardship Lands Imagery (SLI) Inspection

2013 SLI CONUS sites/scans inspected: 24,796 sites and 24,796 scans



Mark Cox flight planning SLI.

Other Section Accomplishments

Inspection of the Vault Index Scans, 501 hours were used to inspect 4,500 indexes and completion of 18 states from this project.

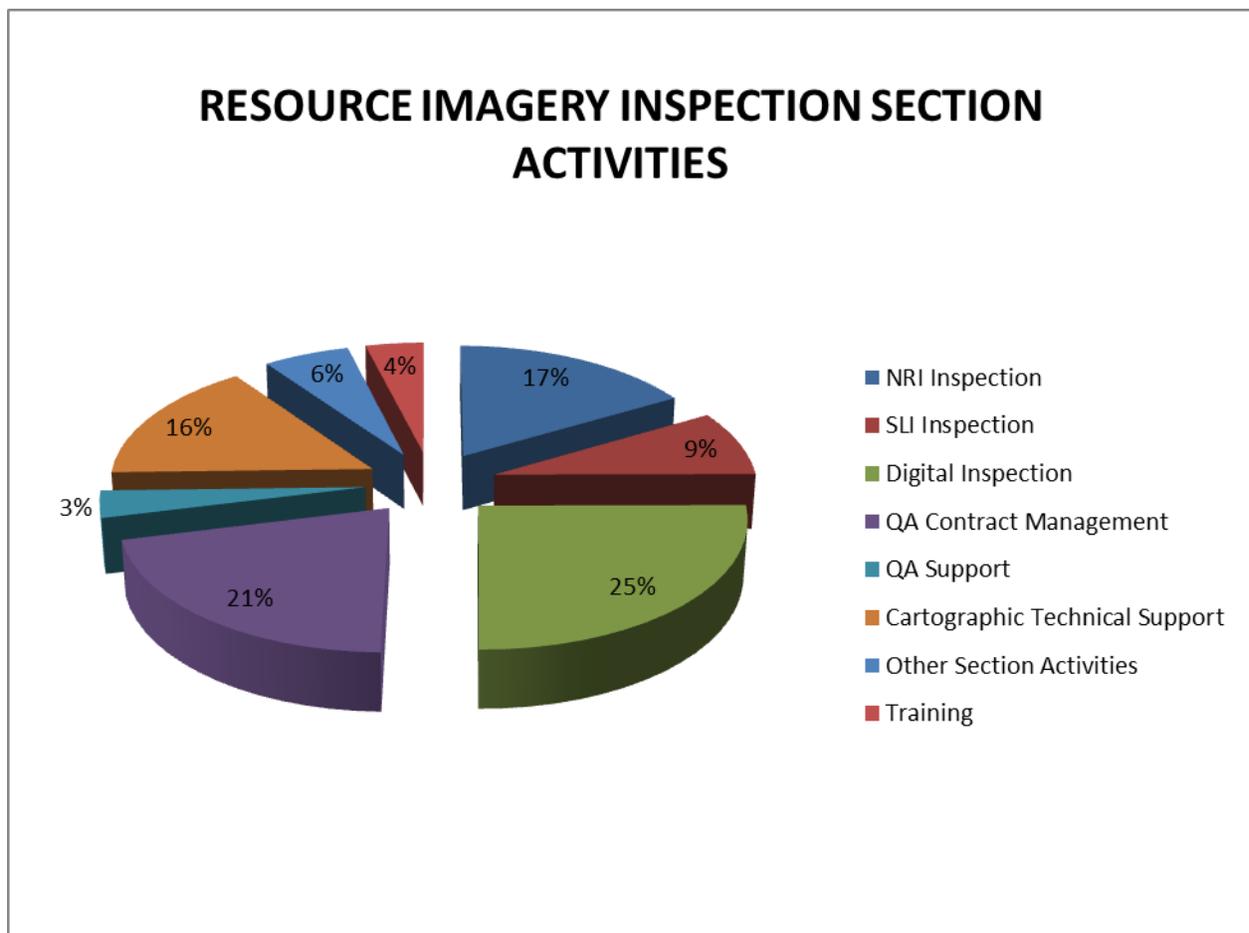
RIIS participated on Technical Evaluation and Source Selection Teams for Three Forest Service Projects.

Jeanette Tolliver served as the Chairperson for the Equal Employment Opportunity Advisory Committee during FY13.

Quality Assurance

RESOURCE IMAGERY INSPECTION SECTION ACTIVITY REPORT

<u>Activity</u>	<u>Hours</u>	<u>% of Time</u>
NRI Inspection	1031.5	16.6%
SLI Inspection	517	8.3%
Digital Inspection	1572	25.3%
QA Contract Management	1300	20.9%
QA Support	213.75	3.4%
Cartographic Technical Support	965.25	15.5%
Other Section Activities	367.25	5.9%
Training	246.25	4.0%
<i>Total</i>	<i>6213</i>	<i>100%</i>



