

REQUEST FOR PROPOSAL

SOLICITATION NUMBER: USDA-NRCS-2-11

ISSUE DATE: December 17, 2010

USDA SMALL AREA CONTRACT AERIAL PHOTOGRAPHY SERVICES



U.S. DEPARTMENT OF AGRICULTURE
FARM SERVICE AGENCY
AERIAL PHOTOGRAPHY FIELD OFFICE

NOTICE TO OFFEROR

Any proposal submitted for this RFP must be identified with the following information labeled on the outside of the mailing package:

SOL.NO: USDA-NRCS-2-11
DUE DATE: 20-JAN-2011, 2:30 PM
RECEIVING OFFICE: CONTRACTING

Mail To: AERIAL PHOTOGRAPHY FIELD OFFICE
CONTRACTING OFFICER
2222 WEST 2300 SOUTH
SALT LAKE CITY UTAH 84119-2020

NOTICE TO PROSPECTIVE OFFERORS :

This RFP is for an Indefinite Delivery Indefinite Quantity (IDIQ), fixed-price contract. The contract covers the base year (2011) and one option year (2012).

Contract awards shall be made prior to award of any task orders. Task orders are the method by which project item areas are awarded. Task order proposals shall be submitted as a separate document from the contract RFP proposals.

Any proposal submitted in response to this solicitation must be presented in two parts, a pricing proposal and a technical proposal. See Section L for proposal preparation instructions.

This procurement for nationwide small area aerial photography is designed to promote economy and efficiency of image acquisition by providing offerors flexibility in the selection of their area of interest and quantity of sites proposed.

The complete text of any or all clauses referenced herein may be obtained by submitting a request, identifying this solicitation number, to the Contracting Officer, USDA, FSA, Aerial Photography Field Office, 2222 West 2300 South, Salt Lake City, Utah 84119-2020. Complete copies of the FAR in loose-leaf or CFR form may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402.



SOLICITATION, OFFER AND AWARD			1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING	PAGE OF PAGES
2. CONTRACT NUMBER		3. SOLICITATION NUMBER		4. TYPE OF SOLICITATION ☐ SEALED BID (IFB) ☐ NEGOTIATED (RFP)		5. DATE ISSUED
7. ISSUED BY		CODE		8. ADDRESS OFFER TO (If other than Item 7)		

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and _____ copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in _____ until _____ local time _____ (Hour) _____ (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-1. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE (NO COLLECT CALLS)		C. E-MAIL ADDRESS
		AREA CODE	NUMBER	EXT.

11. TABLE OF CONTENTS

(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
	A	SOLICITATION/CONTRACT FORM			I	CONTRACT CLAUSES	
	B	SUPPLIES OR SERVICES AND PRICES/COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
	C	DESCRIPTION/SPECS./WORK STATEMENT			J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
	F	DELIVERIES OR PERFORMANCE			L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
	G	CONTRACT ADMINISTRATION DATA			M	EVALUATION FACTORS FOR AWARD	
	H	SPECIAL CONTRACT REQUIREMENTS					

OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52.232-8)	10 CALENDAR DAYS (%)	20 CALENDAR DAYS (%)	30 CALENDAR DAYS (%)	CALENDAR DAYS (%)
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14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated):	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)

15B. TELEPHONE NUMBER	☐ 15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.	17. SIGNATURE	18. OFFER DATE
AREA CODE NUMBER EXT.			

AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: ☐ 10 U.S.C. 2304(c)) ☐ 41 U.S.C. 253(c) ()		23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)
24. ADMINISTERED BY (If other than Item 7)		25. PAYMENT WILL BE MADE BY
CODE		CODE
26. NAME OF CONTRACTING OFFICER (Type or print)		27. UNITED STATES OF AMERICA (Signature of Contracting Officer)
		28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

B-1 AERIAL PHOTOGRAPHY SERVICES

Furnish aerial photography services and related supplies in accordance with the requirements, specifications, terms, conditions, clauses, and provisions specified herein. This is an indefinite-delivery, indefinite-quantity contract, effective for the periods stated in the schedule.

1.1 Contract Pricing Proposal

SMALL AREA AERIAL PHOTOGRAPHY CONTRACT PRICING PROPOSAL			
<u>CONTRACT PRICING PROPOSAL INSTRUCTIONS:</u> In the spaces provided below, please insert the Total Quantity of sites, exposures, and scans, Average Unit Price, and Total Amount from your initial Base Year 2011 Task Order Pricing Proposal, Project 1 (SAC-TO-2-11-1) Page 2 . This price will be used in the contract pricing evaluation for contract award purposes only. Task Order awards will be based on individual Task Orders and determined after contract award. See Section L-3, <u>Task Order Procedures</u> , and Section M-2.2 <u>Price Evaluation</u> .			
TOTAL QUANTITY	UNIT	AVERAGE UNIT PRICE	TOTAL AMOUNT
	SITE EXP SCAN	\$	\$

1.2 Minimum Contract Guarantee

- (a) The guaranteed minimum amount for the contract shall be a total of \$2,500.00, as met through the issuance of one or more task orders within each contract performance period as defined below. See Section I-5, Order Limitations.
- (b) The quantities of services and supplies specified herein are **estimates only**. Awarded quantities shall be made by issuance of authorized task orders in accordance with specified ordering procedures. See Section I-2, Ordering, and Section L-3, Task Order Procedures.

1.3 Contract Performance Periods

- (a) The contract performance period for the Base Year (2011) for issuance of task orders for the acquisition and delivery of small area aerial photography is:

Base Year: **Date of Award through December 31, 2011.**

The contract performance period for Option Year 1 (2012) follows in the subsequent calendar year:

Option Year 1: **January 1, 2012 through December 31, 2012**

- (b) The Government reserves the right to exercise the option to extend the term of the contract for Option Year 1 based on the evaluation of contractor past performance on the previous task order(s) issued during the preceding contract performance period. (See Section F, Paragraph 5.4)

1.4 Task Order Ombudsman

The Director of USDA-FSA-Aerial Photography Field Office shall serve as the Task Order Ombudsman responsible for reviewing complaints from the contractors and ensuring that all of the contractors are afforded a fair opportunity to be considered for task orders issued under this contract. To contact the task order Ombudsman please phone (801) 844-2907, or mail to: Director, APFO, 2222 West 2300 South, Salt Lake City, UT 84119.

1.5 Confidentiality Statement

It is USDA policy that site locations of the National Resources Inventory (NRI) and other small area photography programs as specified in the individual Task Orders are “for official use only” and shall remain confidential. Site locations, represented in either hardcopy or digital form, are available exclusively for use by Government authorized personnel conducting resource inventory activities or other authorized use. Before release of exact site locations, offerors must agree to, by signature, the non-disclosure statements contained in the task order and be submitted with the task order proposal.

1.6 Intended Use of Photography

The primary use of the small area aerial photography is for photo interpretation, area and point delineation, and Geographic Information Systems (GIS) measurements in support of multiple natural resource management and inventory programs.

1.7 Non-Discrimination Statement

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its program 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, genetic information, political beliefs, 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, Director, Office of Civil Rights, 1400 Independence Avenue, SW., Washington, DC 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

B-2 PROJECT DESCRIPTIONS

2.1 National Resource Inventory (NRI) Description

USDA Natural Resources Conservation Service (NRCS) National Resources Inventory (NRI) imagery shall be used by NRCS for interpretative analysis and extraction of data on samples by means of Geographic Information Systems (GIS) measurements. The NRI sample sites are generally 160 acre square parcels measuring 0.5 mile on each side, centered on a single natural color positive aerial photograph. Some sample sites are larger, exceeding 500 acres, requiring an alternate scale and higher altitude to achieve the desired result. Within each sample, NRCS collects data on land cover and use, soil erosion, prime farmland, wetlands, and characteristics of other natural resources. Sample site identification and location data shall be provided by the Government as part of each task order. The nominal photographic scale is predominately 1:7,920 with oversize sites requiring scales of 1:12,000 and 1:15,840. The approximate photographic period is March through September. Historically, NRCS requires approximately 70,000 NRI Sites located nationwide to be acquired each year. This random sample set is derived from a larger population of approximately 300,000 NRI Sites.

2.2 Stewardship Lands Imagery (SLI) Description

USDA NRCS Stewardship Lands Imagery (SLI) is the umbrella name given to several NRCS land management initiatives. The most predominant of these is the Wetland Reserve Program (WRP), a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. The NRCS provides technical and financial support to help landowners with their wetland restoration efforts. The NRCS goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection. The WRP imagery shall be used to monitor restoration efforts on each property enrolled. The basic unit of description for a SLI site is called an Easement. Stewardship Lands Easements are generally larger than NRI Sites in size with some requiring flight line photography. However, some SLI easements are less than one (1) acre while others may be as large as 16,000 acres. The nominal photographic scale is predominately 1:7,920 while oversize and flight line sites may require a 1:12,000 scale. The approximate photographic period is March through September. NRCS may require 19,000 exposures covering over 12,000 SLI Easements located in various states nationwide to be acquired each year. Potential future annual quantities may increase to include over 20,000 SLI exposures (2.8 million acres).

2.3 Other Federal Government Small Area Aerial Photography Programs

Other government agency programs for small area or sample site aerial photography may utilize this contract to satisfy their program requirements. Potential annual requirements are currently unknown, but quantities may be substantial given past trends of successful programs such as the NRI program.

B-3 GENERAL CONTRACT REQUIREMENTS

3.1 Nominal Photographic Scales and/or Ground Sample Distances:

- (a) Standard Scales: 1:4,000 to 1:15,840. Predominately 1:7,920 scale.
- (b) Non-Standard Scales: 1:24,000 to 1:40,000, as required.
- (c) Ground Sample Distance (GSD): 3 cm to 30 cm, as required
- (d) Required scale(s) and/or ground sample distance(s) will be specified in the individual task order(s).

3.2 Approximate Photographic Periods:

- (a) State Photo Period. Multiple photographic acquisition periods are designed to capture specific crop types during their prime growing season. These photo periods generally follow state boundaries and typically range between the months of March through September.
- (b) First Photo Period. Early start dates may be established in various states which contain counties or areas that are not based on specific agricultural crops. These extended photo periods are designed to allow wider photo acquisition windows for non-agricultural terrain.
- (c) Required approximate photo acquisition periods will be specified in the individual task order(s).
- (d) See Section F-5, Performance of the Work.

3.3 Minimum Sun Angle: 30 Degrees, unless otherwise indicated in the individual task order(s).

3.4 Aerial Film Camera:

- (a) Lens Focal Length will be specified in the individual Task Order(s).
 - (1) Nominal Lens Focal Length: 6 inch (153mm);
 - (2) Other Lens Focal Length: 8¼ inch (210mm) and 12 inch (305mm).
- (b) Filter: Antivignetting and additional filters specified by individual task order(s).
- (c) See Attachment A, USDA Aerial Camera Specifications.

3.5 Aerial Film:

- (a) Aerial Film type will be specified in the individual task order(s).
- (b) See Section C-5, Aerial Film.

3.6 Aerial Film Titling:

- (a) Every exposure shall be titled in accordance with the format and instructions specified herein.
- (b) Agency Designators will be specified in individual task order(s).
- (c) Site Identification Codes will be provided upon task order award.
- (d) Automatic electronic titling may be permitted upon Contracting Officer's approval.
- (e) See Section C-6, Titling of Aerial Photography.

3.7 Aerial Film Scanning:

- (a) The general requirement for film scanning is 40 microns, approximately 600 dots per inch (DPI) using a photogrammetric quality scanner.
- (b) The scans are to be delivered as Tagged Image Format File(s) (.tif(s)) on media to be indicated in the individual task order(s). Refer to Section C-7, Aerial Photography Scanning.
- (c) Specific scanning requirements will be indicated in the individual task order(s).

3.8 Aerial Film Based Digital Orthoimagery:

- (a) The general requirement is for digital orthorectification of scanned aerial photography. If USDA supplies the control imagery, the resulting orthorectification shall match the control within an RMSE not to exceed 2.0. Otherwise, National Standards for Spatial Data Accuracy shall apply. Refer to Section C-8, Digital Orthorectification.
- (b) The output resolution of the imagery shall be approximately 600 DPI unless otherwise specified in the individual task order(s). The orthorectified imagery is to be delivered in Geo-referenced, Tagged Image Format Files (GeoTiff's; .tif) on media to be indicated in the individual task order(s).
- (c) Specific orthoimagery requirements will be indicated in the individual task order(s).