Geospatial Services

USDA-FSA Aerial Photography Field Office, Geospatial Services Branch

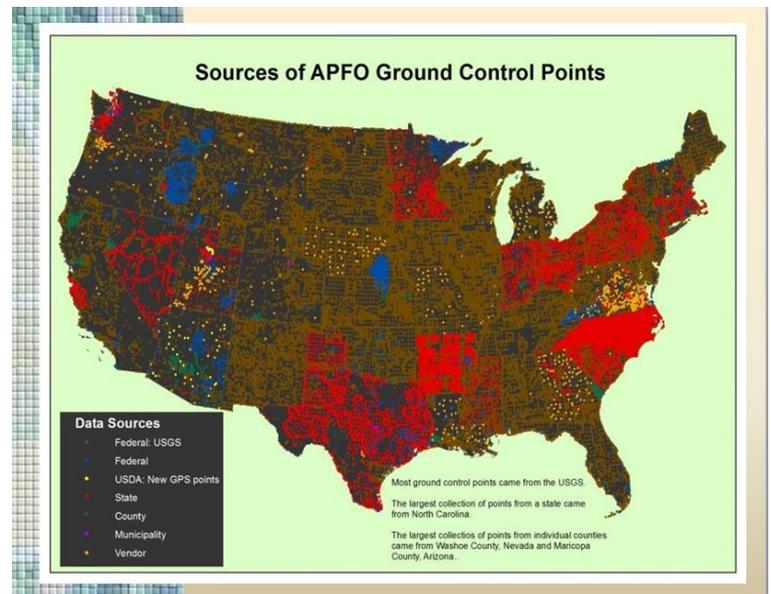
Summary Statement – FY13 Accomplishments

- **Ensured National Agriculture Imagery Program (NAIP) and other USDA imagery program technical specifications and standards are correct**, and will produce products that meet FSA and USDA customer needs the first time around, saving countless dollars in both time and infrastructure resources by getting accurate, authoritative data to the customer as quickly as possible.

Deployed APFO GPS unit to the FSA field to collect control points to support NAIP inspection, ensuring quality products. Points are databased and reusable for many years, multiplying their value over time.

Reviewed and validated NAIP 1/2-meter specifications. Spatial resolution is getting better and better as a standard, and moving to 1/2-meter for NAIP is a natural progression based on technological innovation cross-referenced with cost and product value.

Developed specifications and managed project and reporting aspects of the NAIP Early Access Pilot. This Pilot could be a major game changer for NAIP delivery, where delivery of data as services could potentially be shortened from a few months to a few days.



Control Point Database GPS Point Sources

- In lockstep with contracted staff, helped to ensure web services containing NAIP (CONUS) and other imagery sources (Non-CONUS) are functioning optimally in support of enterprise GIS applications (MIDAS, Thin Client). This enables state and field office employees to do their jobs efficiently and in a timely manner, such that changes on the earth's surface can be positively detected and that field boundaries and acreages, which are directly tied to producer benefits, can be updated quickly and efficiently, providing for end customer satisfaction and more accurate record keeping.
- In a multi-disciplinary team setting, continued moving the **Consolidated Historical Project (CHP)** forward. The vision of CHP is "Modern day access to historical agricultural imagery assets" with a mission to "digitally and/or spatially enable historical imagery assets and provide access to all product lines, leveraging the most appropriate technology that results in useful viewing, research, analysis, and delivery methods for our customers". Production Branch is at present scanning film to digital for archive and increased accessibility, and can achieve a rate of 20k images/month. The team is also moving to seek certain status with NARA securing long term viability for said scanning. Quality Assurance and Geospatial Branches are correcting spatial indexes such that scans will become openly discoverable in a research interface, both to the internal and external customer base, in the future.

Geospatial Services

- **Customer Focused Support.** Built historical imagery products based on FSA and other customer requests, ensuring historical imagery products are spatially enabled such that the state, field offices, and other customers may track and trend changes over time, offering real visual evidence of land use/land cover change in support of various programs.
- **Primary FSA Administrator for the FSA ArcGIS Online (AGOL) Organizational Subscription.** AGOL is a cloud based mapping and analysis interface which shows high potential to, in the future, help minimize agency infrastructure needs in supporting web, mapping, and analysis services. While this is just the pilot year and there are many questions to still be answered regarding enterprise utility, to date APFO has created and maintained 2 public maps for the AgSat imagery status tracking, NAIP 2013 Inspection Status map, NAIP Status Map, NAIP 2011 and 2012 image dates, NRI and SLI Status, GIS Dataset Viewer, and NAIP Program change story map available to all users and the public. GSB has also provided county base layer maps to FSA organizational users, access to a variety of disaster related maps for FSA users, created an imagery feedback/Volunteered Geographic Information application for NAIP imagery for use by FSA state and county personnel, other federal agencies, partners, and the public to provide spatially enabled information to APFO about the imagery. GSB has done substantial research into usage and applications for FSA business processes and how AGOL can be used, has provided training and support through monthly telecons to a variety of users, administered the site for content and usage, added FSA users to the site and determine their organizational roles, provided several informational presentations on ArcGIS Online for WDC office, APFO, NDOP and the USDA planning meeting, provided FSA AGOL users an informational guide, and provided day to day support for FSA users.
- **Lead FSA AgSat Data Delivery.** AgSat is a contracting mechanism that FSA as well as other USDA agencies can utilize to obtain satellite imagery. FSA has used AgSat to obtain data in hard to acquire locations (e.g. HI, AK, Pacific Basin) as well as a demo for disaster recovery. AgSat is new, and thus close monitoring and reporting has been done. Data is still coming in from the initial purchase, so this is an on-going project (as are all the projects above), but initial feedback on potential for multi-spectral imagery usage is positive. GSB has processed AgSat data into web services for use in enterprise GIS applications (MIDAS and Thin Client), and has also produced multiple analysis web services available to the FSA user, such as vegetation, water, and surface indexes, that show evidence of surface water, vegetation health, impermeable surfaces, and so forth, better than traditional color or color infrared imagery.
- **Breaking New Ground.** Built and discussed demonstrations on how analysis of imagery could potentially streamline identification of items such as where new ground has been broken, or potential violations in CRP, through automated and semi-automated image analysis methods. This project is not even in pilot phase, but potential value is high in leveraging imagery further than previously before, getting more out of the data, and in cost savings to the field in reduced man-hours if successful.