3.9 Digital Camera/Sensor:

- (a) Properties: The requirements for digital cameras will be provided in the individual task order(s). The general requirement is that the footprint of the sensor shall be able to cover the width of a standard 160 acre NRI site (.5 miles), with a nominal ¼ mile buffer, in a single flight line.
- (b) Digital Camera/Sensor Acquisition: Digital sensor acquisitions require the Contractor to comply with the technical requirements and specifications of this contract and task order, and Attachment B: General Direct Digital Camera Specification which defines the essential elements in securing high quality direct digital imagery. The digital sensor system shall be a tested, stable, geometrically calibrated system with appropriate documentation, suitable for use in precision photogrammetric applications.
- (c) Sample Imagery Requirements: The Contractor shall provide sample images from the digital camera proposed for use. The sample imagery must be at the same resolution and represent similar terrain for the project that the Contractor is proposing. The digital camera sample imagery shall meet the minimum characteristics stated in Attachment B: General Direct Digital Camera Specification.
- (d) Direct Digital Orthoimagery: The general requirement is for orthorectified imagery, seamlessly mosaicked as necessary, covering the specified area (including the standard ¼ mile buffer). Refer to Section C-8, Digital Orthorectification and Attachment C: USDA Direct Digital Small Area Orthoimagery Tile Specification. Specific direct digital orthoimagery requirements will be indicated in the individual task order(s).

4.0 Photographic Operations:

(a) Air Space Clearance:

- (1) The Contract Project Areas may contain controlled or restricted airspace. USDA will provide a letter describing the contract program to assist in gaining access to

- any controlled or restricted airspace.
- (2) It is the responsibility of the Contractor to obtain all approvals necessary to assure that specified altitudes are achieved.
- (3) See Section H-1, for instructions for Permits and Clearances.

(b) Terrain Conditions:

- (1) Photography must be secured when neither snow nor flooding obscures the ground.
- (2) See Section C-3, Photographic Conditions.

(c) Progress Reports:

- (1) A Progress Report is required for each day progress is made in acquiring project photography.
- (2) Progress Reports shall be transmitted by e-mail following each day of progress. E-mail addresses are indicated on the form (See Section J, Exhibit 1).
- (3) Progress reports shall be submitted in an ASCII Text format.
- (4) See Sections F-5.2 and G-4 for instructions and Section J, Exhibit 1 for sample.

PART I - THE SCHEDULE

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C-1 SCOPE OF CONTRACT

The general scope of this contract is to procure vertical, high resolution, natural color and/or color infrared aerial photography for management and inventories of natural resources and other uses by the United States Department of Agriculture (USDA). The aerial photography and/or digital imagery shall be used by USDA agencies for interpretative analysis and extraction of data by means of photo interpretation and Geographic Information Systems (GIS) technologies. The data collected includes land cover and use, soil erosion, prime farmland, forest resources, wetlands, and characteristics of other natural resources.

1.1 Introduction

The contractor is responsible for furnishing vertical, high resolution, aerial photography and related deliverables in accordance with the requirements, specifications, terms, and conditions specified herein.

(a) Technical Requirements and Specifications.

The technical requirements and specifications of this contract are described in Section C which defines the essential elements in securing high quality photography. Any deviation from the specifications stated herein may cause increased time and effort in using the imagery as intended.

(b) Delivery and Performance.

The delivery and performance requirements are described in Section F. All materials shall be shipped within the time limits and to the place of delivery specified herein. Performance of the contract shall be authorized and monitored by the Contracting Officer and/or the Contracting Officer's Representative.

(c) Quality Control.

Quality control shall be exercised by the Contractor continuously throughout the performance of the contract. Procedures shall be established to assure that all aerial photography and related materials are delivered in accordance with the delivery schedule and at the required level of accuracy and quality. The Contractor shall acquire immediate reflights of any photography where coverage or quality fails to meet minimum requirements of the contract specifications. USDA inspection and acceptance procedures are described in Section E.

(d) Confidentiality Agreement.

It is USDA policy that site locations of the National Resources Inventory (NRI) and other identified small area photography programs are “for official use only” and shall remain confidential. Site locations, represented in either hardcopy or digital form, are available exclusively for use by government authorized personnel conducting resource inventory activities or other authorized use. Before release of exact site locations,

offerors must agree to, by signature, the non-disclosure statements contained in the individual task orders and submitted with offer.

(e) References

The following documents referenced in this solicitation document are considered requirements and specifications under the resulting contract(s), as applicable to the Contractor's technical proposal:

- (1) Federal Geographic Data Committee (FGDC) Specification, FGDC-STD-001-1998 ("Content Standard for Digital Geospatial Metadata")
- (2) Code of Federal Regulation (CFR) Title 14 ("Federal Aviation Regulations")
- (3) GeoTIFF Revision 1.0 Specification, dated December 28, 2000 (Version 1.8.2)
- (4) TIFF Specification Revision 6 dated June 3, 1992 (Adobe Systems Inc.)

1.2 Location of Work

The Standard NRI Sites cover all fifty states, Puerto Rico, the U.S. Virgin Islands, and Pacific Trusts. Data is collected over approximately 300,000 randomly located NRI Sites. Each year a subset of approximately 70,000 NRI Sites will be inventoried. Other program sample sites or small areas may be found in any of the fifty states, Puerto Rico, the U.S. Virgin Islands, and Pacific Trusts. The location and number of small area sites to be photographed under this contract are described in the individual task orders.

1.3 Labor and Materials

The Contractor shall furnish all materials, equipment, transportation, superintendence, and labor as required herein. The Contractor shall execute and finish the aerial photographic services for the project specified and shall deliver to the USDA all materials called for in Section F-1, Materials to be Delivered.

1.4 Size of Sample Sites

Nationally, the small area sample site sizes range from less than one acre to more than 16,000 acres (25 square miles) depending on the specific program requirements. The predominant size of a sample site (NRI Site) is approximately 160 acres (1/4 square mile).

C-2 EQUIPMENT REQUIREMENTS

Any equipment (aircraft and cameras, in addition to those submitted at the time of the offer) proposed to be used by the Contractor must be approved for use by the Contracting Officer. If the aircraft and camera proposed for use is not owned by the Contractor, a written statement of availability from the owner of the equipment shall be furnished to the Contracting Officer. Refer to Attachment A, USDA Aerial Camera Specifications.

2.1 Aircraft

- (a) All aircraft used in the performance of the work under this contract shall be maintained and operated in accordance with all regulations required by the U.S.

Department of Transportation, Federal Aviation Administration (FAA). Aircraft operated in the acquisition of imagery under this contract shall be FAA certified to a service ceiling with operating load (crew, camera, film, oxygen, and other required equipment) of not less than the highest altitude specified in the individual task order.

- (b) When the flight plan and location of any item in the proposed coverage falls within positive control airspace, the aircraft must contain the appropriate equipment to operate in such positive-control areas within the purview of the Federal Aviation Regulation.
- (c) The design of the aircraft shall be such that when the camera is mounted with all its parts within the outer structure, an unobstructed field of view is obtained. The field of view shall be shielded from the exhaust gases, oil, effluence, and air turbulence. Glass, plastic, or other window material shall not be interposed between the camera or digital image system and the ground to be imaged unless authorized by the Contracting Officer.

2.2 Navigation System

The aircraft shall have an onboard, operational, and integrated Global Positioning System (GPS) receiver with a FAA certified antenna for navigation to sample site centroids and acquisition of aerial photography over the centroid. The GPS shall be able to receive real time differential correction signals where available.

2.3 Laboratory

The Contractor's laboratory shall be adequately equipped and staffed to facilitate the production of the specified photographic materials or the Contractor shall have access to such facilities.

C-3 PHOTOGRAPHIC CONDITIONS

Photography shall be acquired during conditions when well-defined, high detail images can be resolved. It shall be free from smoke, clouds, cloud shadows, and excessive haze. The ground shall be free from standing water (other than natural or man-made ponds and lakes), flood waters from streams which have overflowed their banks, and wet ground or snow which obscures field, soil, or crop lines.

Due to the overriding need to acquire quality imagery within the specified period, it may be necessary to acquire some images that are outside of the above requirements. Under the assumption that it may not be possible to acquire an image of the site within the required time frame because of ground conditions, weather or extensive ferry time to get back to the site, and an interpretable image can be acquired by deviation from the requirements; the Contractor is permitted to exercise judgment in acquiring images. USDA reserves the right to reject such imagery if it is deemed unusable for data collection.

3.1 Photographic Period

The official photographic acquisition periods are defined in individual task orders for each program or requirement. Generally, aerial photography acquisition is to be performed

during the agricultural growth periods when vegetation has adequate canopy and greatest contrast. The beginning and ending dates of the acquisition period will vary by individual task orders and by leaf-on vs. leaf-off requirements. Generally, the earliest **beginning date** is **March 1**, and the latest **ending date** is **September 30**. The Contracting Officer shall have the right to adjust the acquisition periods based on adverse weather, deviation of crop growth from normal planting and harvest dates, or other program requirements or factors.

3.2 Sun Angle Requirement

USDA desires that images be acquired only during the portion of the day when the sun angle exceeds the minimum of 30 degrees. However, to expedite acquisition within the photo periods, USDA may accept a sun angle of not less than 20 degrees, provided the image does not have excessive shadows that preclude interpretation and data collection. Exceptions to this requirement shall be noted in individual task order requirements.

3.3 Priorities for Acquiring Project Areas

The Contracting Officer may direct by written order certain areas or sites to be photographed in a priority order, weather and ground conditions permitting. All reasonable effort will be directed to providing a schedule of operations favorable to both the Government and Contractor.

C-4 FLIGHT PLAN REQUIREMENTS

The Contractor shall obtain vertical, high resolution, natural color, color infrared or 4-band aerial photography in accordance with the following technical requirements.

4.1 Project Area(s) To Be Photographed

Each small area or site exposure station centroid(s) shall be identified by state, county, national forest, or region/area, unique site number, latitude/longitude coordinates, acreage, ground elevation, and acquisition period. USDA will furnish the above in a digital file, and if requested, as a coverage in decimal degrees compatible with Arc Map. The site locations shall be indicated by latitude and longitude coordinate system of the North American Datum of 1983. Coordinates shall be expressed in decimal degrees with five (5) decimal places of precision. (Example: latitude 35.75502, longitude -102.37502).

- (a) Coverage Requirements. Complete physical or stereoscopic photographic coverage of the site or small area shall be obtained by the Contractor. The image shall be acquired directly over the specified latitude/longitude coordinate of the exposure station centroid. In addition to complete coverage of the site, USDA requires coverage over a buffer zone beyond the actual site boundary. The minimum buffer unless otherwise specified in the individual task order(s) shall be 1,320 feet, (402 meters) or (1/4 mile).
- (b) Site/Area Coverage. USDA requires most sites acquired with film to be on a single frame regardless of the size of the site. Contractor must adjust flight altitudes from the stated 1:7,920 nominal scale, to flight altitudes achieving a 1:12,000, 1:15,840, or smaller scale to ensure complete coverage of the larger sample sites or small area sites on one frame of film. Areas requiring blocked, overlapped aerial photography shall be

specified in the individual task order(s). Requirements for sites or small areas acquired with direct digital imagery shall be indicated in the respective task order(s).

- (c) Flight Direction. All flights will generally be oriented in either a North-South or East-West direction, **however**, the required project titling shall be at the north or most northerly edge of the image.
- (d) USDA will furnish flight line data derived from commercially available flight planning software package(s) for areas requiring blocked, overlapped aerial film based photography. USDA will furnish shape files and/or centroid locations, as needed, for projects requiring direct digital photography and it shall be the Contractor's responsibility to provide such flight planning as is necessary to obtain the required coverage (including buffer) for each of the sites or areas.

4.2 Image Scale and Flight Altitude for Film Based Photography

The nominal photographic scale for a Standard NRI Site, which constitutes the majority of the base year 2011 requirements, is 1:7,920, with the nominal flight altitude above mean ground elevation being 1,207 meters (3,960 feet) with a 6" focal length lens. For other nominal scales and flight altitudes, see table below.

SCALE	FLIGHT ALTITUDES		
	6" Lens	8 ¼" Lens	12" lens
1:4,000	N/A	N/A	1,219m (4,000')
1:7,920	1,207m (3,960')	1,661m (5,445')	N/A
1:12,000	1,829m (6,000')	2,515m (8,250')	3,658m (12,000')
1:15,840	2,414m (7,920')	3,319m (10,890')	N/A
1:24,000	3,658m (12,000')	N/A	N/A
1:40,000	6,096m (20,000')	N/A	N/A

4.3 Deviation From Specified Flight Altitudes for Film Based Photography

Deviation from the specified flight altitude shall not exceed 2% low or 3% high. For deviation from specified altitudes for nominal scales, see table below.