Geospatial Services

Geospatial Services Branch Service Center Support Section

The Service Center Support Section provides technical and programmatic support and assistance on geospatial related issues to Farm Service Agency (FSA) Service Centers, State Offices, and Headquarters offices as well as to other government agencies and the public. The Service Center Support Section supports APFO and FSA in research and analysis, product enhancement, and in the development of processes and methodologies to improve efficiency in all aspects of geospatial business.

Project Work

National Agriculture Imagery Program (NAIP) Support

Developed, administered, and reported results for the 2012 NAIP Survey

Absolute Control Projects: 2013 control point acquisition and database work for 2013 NAIP States. Teaming with States and Federal Agencies to obtain points and supplemental data. Administered database updates and maintenance, and assistance with automation of the database inspection process. The database is conservatively worth \$12M at present with 40,000+ points, developed through partnerships and provided on a mostly gratis basis.

Deployed GPS unit to the FSA Field to support internal FSA control point acquisition; a step that will yield points that will collectively be worth many times the value of the unit, and will keep the database up to date with current data, ensuring quality end products for the FSA customer

Updated NAIP Control Point Plan

Updated NAIP Flight Planning Plan

Provided NAIP graphics for FGDC Annual Report

2013 NAIP Technical Evaluation Panel and Source Selection Committee

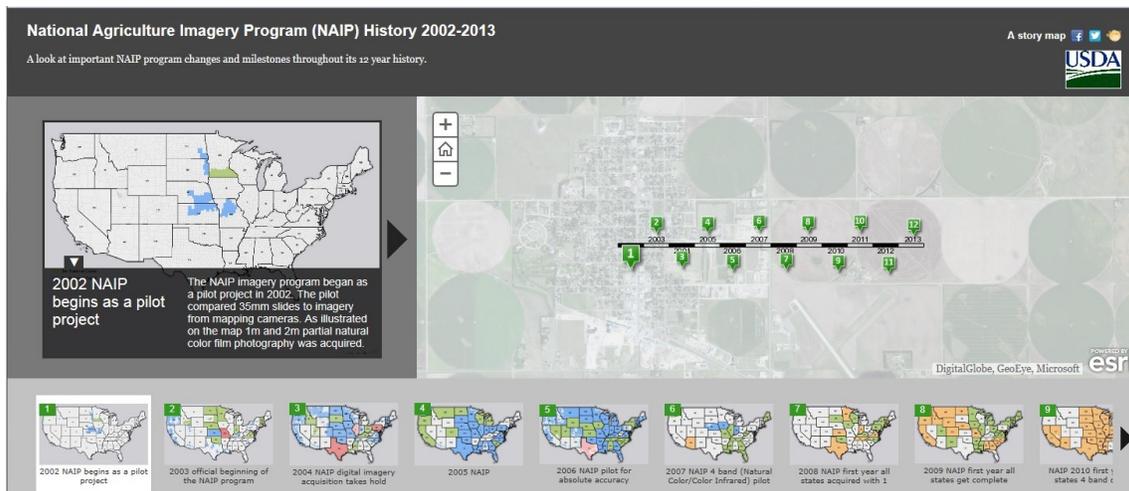
Helped to review and update 2013 NAIP uncompressed, compressed and projected data metadata templates

Evaluated 2012 NAIP DEMs for NED inclusion

Developed FSA NAIP priority states based on NASS statistics

Updated NAIP Status Usage Guide on APFO Website

Administered NAIP Early Access Pilot Project



AGOL NAIP Storyboard Map Showing Basic Progression of NAIP Over Time

Geospatial Services

FSA Main POC for the FSA ArcGIS Online Organizational Subscription

Created and maintained 2 public maps for the AgSat imagery

Created NAIP 2013 Inspection Status map, NAIP Status Map, NAIP 2011 and 2012 image dates, NRI and SLI Status, GIS Dataset Viewer, and NAIP Program change story map available to all users and the public

Provided County base layer maps to FSA organizational users

Provided access to a variety of disaster related maps for FSA users

Created an Imagery Feedback/Volunteered Geographic Information application for NAIP imagery for use by FSA state and county personnel, other federal agencies, partners, and the public to provide spatially enabled information to APFO about the imagery

Substantial research into usage and applications for FSA business processes and how AGOL can be used