SCALE	DEVIATION FROM SPECIFIED FLIGHT ALTITUDES	
	2% Low	3% High
1:4,000	24 meters (80 feet)	37 meters (120 feet)
1:7,920	24 meters (80 feet)	37 meters (120 feet)
1:12,000	37 meters (120 feet)	55 meters (180 feet)
1:15,840	48 meters (157 feet)	73 meters (240 feet)
1:24,000	73 meters (240 feet)	110 meters (361 feet)
1:40,000	120 meters (394 feet)	181 meters (594 feet)

This chart uses a six (6) inch lens for all but the 1:4,000 Scale, which uses a 12 inch lens as a standard.

4.4 Direct Digital Imagery

Flight Altitudes are determined by ground sample distance (GSD) requirements and are related to sensor optics and footprint size. The GSD for any project will be identified in the individual task order. It shall be the contractor's requirement to determine flight altitudes based on his knowledge of the sensor assigned to the project.

4.5 Horizontal Deviation

Deviation from the specified site exposure station centroid in excess of six (6) percent of a full frame may be cause for rejection of the site.

4.6 Crab

Any photograph crabbed in excess of five degrees (5°) as measured against a North-South orientation, may be cause for rejection.

4.7 Tilt

Exposure made with the optical axis of the camera in a vertical position is desired. Tilt (departure from the vertical) of exposure station exceeding four degrees (4°) may be cause for rejection.

C-5 AERIAL FILM

All aerial film provided for any individual task order shall be from one film type and manufacturer and be purchased by the Contractor. Extreme care shall be exercised to insure proper exposure and processing of the film to minimize vignetting due to differential exposure. This differential shall not exceed that which would result from a basic ¼ stop difference in exposure. All pertinent exposure information shall be supplied to the processing laboratory. The film shall be processed as soon as possible after exposure to avoid undesirable changes in the latent image.

5.1 Salient Film Characteristics

Only unexpired, fine grained, polyester base film of the type specified in the individual task order(s) shall be used. The film base shall have a nominal thickness of 4 mils and be 24.1cm (9.5 inches) wide. Natural color and black and white panchromatic emulsions shall be sensitive to the entire visible spectrum plus an extended red sensitivity to approximately 720 through 750 nanometers. Color infrared and black and white infrared emulsions shall be sensitive to the entire visible spectrum plus an extended red sensitivity to 900 nanometers.

5.2 Film Densities – Natural Color Positive Films

The natural color positive film will have a diffuse rms granularity value of 13 or lower (read at a net green diffuse density of 1.0 with a 48-micron aperture). Color emulsions shall be balanced for daylight exposure and the spectral sensitivity will cover the entire visible spectrum to 700 nanometers or greater.

5.3 Film Densities – Natural Color Infrared Positive Films

The color infrared positive film will have a diffuse rms granularity value of 23 or lower (read at a net diffuse density of 1.0 with a 48-micron aperture). Color infrared emulsions will be sensitive to ultraviolet, visible, and infrared radiation to 900 nanometers or greater.

5.4 Film Densities – Black and White Film

The negative densities for panchromatic and infrared film shall be as follows:

Base plus fog density shall not exceed 0.20 units as measured between and at the edges of the negative frame.

The minimum usable density (D-min) as measured on the original aerial negatives shall be no less than 0.30 units and no greater than 0.60 units after deducting the base plus fog density. The maximum usable density (D-max) shall be no more than 1.60 units after deducting base plus fog density.

The average density range aim point should be 1.0. The minimum density range should be no less than 0.60, and maximum density range should be no more than 1.30.

5.5 Image Quality for Film

- (a) All film shall be properly exposed and processed according to manufacturer's specifications. Modified or non-standard processing is not permitted on this contract without prior approval from the Contracting Officer. The film shall be processed in a continuous roller transport processor to achieve consistent and uniform development throughout the roll.
- (b) The color film positives shall be of such quality to produce sharp, natural color or color infrared images that provide maximum image detail. All film imagery, positive or negative, shall be inspected and evaluated according to established industry standards for general film quality and proper exposure and processing of film.
- (c) When required by the Contracting Officer to establish contract standards for color rendition, the Contractor shall supply representative samples of his work for evaluation. If approved, these shall be used as criteria for acceptance or rejection of the contract photographs.

5.6 Physical Properties for Film

- (a) All aerial film shall be free of chemicals, stains, tears, scratches, abrasions, watermarks, finger marks, lint, dirt, and other physical defects. The imagery shall be clear and sharp in detail and uniform density. It shall be free from light streaks, static marks, and other defects that would interfere with the intended purpose. Any notations or marks placed on the film or on the sleeve for titling or editing purposes shall be removed prior to shipment to APFO.
- (b) All film shall be thoroughly fixed and washed to insure freedom from chemicals and shall be of archival quality.

- (c) Film found to contain an excess of residual chemicals, by testing in accordance with manufacturer's procedures, may be rejected or returned to the Contractor for refixing and rewashing.

C-6 TITLING OF AERIAL FILM BASED PHOTOGRAPHY

6.1 Required Titling

Each exposure shall be clearly titled on the northern edge of the film in accordance with the following format example sketch and required project data:

+	13:26	AZ	04001	090901B	+	8	USDA-NRCS	06-12-11	+
---	-------	----	-------	---------	---	---	-----------	----------	---

Local Time: The local time of the exposure, expressed in 24 hour format, using HH:MM for the hour and minute of the exposure.

State Acronym: The two-letter acronym representing the state designation.

State and County FIPS or Forest Code: Number identifying the state and county, or National Forest in accordance with Federal Information Process Standards (FIPS), as specified in individual task orders.

Site Identification Number: The unique site or exposure identification number specified in the individual task order.

Scale: Nominal photographic scale represented by one or two digits to the nearest thousand (8 = 1:7,920, 12 = 1:12,000).

Agency Designator: The acronym of the Government agency the image is being acquired for and used by.

Date: Month-Day-Year in standard numeric notation (MM-DD-YY).

6.2 Type and Size of Characters and Application

The characters used in titling film shall be standard block lettering 6.35 mm (1/4 inch) high. They shall be sharp, legible, and uniformly applied with non-flaking black ink. The titling shall be placed on the non-emulsion side of the film and may be applied by use of an ink drawing pen or stamp.

6.3 Location of Titling Characters

Identifying data shall be placed in a line along the northerly edge of the image. Titling shall be positioned so that the characters are 2.5 mm (1/10 inch) from the image edge and no closer than 2.5mm (1/10 inch) to the corner fiducials.

6.4 Automatic Titling Option

The Government may approve the use of automatic labeling/titling systems as a replacement of the standard ink titling. Contractors are required to submit color positive film samples of “auto-labeling” with similar data indicated above including any additional data such as symbol indicating north and latitude and longitude coordinates. The Contracting Officer shall evaluate the proposed titling and notify the contractor of decision to accept or reject.

6.5 Alternate or Additional Titling Requirements

The Government reserves the right to change, alter, or modify the above required titling to include agency or program specific information on the film titling. Individual task orders will clearly specify the titling required for any given program or task order.

C-7 AERIAL PHOTOGRAPHY SCANNING

7.1 Image Scanning Requirements for Film Based Photography

All individual aerial photographic images shall be scanned after the film is titled and before being cut and individually sleeved where cutting and sleeving is part of the task order requirements. The scan shall include the film image from edge to edge of the film and include the data strip and all fiducial marks associated with the image. The scans shall be clear and sharp in detail with uniform density, and free from dirt and other defects in the digital imagery in accordance with the following requirements:

- (a) Resolution. Aerial photography shall be scanned such that the final product results in a 600 dots per inch (40 micron) resolution or the resolution specified in the individual task order.
- (b) Accuracy. The geometric accuracy of the scan shall be such that a Root Mean Square Error (RMSE) of 2 or less results when registering the calibrated fiducial marks to the scanned image.
- (c) Scan Orientation. The digital scan of the aerial film exposure shall be oriented such that the north-most edge is at the top position of the computer screen when viewed with standard computer software, regardless of North-South or East-West oriented flights.
- (d) Histogram. The histogram of scanned images must represent all the pixels with the digital image without clipping highlight or shadow detail from the image.
- (e) Color Requirements. Color balance is defined as balancing the color between the three primary colors and their complimentary secondary color. Red and cyan must be balanced. Green and magenta must be balanced. Blue and yellow must be balanced. Color saturation is achieved so that minimum colors do not look like a grayscale image and the maximum colors do not bleed into another area of the image. The scanned images shall capture red, green, and blue channels for both natural color and color infrared at 8-bit per channel.

(f) File Format. Tagged Image File Format (TIFF). Scanned files shall be submitted in accordance with the Baseline TIFF 6.0 file format as defined in the TIFF 6.0 Specifications. All baseline TIFF 6.0 files shall store data as uncompressed RGB full-color images as defined in the specification using the “little-endian” byte order and shall only contain one image file directory (IFD). All TIFF files submitted shall be readable by older applications that assume TIFF 5.0 or an earlier version of the specification. TIFFs that use designated "Extended TIFF 6.0 file" features shall not be acceptable. Features designated as "not recommended for general data interchange" are considered extensions to the Baseline TIFF 6.0 specification, and will not be acceptable. This includes TIFFs that use one of the major new extensions such as "tiled images". In the TIFF 6.0 specification, the term "tag" refers only to the identifying number, the term "field" refers to the entire field, including the value. Tags that are defined by the TIFF specification are called public tags and shall not be modified outside of the parameters given in the latest TIFF specification. Tags numbered 32768 or higher, sometimes called private tags, are reserved and shall not be acceptable. Enumeration constants numbered 32768 or higher are reserved and shall not be acceptable. Do not choose your own tag numbers, use only those specified in the Baseline TIFF 6.0 Specification for RGB full-color. Tags numbered in the "reusable" 65000-65535 range shall not be acceptable.

(g) Media Requirements. Refer to Section D-1(d) Media Requirements.

7.2 Scan File Naming Convention

The scan file naming convention shall be specified in individual Task Order Award(s) where the Scanning Option is exercised. The naming convention will generally follow the “Standard: Geospatial Datasets File Naming” found at:

<<http://www.la.nrcs.usda.gov/technical/geotech/SPG-GeospatialDatasetFileNaming.pdf>>. A directory shall be created on the specified media named “<stnnn>” where <stnnn> is the Federal Information Processing Standards (FIPS) code for the state and county containing the images. State codes will be expressed as two-letter US Postal Office abbreviations (md, az, tx, etc.). County codes will be expressed as three-digit FIPS number (001, 015, etc.). Files shall be named “scan_<identifier>_<yyyy><sequence number>”. The identifier shall be the five-digit FIPS code and sample identification number separated by an underscore. <yyyy> is the year the photo was acquired. <sequence number> may be added if multiple photos were taken (i.e. 1, 2, 3) to give each photo a unique name. <.tif> is the file extension.

Example: Directory name: az001
File names: scan_04001_090901b_2011.tif
scan_04001_110701r_2011.tif
scan_04001_140501r_2011.tif

7.3 Scan Data File Description

Contractor shall furnish a Scan Data File in ASCII comma delimited text format containing the following data. All data elements shall be included and shall be provided in the specified order. The “Number of Characters in Field” represents the MAXIMUM number of characters for any element.

Description	Number of Characters in Field
Scan File Name	30
Scan resolution in microns	4
Samples = Columns	4
Lines = Rows	4
Camera Number (10 characters max)	10
Lens Number (10 characters max)	10
Camera Calibration Date (ddmmyyyy)	8
Exposure Date (ddmmyyyy)	8
Time of Exposure in 24 hour format (hhmm)	4
Scanner Manufacturer and Model Number: "Free text with quotations" (50 characters max)	50

Example (for each line in the text file):

scan_05109_020291r_2009.tif,40,6400,5900,1234567890,1234567890,14112009,15062011,1326,"LHS XXXXX Photogrammetric Scanner"

The **text file** shall use the following naming convention:

scan_data_project_(item number).txt (i.e. scan_data_project1_item1.txt)

C-8 DIGITAL ORTHORECTIFICATION

8.1 General Requirements

The Contractor shall furnish direct digital and/or film based orthorectification services for the project item areas in accordance with the requirements and specifications specified in the individual task order(s).