Provided training and support through monthly telecons to a variety of users

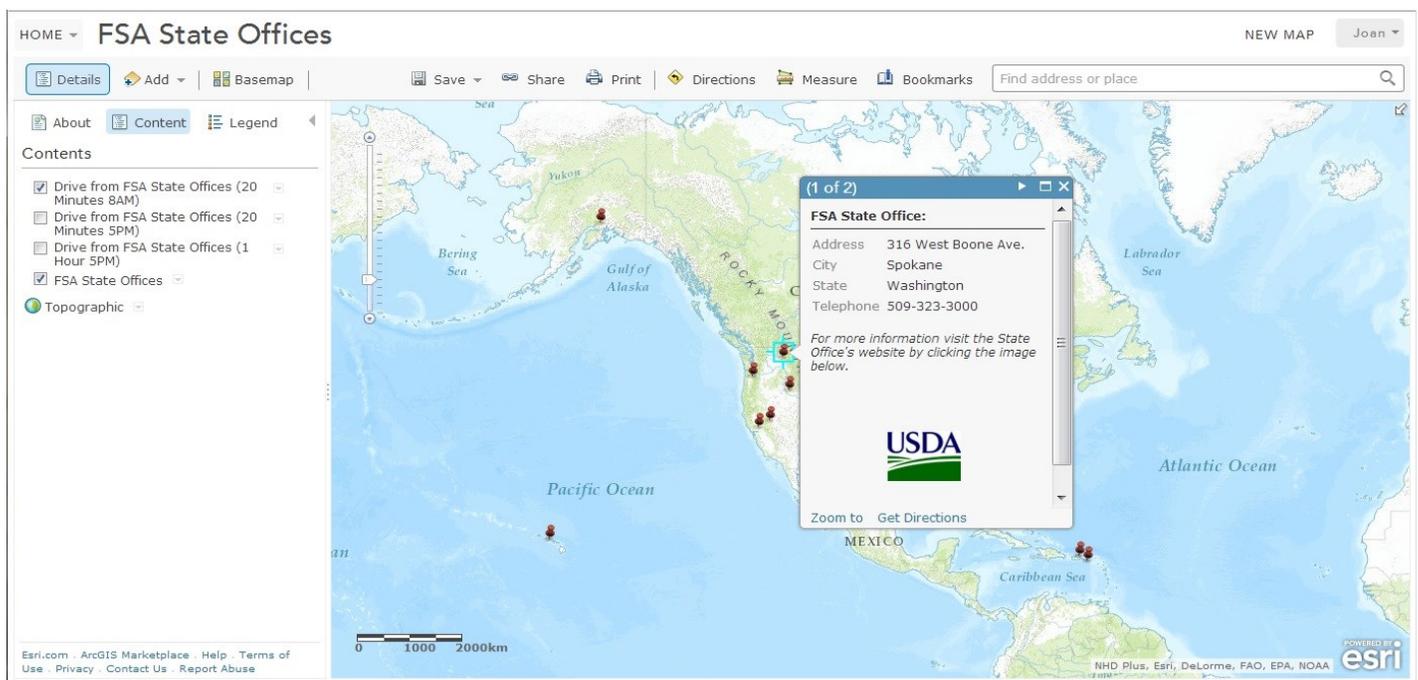
Administered the site for content and usage

Added FSA users to the site and determined their organizational roles

Provided several informational presentations on ArcGIS Online for WDC office, APFO, NDOP and the USDA planning meeting

Provided FSA AGOL users an informational guide

Provided day to day support for FSA users



AGOL FSA State Office Location and Website

Geospatial Services

In Conjunction with Contracted Staff, Continued support for GDW Web Services and Image Services for FSA

- MIDAS and Thin Client Applications
 - Updated Images Services
 - Updated Status Maps
 - Created Models to streamline processes
 - Provided Database Access as Needed
 - Worked on Processing NON-Conus Imagery and Services
 - Provided Support as Needed

Disaster Recovery and Response: Produced a fast turnaround 2013 CO floods disaster web service in support of FSA required field reporting. Obtained data from a variety of sources, processed data, and published web service that the FSA field could consume

Administered 2013 GIS Workstation and GeoData Surveys for WDC

University Outreach:

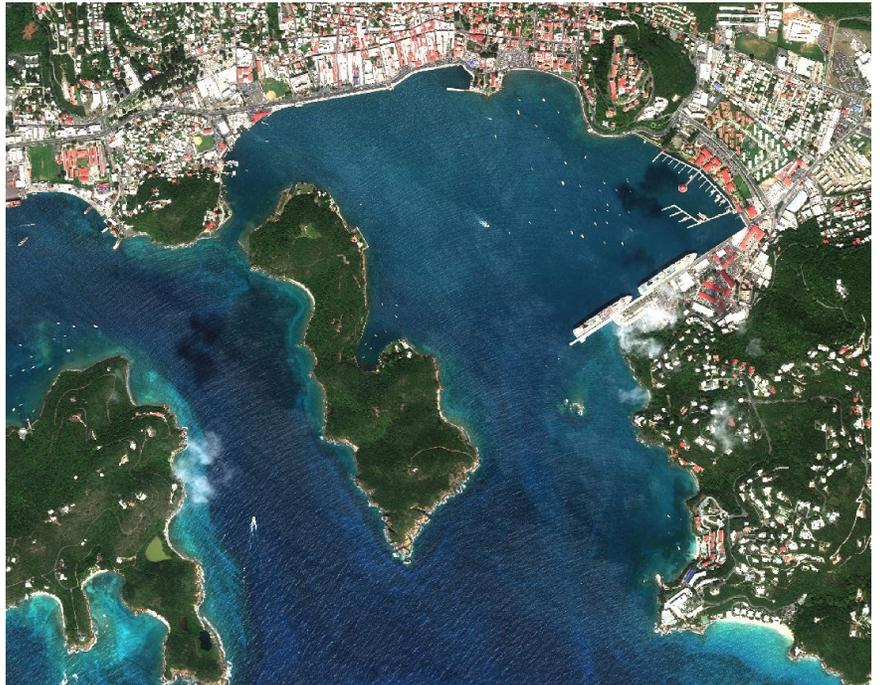
- 35mm Slide Scanner Donation Coordination
- Supported students from University of Idaho, UT State, SLCC, TX A&M, others about NAIP, imagery, and GIS projects

Acted as MIDAS POC between APFO and the geospatial component of the MIDAS Team, helping to ensure services necessary to support MIDAS are available and updated

FSA Work for Puerto Rico (PR)

- Obtained and processed imagery and built PR image services
- Deployed GPS unit to PR on to support WDC assessment trip
- Initiated MOU with PR Government to obtain CRIM (Land Parcel Data) to support FSA CLU digitizing work
- Attached to Training Team that spent 3 Weeks in PR in FY13, training on GPS, CLU maintenance, and farm records

Satellite Acquisition BPA (AgSat): Tested data, processed data, published image services with analysis layers, updated web services for Thin Client and MIDAS use, built demo for DAFP discussion, conservation program analysis for Native Sod, and anomalies in CRP



AgSat Acquisition in U.S. Virgin Islands to Support FSA Enterprise Spatial Applications

Geospatial Services

Historical Project Work: In a multi-disciplinary team setting, continued moving the Consolidated Historical Project (CHP) forward. The vision of CHP is "Modern day access to historical agricultural imagery assets" with a mission to "digitally and/or spatially enable historical imagery assets and provide access to all product lines, leveraging the most appropriate technology that results in useful viewing, research, analysis, and delivery methods for our customers". Most notable, Production Branch is at present scanning film to digital for archive and team is moving to seek certain status with NARA securing long term viability for said scanning. Spatially analyzed Film Vault testing results by county. Quality Assurance and Geospatial Branches are correcting spatial indexes such that scans will become openly discoverable in a research interface, both to the internal and external customer base, in the future.

Provided continuity support for QA Branch, to include training, map making, process review, trouble shooting, GrayPoint Tool update, NAIP modernization work, and fielding control point database questions

Assisted on digital Resource Photography projects at APFO, consisting of a complex mix of new customer requirements and diverse deliverables.

- Participated in multiple contract evaluations
- Assisted in development of contract specifications
- Designed and/or reviewed several metadata templates
- Continued to work through issues with stereo inspection

Participated on NRI Source Selection/Evaluation

Research and Analysis: Researched spatial tags and updated the USDA Digital File Format Specification. Provided potential automated processes for detection of CRP violations at request of VA State FSA, and the WDC office. Researched and implemented the Stereo Analyst for ArcGIS extension. Researched AK imagery options for FSA web service inclusion. Researched and coordinated receipt of updated PR data for FSA web service inclusion. Began research on MG4 format for NAIP. Continued UAS research of new and planned systems, technologies, and applications, especially regarding agricultural and potential FSA uses

Training Provided and/or Received: Map Books, GIS Labeling, ArcGIS Online Boot camp, ENVI 5.0 training, Metadata, Mobile Device, GPS Usage and Deployment.

Publications: 2013 FGDC Annual Report Map, 2013 UT Maps on the Hill Posters, USDA Fencepost Article on Maps on the Hill, Control Map to 2013 Esri Mapbook, Poster and Brief for FSA DC Homeland Security Conference.

Customer Support: Fielded and answered several hundred customer support calls and emails from APFO, FSA, SCA, Federal & local government, private business, and the general public. Completed multiple custom cartographic requests.

Geospatial Services

Geospatial Services Branch Geospatial Services Section

The Geospatial Services Section is responsible for producing accurate and quality checked georeferenced and ortho imagery, from a variety of sources. Imagery is made available in soft and hardcopy formats to meet the needs of GIS implementation in support of FSA Service Centers. In addition, the Geospatial Services Section flight planned the acquisition of imagery for the NAIP 2013 year.

Cartographic features such as scales or legends accompany hardcopy digital products, thus enhancing usability. Responsibilities of the Geospatial Services Section include:

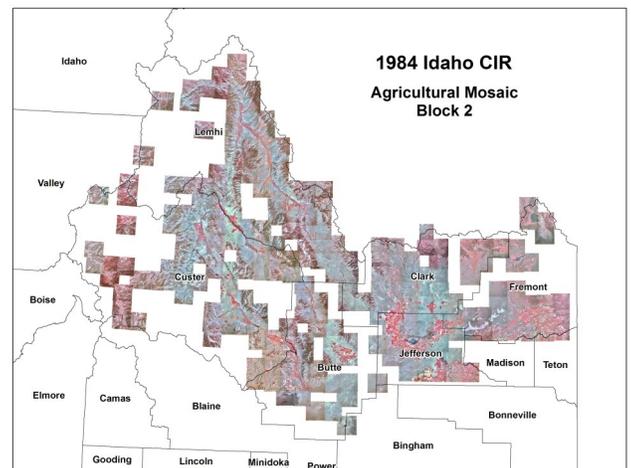
- Index maps created with various overlays
- County, State, and National Status Maps containing geospatial information
- Special projects including historic ortho generation, georeferencing, compressed imagery production, color balancing of county imagery, and reformatting of imagery to meet FSA specifications.
- Detailed flight planning status maps by county and state
- National flight planning status map