8.2 Digital Orthoimagery

The Contractor shall provide digital orthorectified imagery at the scale or Ground Sample Distance (GSD) specified in the individual task order(s). The imagery shall be orthorectified, and projected in the 1983 North American Datum (NAD83) and 1988 North American Vertical Datum (NAVD88), using the corresponding native Universal Transverse Mercator (UTM) zone. The orthophotos shall be mosaicked as indicated in the individual task order(s) if the area of interest covers more than one image. Mosaics shall be tone balanced for a consistent and uniform image quality appearance that eliminates any checkerboard effect. The resulting mosaics must maintain the original color and appearance of the images that comprise the mosaic.

8.3 Metadata Template

- (a) Metadata File. The Contractor will be furnished upon award one (1) data text file (.txt) containing a Federal Geographic Data Committee (FGDC) compliant metadata template to be used when creating the metadata as required below. The Contractor

shall create a FGDC compliant, per the FGDC-STD-001-1998 specification, metadata file using the Government provided template for each orthophoto generated. The metadata must parse cleanly through the USGS metadata parser “mp” version 2.8.10 without any errors. The metadata file shall have the same file name as the orthophoto but with a “.met” extension.

- (b) Auxiliary File. The Contractor may be required to provide an ESRI Projection compatible “aux” file for each orthophoto where compatibility is required for earlier versions of GIS software. The file shall use the same naming convention as other files in the data set but with an “.aux” extension. This requirement will be specified in the individual task order(s).

8.4 Accuracy Requirements

This requirement will be specified in the individual task order(s) and will generally depend on the GSD specified in the task order.

8.5 Orthophoto File Naming

All USDA files shall be named according to the “Geospatial Datasets File Naming Standard”. A directory shall be created on the specified media named “<stnnn>” where <stnnn> is the Federal Information Processing Standards (FIPS) code for the state and county containing the images. State codes will be expressed as two-letter US Postal Office abbreviations (md, az, tx, etc.). County codes will be expressed as three-digit FIPS number (001, 015, etc.). Files shall be named “highres_<identifier>_<yyyy><sequence number>”. The identifier shall be the five-digit FIPS code and sample identification number separated by an underscore. <yyyy> is the year the photo was acquired. <sequence number> may be added if multiple photographs were taken (i.e. 1, 2, 3) to give each photo a unique name. <.tif> is the file extension.

Example: Directory name: al001
File names: highres_01001_010101b_2011.tif
highres_01001_020202b_2011.tif
highres_01001_020302a_2011_1.tif
highres_01001_020302a_2011_2.tif
highres_01001_030303b_2011.tif

8.6 Media Requirements

Refer to Section D-1(d) Media Requirements.

9.0 ADDITIONAL REQUIREMENTS

Additional requirements related to imagery products and acquisition may include, but are not limited to, georeferenced uncompressed digital image files; stereo block files; Airborne Global Positioning System (ABGPS) data; and Inertial Measurement Unit (IMU) data. Additional requirements will be specified in the individual task order(s).

PART I - THE SCHEDULE

SECTION D - PACKAGING AND MARKING

D-1 PREPARATION OF MATERIALS FOR SHIPMENT

- (a) Aerial Film Rolls and Positive Film Transparencies. Unless otherwise specified in the individual Task Order, each original color positive film transparency shall be submitted cut and individually sleeved. See Paragraph (b) Film Sleeves, below. Each exposure shall be cut from the original film roll with the data strip intact and unimpaired. Sites shall be assembled according to the groupings identified in the individual task order requirements. All transparencies shall be assembled by either county group or area in the same site numeric order as listed in the reference data. The assembled material shall be placed in a clear plastic bag with the county (or group) name identified on the outside.
- (b) Film Sleeves. Every film transparency shall be protected and submitted in clear, sturdy archival quality polypropylene film sleeves in accordance with the following requirements:
 - (1) Aerial film sleeve nominal dimensions: 25.4 cm (10 inches) by 24.1 cm (9.5 inches); long side open; 3.0 mil thickness.
 - (2) Brand names for aerial sleeve: Picture Pocket ® Corporation, FilmGuard Corporation, or equivalent.
 - (3) Film sleeves must have a fold-over lip seal located on the short side (9.5”) of the sleeve.
 - (4) Original aerial film and film sleeves shall be free of any marks or labels which would obstruct any part of the film transparency.
- (c) Digital Scan File(s) and Metadata (Text) Files. All text files shall be provided on the indicated media in their own clearly labeled directory(s).
- (d) Media Requirements.
 - (1) Hard Drive Disks. All digital images, whether scans/orthos from film or the direct digital ortho imagery, shall be delivered on industry standard Serial ATA (Version I or II) Hard Drive Disks (HDs) in either 3.5 inch or 2.5 inch form factors. The maximum allowable capacity shall be 500 Gigabytes. These shall be unenclosed (bare) drives packaged in anti-static sleeves, and shipped in containers sufficient to prevent damage to the drives. The files shall not be write-protected nor require an ‘administrator’ to access them. Each hard drive shall be labeled as to content. See Exhibit 3 for labeling requirements.
 - (2) Digital Versatile Disks (DVDs). All digital versatile disks (DVDs) shall be delivered on archival media, 4.7 Gigabytes (GB) (120-minute) per disk DVD+/-R, ISO 9660 Mode 1 format using level 2 interchange. The Contractor must insure that each and every copy session has been properly closed. No multi-session

enabled DVDs shall be acceptable. The DVD media shall have a label attached identifying the digital contents of the DVD in accordance with Section J, Exhibit 3, Figures 1 and 2 (thermal printed DVDs are acceptable). In addition to the packaging requirements in D-2, all DVD media shall be packaged in standard single DVD jewel cases (5-5/8" x 4-15/16" x 3/8") with a clear front cover. The DVD label should be readable without opening the case or removing the DVD from the case. **"Slim" or other non-standard sized jewel cases shall not be accepted.**

D-2 PACKAGING FOR SHIPMENT

- (a) All material shall be packed for shipment in such a manner that will insure acceptance by common carrier and safe delivery at destination. Containers and closures shall comply with the Interstate Commerce Commission regulations, Uniform Freight Classification rules, or regulations of other carriers as applicable to the mode of transportation. Damaged materials will be replaced by the Contractor at no cost to the Government.
- (b) A Government furnished packing slip form shall accompany each shipment. See Section J, Exhibit 2, Packing Slip.

D-3 SHIPPING RECEIPTS

Receipts from common carriers for shipment of materials shall be retained by the Contractor and be made available to the Contracting Officer upon request.

D-4 SHIPPING CONTAINER MARKINGS

All shipping containers shall be clearly marked with delivery address. See Section F-2.

PART I -THE SCHEDULE

SECTION E - INSPECTION AND ACCEPTANCE

E-1 INSPECTION AND ACCEPTANCE (FEB 1988) (AGAR 452.246-70)

- (a) The Contracting Officer or the Contracting Officer's duly authorized representative will inspect and accept the supplies and/or services to be provided under this contract.
- (b) Inspection and acceptance will be performed at:

Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, Utah 84119-2020

E-2 INSPECTION PROCEDURE

- (a) All materials specified in Section F-1 will be inspected to determine conformance to all contract requirements and specifications. Inspections will be performed at the APFO laboratory in Salt Lake City, Utah. (Refer to FAR 52.246-2, Inspection of Supplies-Fixed Price and FAR 52.246-4, Inspection of Services-Fixed Price.)
- (b) If inspection of materials reveals marginal deficiencies, a review by the user agency may be performed to determine if deficiencies may cause increased time and effort in using the photography as intended.
- (c) If any of the services do not conform to the contract requirements, the Government may require the Contractor to perform the services again in conformity with contract requirements, at no increase in contract amount. When the defects in services cannot be corrected by re-performance, the Government may:
 - (1) Require the Contractor to take necessary action to ensure that future performance conforms to contract requirements and
 - (2) Reduce the contract price to reflect the reduced value of services performed.

E-3 INSPECTION SCHEDULE

- (a) The Government will make every effort to inspect all material specified within 30 calendar days after they are received at the point designated. Should the inspection procedure be delayed longer than 30 days, the Contractor will be notified of the reason(s) for delay and given the estimated completion date.
- (b) Contract materials will be inspected in the order of their receipt, unless otherwise prioritized by the Government. Inspection of project areas where the photographic season is open will be given priority over projects for which the season has closed.

- (c) The Contractor will be notified in writing whether the materials are satisfactory and what areas, if any, shall be re-photographed and what materials, if any, shall be remade because of non-conformity with contract requirements.

E-4 PRELIMINARY INSPECTION

- (a) USDA reserves the right to call in photographic materials for incomplete project areas at any time during the contract period as deemed necessary, to determine extent of acceptability.
- (b) The APFO will perform a preliminary inspection of materials that have been determined questionable from the contractor's inspection, within 2 days of receipt, provided that:
 - (1) The photographic season or any approved extension has not expired.
 - (2) In the event of rejected material which requires reflights, the contractor shall undertake such reflights prior to the end of the photographic season or approved extension.

E-5 ACCEPTANCE

- (a) Final acceptance will be made after inspection by the Government of all required materials delivered at the specified destination. The delivery date is specified under Section F-3. The acceptance date shall be the date of the letter by the Government to the contractor stating all materials are acceptable and invoice may be submitted.
- (b) Partial acceptance on any incomplete county will be made only after the photographic season has ended and all materials required for the partial county have been delivered, inspected, and accepted by the Government. The acceptance date shall be the date of the letter by the Government to the contractor identifying the amount of partial acceptance and referring the contractor to the Contracting Officer.

E-6 CLAUSES INCORPORATED BY REFERENCE (FEB 1998) (FAR 52.252-2)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this address: www.arnet.gov/far.

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES:

- 52.246-02 Inspection of Supplies - Fixed Price (AUG 1996)
- 52.246-04 Inspection of Services - Fixed Price (AUG 1996)
- 52.246-16 Responsibility for Supplies (APR 1984)

PART I - THE SCHEDULE

SECTION F - DELIVERIES OR PERFORMANCE

F-1 MATERIALS TO BE DELIVERED

The materials as specified in individual task orders shall be delivered as required herein. All materials shall conform to requirements stated herein and become the property of the USDA.

F-2 PLACE OF DELIVERY

The materials to be furnished hereunder shall be delivered, all transportation charges paid by the Contractor, and in accordance with FAR Clause 52.247-35, F.o.b. Destination, Within Consignee's Premises, to:

USDA, FSA, Aerial Photography Field Office
Contracting Section
2222 West 2300 South
Salt Lake City, Utah 84119-2020

Offers submitted on a basis other than F.o.b. Destination within consignee's premises will be deemed unacceptable or rejected as non-responsive.

Packing slip forms for individual states will be furnished to the Contractor upon award. A form must be completed and included with every shipment of goods.

F.O.B. DESTINATION, WITHIN CONSIGNEE'S PREMISES (APR 1984) (FAR 52.247-35)

- (a) The term "f.o.b. destination, within consignee's premises," as used in this clause, means free of expense to the Government delivered and laid down within the doors of the consignee's premises, including delivery to specific rooms within a building if so specified.
- (b) The Contractor shall -
 - (1) (i) Pack and mark the shipment to comply with contract specifications; or
(ii) In the absence of specifications, prepare the shipment in conformance with carrier requirements;
 - (2) Prepare and distribute commercial bills of lading;
 - (3) Deliver the shipment in good order and condition to the point of delivery specified in the contract;
 - (4) Be responsible for any loss of and/or damage to the goods occurring before receipt of the shipment by the consignee at the delivery point specified in the contract;
 - (5) Furnish a delivery schedule and designate the mode of delivering carrier; and
 - (6) Pay and bear all charges to the specified point of delivery.

F-3 SCHEDULE FOR DELIVERY OF MATERIALS

All photographic materials required in this contract shall be shipped within time limits specified in the task order requirements. Failure to ship within the period stated will be considered as failure by the Contractor to prosecute the work as to ensure completion and will render the contract subject to default. Date of shipment will be shown by postmark or carrier receipt.

3.1 Original Materials - Delivery Schedule

Unless otherwise specified in the task order, all delivery materials required for all original and USDA ordered reflight aerial photography for a project shall be shipped as soon as completed but not later than 15 calendar days after the photographic season has ended, or any season extension thereof. Delivery schedules for other contract materials such as scans or orthoimagery shall be specified in the task order. Prompt delivery of all materials will better assure the timely inspection and prompt payment for accepted materials.