Strategic Planning

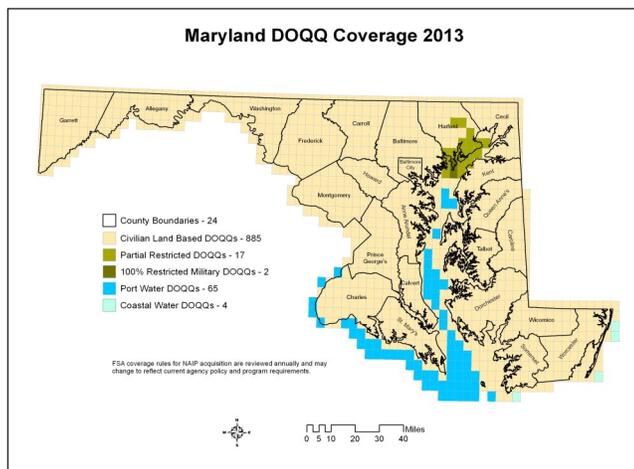
Equipment, process improvements, and training were goals established and achieved to include:

Training

- In-house training
 - Index Scan Training
 - ArcGIS Label Using ArcGIS 10.2
 - Center Point Update Demo
 - Spatial Index Repairs
 - GPS Training
 - Creating Mapbooks in ArcGIS
 - ENVI Training
 - ESRI & Adobe



1984 ID CIR Georeferencing Project for NRCS



MD NAIP Flight Planning

Accomplishments

Production

- Historical Digital Ortho Quarter Quads produced - 1
- Compressed mosaics produced - 6
- Forest Service Digital Indices created - 10 (25 sheets)
- NAIP 2013 states flight planned - 23
- Status maps Produced - 200
- Georeferencing for Custom Requests - 1639 images
- Historic Utah Indices Repair Project -
 - 1 County (2 Years - 28 Sheets)
- Historic Minnesota Ortho Project - Ongoing

Technology Services

The **TECHNOLOGY SERVICES BRANCH (TSB)** acts as the backbone of any APFO operation. By providing Information Technology Security and Support for agency specific applications TSB oversees all Data Management, Distribution and Application Development.

Imagery, pictures, and geo data are some of the names and formats for the images that are captured of America's farm and ranch lands. APFO has the largest collection of these images residing in a digital library containing over 8 million image files at 2.95 Terabytes, and a physical library of historical images (affectionately known as "the Vault") with 54,533 rolls of film and 83,875 photo indexes all stored in an environmentally monitored area to avoid excessive curl and brittleness or cause mold and ferrotyping. APFO's film vault exists because aerial photography has been used for over half a century in the service of the USDA Farm Programs, but has also shown its importance stretching through nearly every facet of American Life.

Under the *Technology Services Branch* are two sections:



Inside the digital library of APFO

The **Digital Data Management and Distribution Section** performs data ingestion, archiving, distribution and fills large custom digital product orders while the **Application Development Section** supplies specific production application development while providing support and/or development of custom applications including management and development of databases.

Additional responsibilities include management of APFO web based applications and services, solution and development research and coordination of requirements with a variety of CIO-ITS organizations.

TSB supports both business and GIS applications in direct support of APFO business requirements, managing approximately 400TB (terabytes) of data on behalf of FSA and an additional 200 TB of data in support of other USDA agencies (NRCS, FS).

Beginning with FY 2012, APFO TSB entered into partnership with FSA NITC to examine the future of imagery data storage and the correct storage applications. After establishing a 10G Fiber Connection (the "pipe" as we call it) between Salt Lake City and Kansas City TSB will now move to migrate all public facing systems to NITC for better efficiency.

Technology Services

With direction and assistance from ITS, TSB designed and planned APFO wide web farm security stack, with implementation to be complete by end of year.

- The data management support TSB provides for the 500TB of archived post inspection imagery on the SL8500 tape library supports all of APFO's critical business processes and applications. This past year, 23.3 Tera Bytes of post inspection imagery was placed on APFO's archive library and 23.3 Tera Bytes of post inspection imagery was written to offsite recovery tapes that are destined for storage in the vaults at Perpetual Storage, Inc. located in Little Cottonwood Canyon. In support of Midas, 219,436 QQs (42 TB of data) were copied from HSM tapes to disk cache, re-projected from NAD83 UTM to Web Mercator Auxiliary Sphere (WMAS) and compressed 10:1 into JPEG 2000 imagery for web service creation.

Post Inspection Long Term Archive

NAIP 2012 QQ –	101,750	20.0 TB
NAIP 2012 CCM –	1,628	1.3 TB
JP2000 NAD83 –	<u>101,750</u>	<u>2.0 TB</u>
	205,128	23.3 TB

Post Inspection OffSite Archive Copy

	Number of	Data Size
NAIP 2012 QQ –	101,750	20.0 TB
NAIP 2012 CCM –	1,628	1.3 TB
JP2000 NAD83 –	<u>101,750</u>	<u>2.0 TB</u>
	205,128	23.3 TB

Midas Support (National coverage of most current NAIP imagery re-projected from NAD83 UTM to Web Mercator Auxiliary Sphere [WMAS] and compressed 10:1 into a JPEG 2000 imagery for web service creation.)

NAIP 2012 QQ –	101,750	20.0 TB
NAIP 2011 QQ –	67,783	14.0 TB
NAIP 2010 QQ –	<u>49,903</u>	<u>9.0 TB</u>
	219,436	43.0 TB

JP2000 WMAS –	219,436	4.2 TB
JP2000 WMAS –	219,436	4.2 TB

Post Inspection Long Term Archive

Post Inspection OffSite Archive Copy

Resource Data Gateway (FSA CLU shape files submitted via ftp during FY13) represents < 100GB

	DataSet Count	File Count
CLU Data Sets:	12,879	165,064
CRP Data Sets:	9,415	17,585
WET Land Data:	<u>10,889</u>	<u>69,569</u>
	55,617	255,218

- TSB provided oversight and coordination for the successful migration of production servers, with minimal downtime. Implemented Business Intelligence purchased and design with focus on the redevelopment of the NAIP inspection applications.
- Implemented Business Intelligence purchased and design with focus on the redevelopment of the NAIP inspection applications.
- Initiated migration of Oracle from 9i to 11g, to include migration of legacy forms and reports.

Technology Services

In the last year, TSB retooled the inspection applications for the NAIP Inspection process. Updating code that has served us for the last 8 years was not easy. Due to updates in the inspection software and IT infrastructure, hundreds of hours of research and script writing has paid off in the Quality Assurance process of inspecting each image procured under acquisition contracts by reducing stagnated inspection lines when one image has an issue. Today the processor can make inspections, notification and comments into the file at any time, thus freeing up idle time and reducing project time in QA.

The continued process of redeveloping the Resource Inspection Applications has had very positive results on several reimbursable projects that APFO completes on behalf of the US Forest Service.



TSB transfers archived imagery and aerial imagery information to hard drives for customers around the country.

Technology Services

In support of projects that benefit the general public and agencies outside USDA TSB:

- Developed (and made available) state based web services.
- Life cycle replacement of Multifunction (Leased) Printer and legacy printers, reducing printing footprint and paper consumption by more than 50%.
- Developed (and made available) state based web services.
- Federal customers the ability to order geospatial data online.
- Geospatial Infrastructure Support—TSB continues to support and enhance existing websites to enable Federal and public customers to obtain status on CLU, NAIP, and NRI related projects.
- Successfully upgraded the APFO Oracle Development and Certification databases from Oracle 11gR2 to Oracle 11gR3 and migrated the databases to new servers.
- Developed a detailed migration plan to assist with future Oracle Database 11gR3 installations and upgrade of production system.
- Approximately 90% progress towards completing upgrade and migration of Oracle Forms and Reports 10g to Oracle Fusion Middleware Forms and Reports 11g. Completion of this upgrade and migration is critical because Oracle Forms and Reports 10g is no longer supported by Oracle.
- Provided data management for 400TB of archived imagery on the SL8500 tape library.
- Customer and NAIP partner orders
- Resource Projects- Copied and delivered 44TB of data on 46 hard disks



Technology Services

Cyber Security

- Completed security review of APFO applications and systems thru FSA Cybersecurity Office
- Retired Data Provisioning System (DPS) from CSAM and its child application Customer Order Entry System (COES)
- Disaster and Recovery is being reviewed and maintained by APFO.
- All APFO databases are continuously reviewed for appropriate security levels and user permissions and changes made as necessary.
- In collaboration with FSA ISO, TSB developed account management policy and procedures.

Film Vault Scanning:

- Facilitated and coordinated the purchase and installation of 2 additional film scanners (Leica) and the upgrade of 3 film scanners (Wehrl)
- As a result of additional funding, have initiated the procurement of the following in direct support of the Film Vault scanning project:
 - ◇ 3 additional Leica Scanners (to be installed November FY13)
 - ◇ COTS Inventory Software – will support the 100% inventory of all film and its location within the facility
 - ◇ 420TB of additional NAS storage to support scanning of film. This will also allow TSB to continue full support of all inspection and data processes while beginning the migration of data and equipment to the Federal Building

Geospatial Data Warehouse:

- Migrated GDW Image Service infrastructure to ArcGIS Server product from Image Server product
- Stood up new Production imagery stack
- Migrated 350 image services to new ArcGIS Server paradigm to support GISO Thin Client applications

MIDAS

- Re-tooled image service architecture to support identified MIDAS requirements
- Rebuilt Current Year image services in WMAS projection to meet MIDAS requirements
- Provided on going MIDAS usage metrics to Management Team

CLU

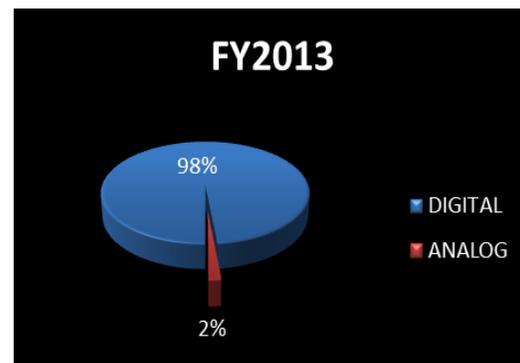
- Continued to process CLU and distribute to Partners
- Continues to produce data analysis report to assist FSA with cleanup of CLU dataset for MIDAS implementation

Production Services

"If you want something new, you have to stop doing something old" – Peter F. Drucker