3.2 Remake Materials - Delivery Schedule

Unless otherwise specified in the task order, all remake materials requested by USDA shall be shipped as soon as possible after correction is made, but no later than 15 days after receipt in the Contractor's facility of the materials or data required to make the corrections. Signed delivery receipts will be required to verify date of receipt of such data or materials by the Contractor.

F-4 CONTRACTOR'S RESPONSIBILITIES

The Contractor shall: furnish all materials, superintendence, labor, transportations, and equipment; execute and complete the aerial photography of the area(s) specified and deliver to the USDA the materials called for; execute all work expeditiously, to the satisfaction of the Contracting Officer or authorized Contracting Officer's Representative(s).

F-5 PERFORMANCE OF THE WORK

The Contracting Officer will authorize and direct the photographic season to begin or end anytime within 30 days before or after the approximate photographic dates given in the individual task order(s), depending upon the weather, ground, foliage, and sun angle conditions required for the project item or area. No photography shall be undertaken before the Notice to Proceed is issued or after the final date of the photographic season (or its extension) has occurred. Weather and ground conditions for all project locations will be monitored daily to determine Contractor compliance to performance requirements.

5.1 Notice To Proceed

The Notice to Proceed will be given upon Task Order Award, based on established start dates for each Project Area. Failure of the Contractor to proceed with flights on an item within 10 calendar days after a "Notice to Proceed" is given may be considered as evidence of failure to prosecute the work so as to ensure its timely completion. As evidence of performance, Progress Reports shall be submitted.

5.2 Progress Reports

- (a) Progress Reports indicating the progress made in acquiring project aerial photography shall be prepared and E-mailed in accordance with instructions on the report form. Reports shall be submitted only for days performance was accomplished. Reports shall contain a listing of sites or areas flown that date and shall be submitted in ASCII Text format.
- (b) Each progress report shall be sent not later than the day following performance to the E-mail address indicated on the form. In the event that day is a holiday or non-business day, the report shall be sent on the next business day. One copy of the report shall be sent to each person listed on the progress report form.
- (c) Separate reports are required from each photographic crew assigned to a project item. Such "next day" reporting shall start when the Contractor receives the Notice to Proceed, and continue until the item is completed or the photo season and any extension(s) thereof end.
- (d) If it is determined that a season extension or additional flying is required, or reflights are ordered by USDA, reports covering such performance periods shall be submitted.

5.3 Photographic Season Extension

- (a) The Government reserves the right to extend the photographic season of this contract beyond the approximate photographic period indicated in the individual task order(s). A lower minimum sun angle requirement may be necessary to allow the season extension.
- (b) The Government may extend the season of this contract, at no increase in price, by written notice to the Contractor at any time prior to the end of the photographic season. (Refer to FAR 52.217-08 "Option to Extend Services".)

5.4 Option to Extend the Term of the Contract (MAR 2000) (FAR 52.217-09)

- (a) The Government may extend the term of this contract by written notice to the Contractor within **90** days of the end of the base and any option period; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least **30** days before the contract expires. The preliminary notice does not commit the Government to an extension.
- (b) If the Government exercises this option, the extended contract shall be considered to include this option clause.
- (c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed **1 year 10 months**.

F-6 CLAUSES INCORPORATED BY REFERENCE (FEB 1998) (FAR 52.252-02)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text

available. Also, the full text of a clause may be accessed electronically at this address:
www.arnet.gov/far.

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES:

52.242-15 Stop Work Order (AUG 1989)

52.242-17 Government Delay of Work (APR 1984)

PART I - THE SCHEDULE

SECTION G - CONTRACT ADMINISTRATION DATA

G-1 CONTRACTING OFFICE

The Aerial Photography Field Office (APFO) of the United States Department of Agriculture (USDA), Farm Service Agency (FSA), is responsible for the solicitation, award, and administration of this contract.

Communications shall be directed to:

Contracting Officer, USDA - FSA
Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, Utah 84119-2020

Telephone (801) 844-2915
Facsimile (801) 956-3641
E-mail: apfo.contracts@slc.usda.gov

Written correspondence shall reference the contract number and/or solicitation number plus project item number.

G-2 CONTRACTING OFFICER'S REPRESENTATIVE

Each awarded contract item may have a Contracting Officer's Representative (COR) or a Contracting Officer's Technical Representative (COTR). Such designations will be made either at the time of award or by appointment letter.

G-3 CONTRACT INTERPRETATION

Technical assistance regarding interpretation of the specifications and/or terms of the contract will be provided by the Contracting Officer or the COR. Only the Contracting Officer has authority to award, modify, and terminate contracts. The Contractor is encouraged to visit the USDA-APFO facilities and discuss the contract and inspection procedures.

3.1 Discrepancies

Any discrepancy in the schedule or official flight maps shall be immediately called to the attention of the Contracting Officer for decision. A discrepancy shall not be adjusted without approval of the Contracting Officer, except at the Contractor's own risk and expense.

G-4 PROGRESS REPORTS

Progress Reports are required for this contract and report forms will be furnished by the Contracting Officer. If completion instructions contained in the report (see Section J, Exhibit 1) are not adequate, contact the Contracting Officer for clarification. It is essential that all items of information requested on the report be provided. Progress Reports shall be prepared and submitted for performance periods during the photographic season as stated in Section F-5.2. Failure to comply with this requirement may result in \$25,000 or 5 percent of the contract amount, whichever is less, being withheld from payment. (Refer to FAR 52.242-2, Production Progress Reports.)

G-5 PACKING SLIP

Packing slips are required for this contract and forms will be furnished by the Contracting Officer. Please refer to instructions contained in the packing slip (see Section J, Exhibit 2). It is essential that all items of information requested on the report be provided. Packing slips shall be prepared and submitted for all shipments of NRI Sites and/or other projects to APFO.

G-6 SMALL BUSINESS SUBCONTRACTING PLAN

Pursuant to FAR Clause 52.219-09 (OCT 2010) Small Business Subcontracting Plan (Incorporated by Reference, Section I-7), large business concerns proposing contract awards exceeding \$500,000 shall submit a subcontracting plan that separately addresses subcontracting with small business, veteran-owned small business, service-disabled veteran-owned small business, HUBZone small business concerns, small disadvantaged business and women owned small business concerns. A large business concern is defined as a business with average annual revenues over of \$7 million under the NAICS Code 541922 for aerial photography services. Small business concerns are not required to submit small business subcontracting plans. The subcontracting plan shall be included and made a part of any resultant task order award and be negotiated with the Contracting Officer during the task order negotiation period. Failure to submit and negotiate the subcontracting plan shall make the offeror ineligible for award. Subcontracting plan data shall subsequently be entered into the Small Business Administration's new Electronic Subcontracting Reporting System (eSRS) upon award.

G-7 CHARGES TO CONTRACTOR

The USDA may, at its option, correct deficiencies found to exist in connection with photographic materials submitted by the Contractor and deduct from the Contractor's vouchers the cost thereof to the Government. When the deficiencies to be corrected are such that the cost exceeds \$100.00 at current prices, such corrections will be made only with the prior approval of the Contractor, except in the event of termination for default.

G-8 PARTIAL PAYMENTS

Full payment with respect to each completed area (county or state) within the project item, will be made upon final acceptance of all work in connection with any such area. Partial payments

may be requested and invoiced for all completed and accepted areas on the first day of each month. Such payment is partial payment of the contract and shall be approved by the Contracting Officer under the conditions stated in FAR 52.232-1, Payments.

G-9 PAYMENT DUE DATE

The required payment date will be 30 calendar days after:

- (a) The date of actual receipt of a proper invoice by the office designated to receive the invoice, or the date all contract deliverables are accepted, whichever is later.
- (b) The date of the check issued in payment or the date of the payment by electronic funds transfer shall be considered to be the date payment is made.

G-10 INTEREST ON OVERDUE PAYMENTS

- (a) The Prompt Payment Act, Public Law 100-496 (96 Stat. 85, 31 USC 1801) is applicable to payments under this contract and requires the payment to Contractors of interest on overdue payments and improperly taken discounts.
- (b) Determinations of interest due will be made in accordance with the provisions of the Prompt Payment Act and Office of Management and Budget Circular A-125.

G-11 INVOICES

An original invoice shall be submitted to the Contracting Officer designated in this contract or on the delivery order to receive invoices. To constitute a proper invoice, the invoice must include the following information and/or attached documentation:

- (a) Name and address of the contractor.
- (b) Invoice date.
- (c) Contract number or other authorization for supplies delivered or services performed.
- (d) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.
- (e) Shipping and payment terms.
- (f) Name and address of contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).
- (g) Name (where practicable), title, phone number, and mailing address of person to notify in the event of a defective invoice.
- (h) Any other information or documentation required by the contract.
- (i) While not required, contractors are strongly encouraged to assign an identification number to each invoice.

Notice of an apparent error, defect, or impropriety in an invoice will be given to the Contractor within 7 days of receipt of an invoice and suitably documented.

PART I - THE SCHEDULE

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H-1 PERMITS AND CLEARANCES

It shall be the responsibility of the Contractor to determine and secure all necessary permits and clearances for controlled or restricted airspace areas. The Contractor shall contact the Federal Aviation Administration (FAA) watch supervisor in charge of the Air Traffic Control (ATC) facility to gain approval to operate within controlled airspace. It is suggested that pre-flight coordination, at least one week in advance, will result in better communication. The FAA suggests that on the day of the flight the photo mission pilot contact the ATC facility and:

- (a) Confirm previous arrangements,
- (b) State that "this is a photo survey mission" via air/ground communications, and subsequently inform the controller when the flight line is commenced.

Military Operation Areas (MOA) will be identified in advance, and if necessary a contact for airspace clearance established. The Contractor is responsible for obtaining flight approvals and security clearances if required by the U.S. Department of Defense. Photographic materials of classified areas shall be stored, handled, and shipped in accordance with existing security regulations. In the event of difficulty, the Contracting Officer shall be contacted for guidance and/or assistance.

H-2 AIRCRAFT REGULATIONS AND CERTIFICATIONS

All aircraft used in the performance of the work under this contract shall be maintained and operated in accordance with all regulations required by the U.S. Department of Transportation, Federal Aviation Administration (FAA). Aircraft operated in the acquisition of aerial photography under this contract shall be FAA certified to the highest flying altitude specified in the solicitation.

H-3 OWNERSHIP OF PHOTOGRAPHIC MATERIALS

All original photographic materials shall become the property of the Government upon formal acceptance. See FAR 52.246-16, Responsibility For Supplies. No reproductions shall be made prior to inspection by the Government unless specified in the contract or authorized by the Contracting Officer.

H-4 NOTICE TO THE GOVERNMENT OF DELAY

The Contractor shall immediately, upon becoming aware of any difficulties in meeting performance requirements during the photographic season or when difficulties are encountered which may delay deliveries under the contract, notify the Contracting Officer in writing thereof. Such notification shall identify difficulties, the reasons therefore, and the estimated period of anticipated delay.

FAILURE OF THE CONTRACTOR TO GIVE SUCH NOTICE MAY PRECLUDE LATER CONSIDERATION OF ANY CLAIM FOR NON-PERFORMANCE DUE TO WEATHER CONDITIONS OR ANY REQUEST FOR AN EXTENSION OF CONTRACT TIME.

H-5 WAGE DETERMINATION

The Wage Determination applicable to any contract resulting from this solicitation is determined by the location of the Contractor's establishment.

Wage Determination number 1995-0222, Revision 31, dated November 29, 2010 will be applicable for Contractors located nationwide. See Section J, Exhibit 6, Wage Determination.

H-6 INDUSTRY SMALL BUSINESS STANDARD

The small business industry size standard for the type of services covered by this procurement, under NAICS Code 541922 (previously SIC code 7389), is the average annual receipts of the concern and its affiliates for the preceding three (3) years not in excess of \$7 million.

PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

I-1 STATEMENT OF EQUIVALENT RATES FOR FEDERAL HIRES (MAY 1989) (FAR 52.222-42)

In compliance with the Service Contract Act of 1965, as amended, and the regulations of the Secretary of Labor (29 CFR part 4), this clause identifies the classes of service employees expected to be employed under the contract and states the wages and fringe benefits payable to each if they were employed by the contracting agency subject to the provisions of 5 U.S.C. 5341 or 5332.

THIS STATEMENT IS FOR INFORMATION ONLY.
IT IS NOT A WAGE DETERMINATION.