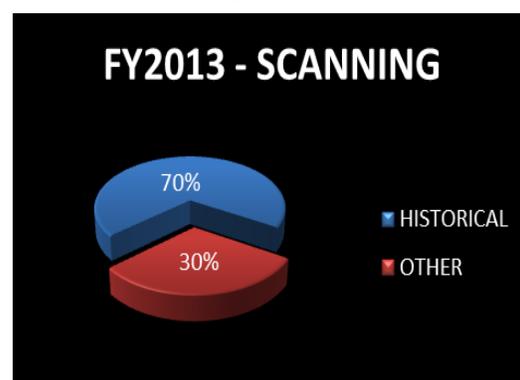
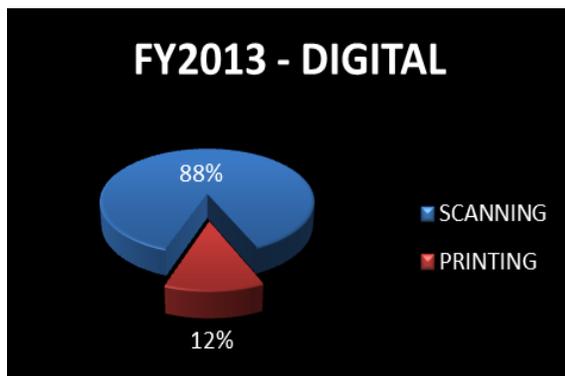
APFO's **Production Services Branch** is responsible for generating color and black and white aerial products both from digital image files and film original source materials for various customers, including the Farm Service Agency (FSA), the National Resources Conservation Service (NRCS), and the U.S. Forest Service (USFS), as well as many other federal/non-federal agencies and the general public. The Branch is also responsible for photographic chemical mixing and chemical quality control as well as the electronic and mechanical maintenance of all production related equipment.

We last reported to you that equipment purchased in FY2011, had been integrated into the Production Services workflow and this was allowing for a shift away from relying on the traditional analog wet lab photographic processes to support customer work orders. In fact, 21% more of this year's work was either in the form of a image scan or a digitally produced hardcopy print. This was a significant jump in the balance of our workflow which in turn, brought the overall level of digitally produced units up to 98% of all work produced during FY2013. Analog/traditional production is anticipated to discontinue by the end of FY2014 or once stock materials are depleted.



A comparison between FY2012 and FY2013 workflows.

Digging through the layers of the FY2013 data, one will observe the majority of the digital work was scanning at 88%. Scanning can be broke out into basic categories, Historical and Other. Historical scans comprised 70% of the scanning work and numbered at 49,253, about half of these were created in August and September.



A breakdown of FY2013 digital workflows.

Production Services



Jerry Roach, Production Services Branch, locates a roll of film in the film Vault. There are over 65,000 cans of film hosted here dating from 1955 through 2011, about 60 percent of the film is some form of black and white and the remaining film is color negative or transparency. A project has been piloted and is currently underway to create a “high-resolution” digital image from scanning the film, there will be somewhere around 11 million individual frames included in this scanning project and its data storage requirement will be over 6 petabytes...that is more than 6,000 terabytes. APFO photo credit.

Production Services Scanning Section has taken the lead on the Historical Film Scanning Project. Under guidance from the Director, a pilot project was approved to scan Utah historical film. Currently scanning work under the pilot is 21.3% complete, has created 51,702 digital images, required 823.4 work hours, and consumed over 17 terabytes of data storage. The complete undertaking involves over 1,400 cans of film from 45 years of coverage, constituting nearly 250,000 film exposures – both black and white and color – involving roughly 7,000 work hours and creating a geographic imagery data set estimated to be over 145 terabytes in storage. To add perspective, if approval is granted for continuing the Historical Film Scanning Project to include the remainder of the un-scanned film images hosted in APFO’s Film Vault then the aforementioned numbers will drastically increase. The number of film cans involved will be around 65,000 and individual film frames to be scanned will approach 11,000,000. The estimated work completion time should be less than 20 years, and will create a preserved and accessible geographic imagery data set that may exceed 6.5 petabytes...that is somewhere around 6,500 terabytes.

Employee Activities

True to his roots as a frontier farm boy, on May 15, 1862, President Abraham Lincoln signed legislation to create the U.S. Department of Agriculture. 2012 marked 150 years of service to the American Farmer and Rancher and APFO celebrated at the Bennett Federal Building in downtown Salt Lake City with other regional USDA organizations and employees.

"Leading Change Every Day in Every Way" isn't a phrase but more a commitment to ensuring a more positive cultural environment at APFO. A multi-disciplined approach to enhancing our most valuable resource, our workforce, saw several activities and initiatives.

APFO Equal Employment Opportunity programs provide employees with various opportunities to participate in events that promote workforce diversity. One such activity is the diversity education program "Lunch and Learn" where employees spend their lunch time learning about topics such as:

- **Disability Awareness**
- **Native American Heritage**
- **Black History**

Some of the Employee Observance Activities included:

The Road Home * Hispanic Heritage Month *** Sub for Santa**

Utah Pet Adoption * 26th Annual Utah Women's Conference *** Veteran's Day**

Breast Cancer Awareness Month * Women's History Month**

Asian/Pacific Heritage Month * Utah Food Bank**

Employee Activities



Non-Discrimination Statement

"The U.S. Department of Agriculture (USDA) prohibits discrimination in all of its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD)."

.....

To file a complaint of discrimination, write to USDA, Assistant Secretary for Civil Rights, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, S.W., Stop 9410, Washington, DC 20250-9410, or call toll-free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay). USDA is an equal opportunity provider and employer.

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This is the reporting page for the Notification and Federal Employee Antidiscrimination and Retaliation Act of 2002 (NO FEAR Act), Public Law 107-174.