<u>Employee Class</u>	<u>Monetary Wage - Fringe Benefits</u>
Aircraft Pilot	\$64,217
Aircraft Co-Pilot	\$55,326
Aerial Photographer	\$33,663

I-2 ORDERING (OCT 1995) (FAR 52.216-18)

- (a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders or task orders by the individuals or activities designated in the Schedule. Such orders may be issued from **January through September** for the base and option periods.
- (b) All delivery orders or task orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order or task order and this contract, the contract shall control.
- (c) If mailed, a delivery order or task order is considered "issued" when the Government deposits the order in the mail. Orders may be issued orally, by facsimile, or by electronic commerce methods only if authorized in the Schedule.

I-3 EVALUATION QUANTITIES—INDEFINITE DELIVERY CONTRACT (FEB 1998) (AGAR 452.216-72)

To evaluate offers for award purposes, the Government will apply the offeror's proposed fixed-prices/rates to the estimated quantities included in the solicitation, and will add other direct costs if applicable.

I-4 MINIMUM AND MAXIMUM CONTRACT AMOUNTS (FEB 1988)
(AGAR 452.216-73)

During the period specified in FAR clause 52.216-18, ORDERING, the Government shall place orders totaling a minimum of \$2,500.00 but not in excess of \$10.0 million.

I-5 ORDER LIMITATIONS (OCT 1995) (FAR 52.216-19)

- (a) Minimum order. When the Government requires supplies or services covered by this contract in an amount of less than \$2,500.00, the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.
- (b) Maximum order. The Contractor is not obligated to honor -
 - (1) Any order for a single item in excess of \$10.0 million;
 - (2) Any order for a combination of items in excess of \$10.0 million; or
 - (3) A series of orders from the same ordering office within 30 days that together call for quantities exceeding the limitation in paragraph (b)(1) or (2) of this section.
- (c) If this is a requirements contract (*i.e.*, includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in paragraph (b) of this section.
- (d) Notwithstanding paragraphs (b) and (c) of this section, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within 15 days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

I-6 INDEFINITE QUANTITY (OCT 1995) (FAR 52.216-22)

- (a) This is an indefinite-quantity contract for the supplies or services specified and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.
- (b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the "maximum." The Government shall order at least the quantity of supplies or services designated in the Schedule as the "minimum."
- (c) Except for any limitations on quantities in the Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The

Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.

- (d) Any order issued during the effective period of the contract and not completed within the period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; *provided*, that the contractor shall not be required to make any deliveries under this contract after **December 31, 2012**.

I-7 CLAUSES INCORPORATED BY REFERENCE (FEB 1998) (FAR 52.252-2)

This contract incorporates the following clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this address: www.arnet.gov/far.

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES:

- 52.202-01 Definitions (JUL 2004)
- 52.203-03 Gratuities (APR 1984)
- 52.203-05 Covenant Against Contingent Fees (APR 1984)
- 52.203-06 Restrictions on Subcontractor Sales to the Government (SEP 2006)
- 52.203-07 Anti-Kickback Procedures (OCT 2010)
- 52.203-08 Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity (JAN 1997)
- 52.203-10 Price or Fee Adjustment for Illegal or Improper Activity (JAN 1997)
- 52.203-12 Limitation on Payments to Influence Certain Federal Transactions (OCT 2010)
- 52.204-04 Printed or Copied Double-Sided on Recycled Paper (AUG 2000)
- 52.204-07 Central Contractor Registration (APR 2008)
- 52.209-06 Protecting the Government's Interest When Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (SEP 2006)
- 52.215-02 Audit and Records - Negotiation (OCT 2010)
- 52.215-08 Order of Precedence - Uniform Contract Format (OCT 1997)
- 52.215-14 Integrity of Unit Prices (OCT 2010)
- 52.216-27 Single or Multiple Awards (OCT 1995)

- 52.217-06 Option for Increased Quantity (MAR 1989)
- 52.217-08 Option to Extend Services (NOV 1999)
- 52.217-09 Option to Extend the Term of the Contract (MAR 2000)
- 52.219-04 Notice of Price Evaluation Preference for HUBZone Small Business Concerns (JUL 2005)
- 52.219-08 Utilization of Small Business Concerns (MAY 2004)
- 52.219-09 Small Business Subcontracting Plan (OCT 2010)
- 52.222-03 Convict Labor (JUN 2003)
- 52.222-04 Contract Work Hours and Safety Standards Act - Overtime Compensation (JUL 2005)
- 52.222-21 Prohibition of Segregated Facilities (FEB 1999)
- 52.222-26 Equal Opportunity (MAR 2007)
- 52.222-35 Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (SEP 2010)
- 52.222-36 Affirmative Action for Workers with Disabilities (JUN 1998)
- 52.222-37 Employment Reports on Special Disabled Veterans and Veterans of the Vietnam Era, and Other Eligible Veterans (OCT 2010)
- 52.222-41 Service Contract Act of 1965, as Amended (NOV 2007)
- 52.222-44 Fair Labor Standards Act and Service Contract Act - Price Adjustment (SEP 2009)
- 52.223-06 Drug-Free Workplace (MAY 2001)
- 52.223-14 Toxic Chemical Release Reporting (AUG 2003)
- 52.225-01 Buy American Act - Supplies (FEB 2009)
- 52.225-13 Restrictions on Certain Foreign Purchases (JUN 2008)
- 52.227-01 Authorization and Consent (DEC 2007)
- 52.227-03 Patent Indemnity (APR 1984)
- 52.227-14 Rights in Data - General - Alternate I (DEC 2007)
- 52.229-03 Federal, State, and Local Taxes (APR 2003)

- 52.232-01 Payments (APR 1984)
- 52.232-08 Discounts for Prompt Payment (FEB 2002)
- 52.232-09 Limitation on Withholding of Payments (APR 1984)
- 52.232-11 Extras (APR 1984)
- 52.232-17 Interest (OCT 2010)
- 52.232-19 Availability of Funds for the Next Fiscal Year (APR 1984)
- 52.232-23 Assignment of Claims (JAN 1986)
- 52.232-25 Prompt Payment (OCT 2008)
- 52.233-01 Disputes (JUL 2002)
- 52.233-03 Protest After Award (AUG 1996)
- 52.242-02 Production Progress Reports (APR 1991)
- 52.242-13 Bankruptcy (JUL 1995)
- 52.243-01 Changes - Fixed Price - Alternate II (APR 1984)
- 52.245-01 Government Property (AUG 2010) (Includes Alternate I)
- 52.246-25 Limitation of Liability - Services (FEB 1997)
- 52.248-01 Value Engineering (OCT 2010)
- 52.249-04 Termination for Convenience of the Government (Services) (Short Form)
(APR 1984)
- 52.249-08 Default (Fixed-Price Supply and Service) (APR 1984)
- 52.253-01 Computer Generated Forms (JAN 1991)

PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

<u>EXHIBIT</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
Exhibit 1	Aerial Photography Progress Report (Sample) (1 page).	39
Exhibit 2	Packing Slip (Sample) (1 page).	40
Exhibit 3	Hard Drive & DVD Labeling Requirements (3 pages)	41-43
Exhibit 4	Sample Non-Disclosure Agreement (2 pages)	44-45
Exhibit 5	Glossary and Definitions (1 page).	46
Exhibit 6	Wage Determination (3 pages)	47-49
Attachment A	USDA Aerial Film Camera Specifications (8 pages)	Separate Attachment
Attachment B	General Direct Digital Camera Specification (4 pages)	Separate Attachment
Attachment C	USDA Direct Digital Small Area Orthoimagery Tile Specification (15 pages)	Separate Attachment

EXHIBIT 1

AERIAL PHOTOGRAPHY PROGRESS REPORT (SAMPLE)

INSTRUCTIONS

This report shall be prepared only for days that performance is accomplished in acquiring project photography. Reports shall be submitted to the government office E-mail address indicated below no later than the day following performance. Reports shall be submitted in ASCII text format. On separate E-mail reports, a list of NRI Sites flown and SLI/WRP exposures flown shall be indicated by their respective identification numbers, and shall reflect only the previous day's performance. A cumulative progress record of all sites acquired shall be maintained by the Contractor.

**2011 NRI PROGRESS REPORT
SAC-TO-2-11, ITEM #**

TO:

Contracting Officer
Aerial Photography Field Office
E-mail Address: NRI.apfo.reports@slc.usda.gov

FROM:

Name
Company
Telephone Number

PERFORMANCE RECORD:

Date Acquired: 06-JUN-11

NRI Sites Acquired:

01035_040402R
01061_030503R
01061_030602R
01067_010301B

**2011 SLI/WRP PROGRESS REPORT
SAC-TO-2-11, ITEM #**

TO:

Contracting Officer
Aerial Photography Field Office
E-mail Address: WRP.apfo.reports@slc.usda.gov

FROM:

Name
Company
Telephone Number

PERFORMANCE RECORD:

Date Acquired: 06-JUN-11

WRP Exposures Acquired:

01035_WRP0004
01061_WRP0001
01061_WRP0002
01067_WRP0001

EXHIBIT 2 PACKING SLIP (SAMPLE)

STATEMENT OF SHIPMENT FOR 2011 NRI SITES

INSTRUCTIONS: This document will accompany all shipments from the contractor. Please complete the requested information at the top of the page and indicate all counties that are included in this shipment with an "X". If quantities submitted for individual counties differ from the quantities listed, then a quantity of NRI Sites acquired for the county(s) should be recorded instead.	
SEND TO: CONTRACTING OFFICER USDA-FSA-APFO 2222 WEST 2300 SOUTH SALT LAKE CITY, UT 84119-2020	DATE: _____ SHIPMENT NUMBER: _____ TOTAL OF NRI SITES IN SHIPMENT: _____ TOTAL OF COUNTIES IN SHIPMENT: _____

STATE: ALABAMA

TOTAL COUNTIES: 67

TOTAL NRI SITES:

NRI				NRI			
	FIPS	SITES	COUNTY		FIPS	SITES	COUNTY
[]	01001	13	AUTAUGA	[]	01073	16	JEFFERSON
[]	01003	21	BALDWIN	[]	01077	29	LAUDERDALE
[]	01005	18	BARBOUR	[]	01079	27	LAWRENCE
[]	01007	15	BIBB	[]	01081	24	LEE
[]	01009	32	BLOUNT	[]	01083	27	LIMESTONE
[]	01011	13	BULLOCK	[]	01085	24	LOWNDES
[]	01013	15	BUTLER	[]	01087	30	MACON
[]	01015	13	CALHOUN	[]	01089	29	MADISON
[]	01017	21	CHAMBERS	[]	01091	22	MARENGO
[]	01019	21	CHEROKEE	[]	01093	13	MARION
[]	01021	22	CHILTON	[]	01095	24	MARSHALL
[]	01023	19	CHOCTAW	[]	01097	37	MOBILE
[]	01025	14	CLARKE	[]	01099	19	MONROE
[]	01027	13	CLAY	[]	01101	35	MONTGOMERY
[]	01029	11	CLEBURNE	[]	01103	25	MORGAN
[]	01031	22	COFFEE	[]	01105	27	PERRY
[]	01033	20	COLBERT	[]	01107	18	PICKENS
[]	01035	15	CONECUH	[]	01109	19	PIKE
[]	01037	13	COOSA	[]	01111	15	RANDOLPH
[]	01039	21	COVINGTON	[]	01113	20	RUSSELL
[]	01041	20	CRENSHAW	[]	01115	18	ST CLAIR
[]	01043	20	CULLMAN	[]	01117	15	SHELBY
[]	01045	28	DALE	[]	01119	15	SUMTER
[]	01047	22	DALLAS	[]	01121	20	TALLADEGA
[]	01049	28	DE KALB	[]	01123	21	TALLAPOOSA
[]	01051	15	ELMORE	[]	01125	27	TUSCALOOSA
[]	01053	20	ESCAMBIA	[]	01127	14	WALKER
[]	01055	24	ETOWAH	[]	01129	24	WASHINGTON
[]	01057	11	FAYETTE	[]	01131	16	WILCOX
[]	01059	12	FRANKLIN	[]	01133	20	WINSTON
[]	01061	23	GENEVA				
[]	01063	29	GREENE				
[]	01065	27	HALE				
[]	01067	20	HENRY				
[]	01069	29	HOUSTON				
[]	01071	22	JACKSON				

Quantities are EXAMPLES ONLY

EXHIBIT 3 – Page 1 of 3

Serial ATA (SATA) I or II Hard Drive Label

The diagram shows a rectangular label template for a Serial ATA (SATA) I or II Hard Drive. It includes several fields with arrows pointing to them from labels on the right:

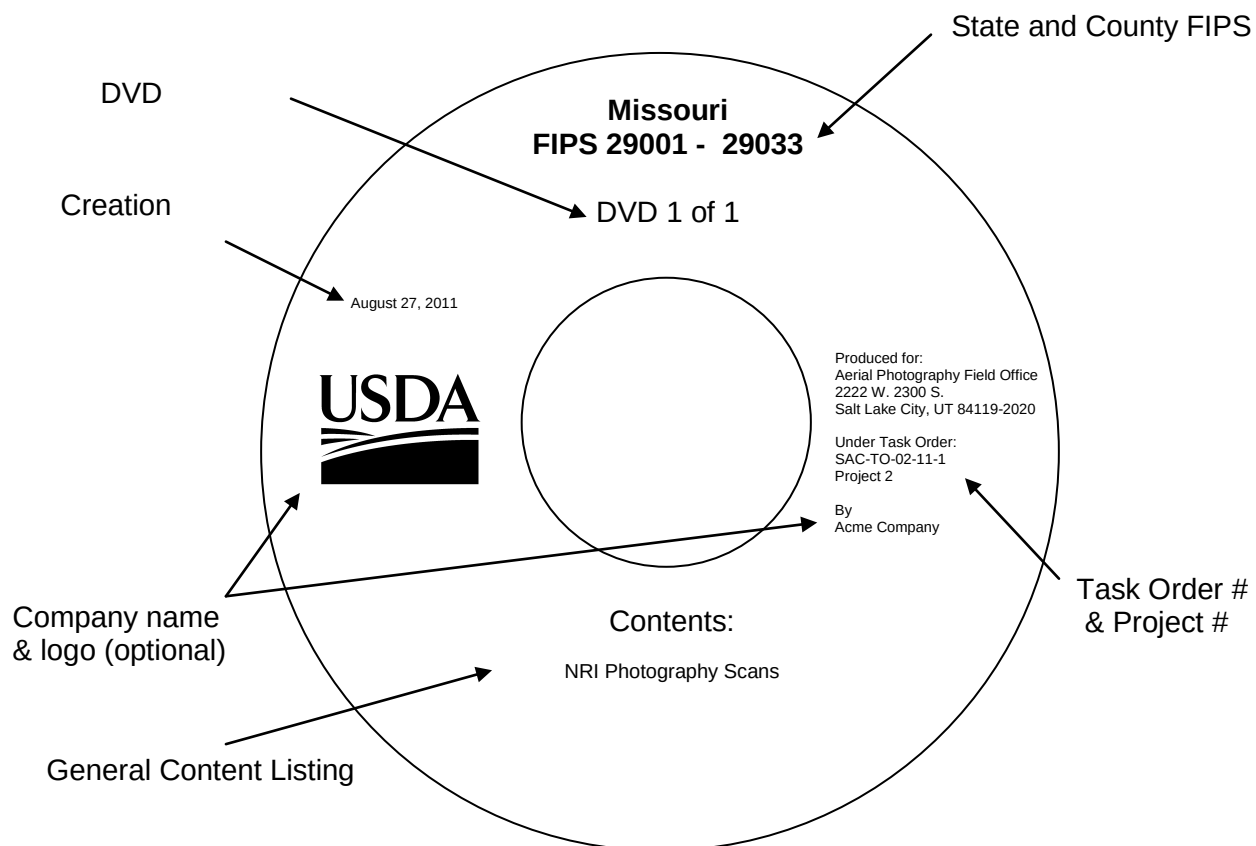
- Project item area(s) & Drive Number (If needed):** Points to the text "NRI Missouri - Drive 1".
- Creation date:** Points to the text "August 27, 2011".
- Company logo (Optional):** Points to the USDA logo.
- Contents:** Points to the text "Contents: Scanned NRI Images Jefferson County Morgan County - Partial".
- Task Order Number & Project Number:** Points to the text "Under Task Order: SAC-TO-2-11-1 Project 2".
- Company name:** Points to the text "By Acme Company".

Additional text on the label includes "Produced for: Aerial Photography Field Office 2222 W. 2300 S. Salt Lake City, UT 84119-2020".

Label is sized to fit the drive as needed: Approximately 3 ½" X 4 ½"

EXHIBIT 3 – Page 2 of 3

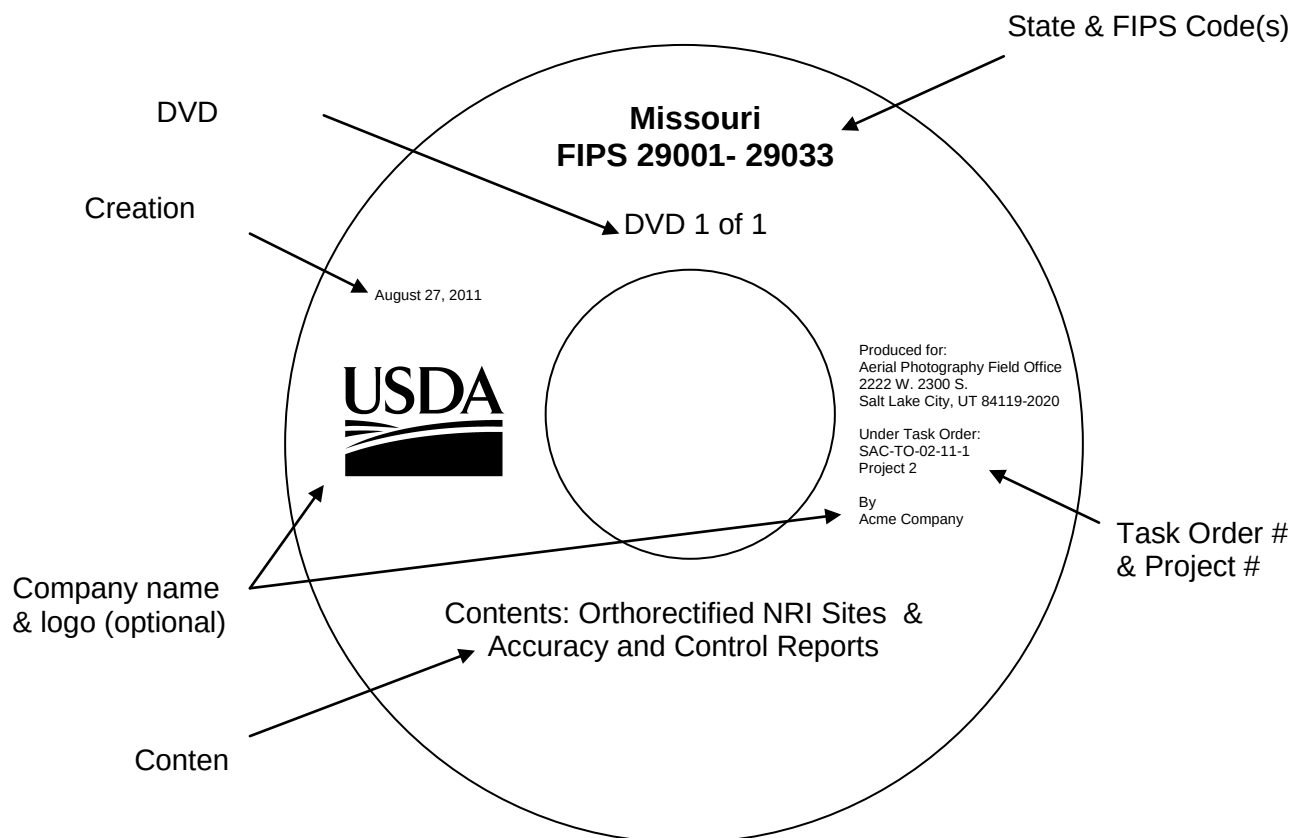
DVD Labeling Requirements for Scans



ELEMENT	EXAMPLE
DVD Number	DVD 1 of 1
Company name & logo	Acme Company
Task Order Number	SAC-TO-2-11-1
Project Item Number	Project 2
State and County FIPS	Missouri, 29001 – 29033
Creation date	August 27, 2011

EXHIBIT 3 – Page 3 of 3

DVD Labeling Requirements for Ortho Imagery



ELEMENT	EXAMPLE
DVD Number	DVD 1 of 1
Company name & logo	Acme Company
Content	Project Data Files & Accuracy and Control Reports
Task Order Number	SAC-TO-2-11-1
Project Number	Project 2
Creation date	August 27, 2011
State & FIPS Code(s)	Missouri (FIPS 29001 -29033)
FIPS code(s) & UTM zone	29001-29033 (UTM Zone 15)

EXHIBIT 4

SAMPLE NON-DISCLOSURE AGREEMENT

This Agreement is effective as of the ____ day of ____, 2011, by and between _____, and the United States Department of Agriculture, Natural Resources Conservation Service.

The Purpose of this agreement is to permit the Natural Resources Conservation Service (NRCS) to transmit or exchange National Resource Inventory (NRI) Information “For Official Use Only” to or with the _____ for the purpose of aerial photography acquisition.

NRI Information “For Official Use Only”. The geographic locations of the Natural Resources Conservation Service National Resources Inventory (NRI) Sample Sites (Sites) are defined as NRI Information “For Official Use Only”. NRI Information “For Official Use Only” may include, but is not limited to specifications, written descriptions, maps, aerial photographs, computer database files, geographic coordinates, and other information relating to the physical location of the sites. All reference to NRI Information “For Official Use Only” will be identified at the time of disclosure with an appropriate legend, marking, stamp or positive written identification as NRI Information “For Official Use Only” by the Natural Resources Conservation Service.

Restrictions. In order to maintain the integrity of the NRI, and to maintain confidentiality, privacy, and cooperation of land owners, the receiving party shall not release the locations of NRI Sites to the public, other agencies, any individual or other organization. With respect to Natural Resources Conservation Service NRI Information “For Official Use Only”, the receiving party agrees to:

1. Use the NRI Information “For Official Use Only” solely for the purposes of this Agreement, any other use shall be only with the prior written consent of the Natural Resources Conservation Service;
2. Not disclose the NRI Information “For Official Use Only” to any third party or to any of their employees not having any “need to know” for the purposes of this Agreement, and provided that such third parties shall first have agreed in writing to be bound by a like obligation of confidentiality with respect to such NRI Information “For Official Use Only” as the receiving party is bound;
3. Take all reasonable steps, at least as great as the steps which the receiving takes with respect to its own NRI Information “For Official Use Only”, to protect and safeguard the secrecy of and avoid the unauthorized disclosure or use of the NRI Information “For Official Use Only”;
4. Promptly notify the Natural Resources Conservation Service of any misuse, misappropriation or unauthorized disclosure which may come to its attention; and
5. Not create second generation products from the NRI Information “For Official Use Only”.

Exceptions to Non-Disclosure. _____ shall not be liable under this Agreement if a disclosure or use of NRI Information “For Official Use Only” received hereunder is made where the NRI Information “For Official Use Only”:

1. Was in the public domain at the time of the disclosure or is subsequently made available to the general public without restriction and without breach of this Agreement by _____, or
2. Was known by _____ at the time of disclosure without restrictions on its use or independently developed by the receiving party, as shown by adequate documentation; or

3. Is disclosed to _____ by a third party without restriction and without breach of any agreement; or
4. Is disclosed with the prior written approval of the Natural Resources Conservation Service; and
5. Is used or disclosed pursuant to a court order, subpoena or other lawful order of a court or governmental authority of competent jurisdiction.

Term. This Agreement shall apply to NRI Information “For Official Use Only” provided to _____ during a period of one (1) year from the date set forth above, provided however, that either party may terminate this Agreement by giving the other party thirty (30) days notice in writing of its intention to terminate this Agreement. Termination shall not abrogate either party's obligations hereunder for NRI Information “For Official Use Only” received prior to the date of termination.

Remedies. The receiving party acknowledges that its obligations to protect the NRI Information “For Official Use Only” are essential to the business interests of the receiving party, and that the disclosure of such NRI Information “For Official Use Only” in breach of this Agreement will cause the Natural Resources Conservation Service immediate, substantial and irreparable harm, the value of which would be extremely difficult to determine. Accordingly, the receiving party agrees that, in addition to any other remedies that may be available in law, equity, or otherwise for the disclosure or use of NRI Information “For Official Use Only” in breach of this Agreement, the Natural Resources Conservation Service shall be entitled to seek and obtain a temporary restraining order, injunctive relief or other equitable relief against the continuance of such breach, in addition to all other remedies, and without the requirement of posting a bond or undertaking or proving injury as a condition for relief.

Return of Materials. Upon written request from the Aerial Photography Field Office (APFO), or one (1) year after notice of final acceptance of imagery associated with this agreement, the receiving party agrees to destroy any materials and documents furnished by NRCS containing NRI Information “For Official Use Only” together with all copies made thereof by the receiving party, any geographically identifiable photographic imagery, and any scanned imagery that may have been retained for backup and recovery purposes. The receiving party shall deliver written certification to the Aerial Photography Field Office for documentation in the contract file that these actions have been taken and that the material has been destroyed with a copy of the certification forwarded to the Natural Resources Conservation Service.

In Witness Whereof, the parties have executed this Agreement by their authorized representatives as of the date set forth above.

By: _____
Authorized Signature

By: _____
Authorized Signature

Typed Name

Typed Name

Title

Title

EXHIBIT 5

GLOSSARY AND DEFINITIONS

Camera System: The combination of lens, cone, magazine(s), and camera filter(s) which have been calibrated as an integral unit.

Contracting Officer's Technical Representative (COTR): A person assigned to a contract who has the responsibility of providing technical information such as site ground and weather conditions.

Contracting Officer's Representative (COR): A person assigned to a contract who is responsible for specific technical and administrative duties related to that contract.

Exposure Stations: Pre-determined locations, annotated by USDA on the flight map, where photo centers of individual frames are to be exposed.

Film Titling: Information annotated on the original aerial film pertaining to project and exposure identification.

Line Item: A separable area or unit within a project item that has separate sites, areas, or linear miles. All line items within a project item shall be awarded to only one offeror.

Original Photography: All aerial photography, as secured by the Contractor, prior to its inspection by the USDA, including any reflights made at the discretion of the Contractor.

Project Item: An area or areas described in the Schedule for which award shall be made to one offeror.

Reflight Photography: Photography reflown to replace original photography rejected by USDA.

Remake Materials: Any contract materials, other than the original aerial film, ordered remade by USDA.

Stereomodel: The area covered by the conjugate images of three successive overlapping exposures.

APFO: Aerial Photography Field Office.

FSA: Farm Service Agency (formerly ASCS, CFS).

USFS: United States Forest Service.

NRCS: Natural Resources Conservation Service (formerly SCS).

USDA: United States Department of Agriculture.

USGS: United States Geological Survey.

SLI: Stewardship Land Imagery

WRP: Wetland Reserve Program

EXHIBIT 6 (3 Pages)

Wage Determination – Page 1 of 3

REGISTER OF WAGE DETERMINATIONS UNDER THE SERVICE CONTRACT ACT By direction of the Secretary of Labor	U.S. DEPARTMENT OF LABOR EMPLOYMENT STANDARDS ADMINISTRATION WAGE AND HOUR DIVISION WASHINGTON D.C. 20210
Shirley F. Ebbesen Director Division of Wage Determinations	Wage Determination No.: 1995-0222 Revision No.: 31 Date Of Last Revision: 11/29/2010

Nationwide: Applicable in the continental U.S. Alaska, Puerto Rico, Hawaii and Virgin Islands.

****Fringe Benefits Required Follow the Occupational Listing****

Employed on U.S. Government contracts for aerial photographer, aerial seeding, aerial spraying, transportation of personnel and cargo, fire reconnaissance, administrative flying, fire detection, air taxi mail service, and other flying services.

OCCUPATION CODE - TITLE	MINIMUM WAGE RATE
31010 - Airplane Pilot	25.27
(not set) - First Officer (Co-Pilot)	23.01
(not set) - Aerial Photographer	12.63

EXCEPT SCHEDULED AIRLINE TRANSPORTATION AND LARGE MULTI-ENGINE AIRCRAFT
SUCH AS THE B-727, DC-8, AND THE DC-9.

ALL OCCUPATIONS LISTED ABOVE RECEIVE THE FOLLOWING BENEFITS:

HEALTH & WELFARE: \$3.50 per hour or \$140.00 per week or \$606.67 per month

VACATION: 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 5 years, and 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with the predecessor contractors in the performance of similar work at the same Federal facility. (Reg. 29 CFR 4.173)

HOLIDAYS: A minimum of ten paid holidays per year, New Year's Day, Martin Luther King Jr's Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. (A contractor may substitute for any of the named holidays another day off with pay in accordance with a plan communicated to the employees involved.) (See 29 CFR 4174)

VACATION (Hawaii): 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 10 years, and 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with the predecessor contractors in the performance of similar work at the same Federal facility. (Reg. 29 CFR 4.173)

HEALTH & WELFARE (Hawaii): \$1.42 per hour, or \$56.80 per week, or \$246.13 per month hour for all employees on whose behalf the contractor provides health care benefits pursuant to the Hawaii prepaid Health Care Act. For those employees who are not receiving health care benefits mandated by the Hawaii prepaid Health Care Act, the new health and welfare benefit rate will be \$3.50 per hour.

Wage Determination 1995-0222, 31

Page 2 of 3

HAZARDOUS PAY DIFFERENTIAL: An 8 percent differential is applicable to employees employed in a position that represents a high degree of hazard when working with or in close proximity to ordnance, explosives, and incendiary materials. This includes work such as screening, blending, dying, mixing, and pressing of sensitive ordnance, explosives, and pyrotechnic compositions such as lead azide, black powder and photoflash powder. All dry-house activities involving propellants or explosives. Demilitarization, modification, renovation, demolition, and maintenance operations on sensitive ordnance, explosives and incendiary materials. All operations involving regrading and cleaning of artillery ranges.

A 4 percent differential is applicable to employees employed in a position that represents a low degree of hazard when working with, or in close proximity to ordnance, (or employees possibly adjacent to) explosives and incendiary materials which involves potential injury such as laceration of hands, face, or arms of the employee engaged in the operation, irritation of the skin, minor burns and the like; minimal damage to immediate or adjacent work area or equipment being used. All operations involving, unloading, storage, and hauling of ordnance, explosive, and incendiary ordnance material other than small arms ammunition. These differentials are only applicable to work that has been specifically designated by the agency for ordnance, explosives, and incendiary material differential pay.

**** UNIFORM ALLOWANCE ****

If employees are required to wear uniforms in the performance of this contract (either by the terms of the Government contract, by the employer, by the state or local law, etc.), the cost of furnishing such uniforms and maintaining (by laundering or dry cleaning) such uniforms is an expense that may not be borne by an employee where such cost reduces the hourly rate below that required by the wage determination. The Department of Labor will accept payment in accordance with the following standards as compliance: The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of \$3.35 per week (or \$.67 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations", Fifth Edition, April 2006, unless otherwise indicated. Copies of the Directory are available on the Internet. A links to the Directory may be found on the WHD home page at <http://www.dol.gov/esa/whd/> or through the Wage Determinations On-Line (WDOL) Web site at <http://wdol.gov/>.

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND WAGE RATE {Standard Form 1444 (SF 1444)}

Conformance Process:

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C)(vi)} When multiple wage determinations are included in a contract, a separate SF 1444 should be prepared for each wage determination to which a class(es) is to be conformed.

Wage Determination: 1995-0222, 31

Page 3 of 3

The process for preparing a conformance request is as follows:

- 1) When preparing the bid, the contractor identifies the need for a conformed occupation(s) and computes a proposed rate(s).
- 2) After contract award, the contractor prepares a written report listing in order proposed classification title(s), a Federal grade equivalency (FGE) for each proposed classification(s), job description(s), and rationale for proposed wage rate(s), including information regarding the agreement or disagreement of the authorized representative of the employees involved, or where there is no authorized representative, the employees themselves. This report should be submitted to the contracting officer no later than 30 days after such unlisted class(es) of employees performs any contract work..
- 3) The contracting officer reviews the proposed action and promptly submits a report of the action, together with the agency's recommendations and pertinent information including the position of the contractor and the employees, to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, for review. (See section 4.6(b)(2) of Regulations 29 CFR Part 4).
- 4) Within 30 days of receipt, the Wage and Hour Division approves, modifies, or disapproves the action via transmittal to the agency contracting officer, or notifies the contracting officer that additional time will be required to process the request.
- 5) The contracting officer transmits the Wage and Hour decision to the contractor.
- 6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF 1444 or bond paper.

When preparing a conformance request, the "Service Contract Act Directory of Occupations" (the Directory) should be used to compare job definitions to insure that duties requested are not performed by a classification already listed in the wage determination. Remember, it is not the job title, but the required tasks that determine whether a class is included in an established wage determination. Conformances may not be used to artificially split, combine, or subdivide classifications listed in the wage determination.

**** OCCUPATIONS NOT INCLUDED IN THE SCA DIRECTORY OF OCCUPATIONS ****

Aerial Photographer

The aerial photographer must be skilled in reading flight maps, capable of assisting the pilot to adhere to flight lines, be able to level and operate a cartographic camera and its auxiliary equipment mounted in the aircraft so that the photographs that are taken will have the required forward lap and side lap for use in photogrammetric mapping equipment, and possess a working knowledge of aerial films and camera filters to insure proper exposure of the films.

First Officer (Co-Pilot)

Is second in command of commercial airplane and its crew while transporting passengers, mail, or other cargo on scheduled or nonscheduled flights. Assists or relieves an airline captain in operating the controls of an airplane; monitoring flight and engine instruments; and maintaining air-to-ground communications.

PART IV - REPRESENTATIONS AND INSTRUCTIONS

SECTION K REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS

K-1 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (OCT 2010) (FAR 52.204-08)

- (1) The North American Industry classification System (NAICS) code for this acquisition is 541922.
- (2) The small business size standard is \$7 million.
- (3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at <http://orca.bpn.gov> . After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below *[offeror to insert changes, identifying change by clause number, title, date]*. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

K-2 ADDRESS TO WHICH PAYMENT SHOULD BE MAILED

In the space provided below, the Contractor is requested to indicate the address to which payment should be mailed, or indicate "same" if it is the same as the address shown on the solicitation form (page 1).

K-3 INCOMPLETE CONTRACTS AS OF DATE OF PROPOSAL:

<i>Indicate by Linear Miles</i>	Remaining Work - Summer	Remaining Work - Winter
U.S. Government Contracts		
All Other Contracts		

K-4 AIRCRAFT TO BE USED IN THE PERFORMANCE OF THIS CONTRACT:

Make/Model	Registration (Tail) Number	Operating Ceiling	Offeror Owned (check appropriate block)
			☐ Yes ☐ No *
			☐ Yes ☐ No *
			☐ Yes ☐ No *

* If the aircraft is/are not offeror owned, a written statement of availability from the owner of the aircraft must be enclosed. If needed, aircraft may be listed on a separate sheet of paper.

K-5 FILM CAMERA(S) TO BE USED IN THE PERFORMANCE OF THIS CONTRACT:

Current calibration report(s) must be enclosed or on file at the Aerial Photography Field Office.

Make/Model	Lens Number	OSL Calibration Date	Offeror Owned (check appropriate block)
			☐ Yes ☐ No *
			☐ Yes ☐ No *
			☐ Yes ☐ No *

* If the camera(s) is/are not offeror owned, a written statement of availability from the owner(s) of the camera(s) must be enclosed. If needed, cameras may be listed on a separate sheet of paper.

K-6 DIGITAL SENSOR(S) TO BE USED IN THE PERFORMANCE OF THIS CONTRACT:

Sample imagery and current manufacturers calibration report(s) must be enclosed or on file at the Aerial Photography Field Office for each digital sensor proposed for use on this contract..

Make/Model	Sensor Number	Manufacturers Calibration Date	Offeror Owned (check appropriate block)
			☐ Yes ☐ No *
			☐ Yes ☐ No *
			☐ Yes ☐ No *

* If the sensor(s) is/are not offeror owned, a written statement of availability from the owner(s) of the sensor(s) must be enclosed. If needed, sensors may be listed on a separate sheet of paper.

K-7 PAST PERFORMANCE REFERENCES

If no previous contracts have been held by the offeror with the Aerial Photography Field Office, list two (2) references with whom the offeror has held similar contracts. If possible, one reference should be within the Federal Government.

(List company or agency name, name of person to contact, and telephone number)

(1)

(2)

K-8 KEY PERSONNEL INTENDED FOR PERFORMANCE ON THIS CONTRACT:

List all key professional and technical personnel intended to perform on this contract. List may include project manager, pilot(s), photographer(s), and key back-up or support personnel. If needed, Key Personnel may be listed on a separate sheet of paper.

Name	Title	Education	Years of Experience

K-9 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)
(FAR 52.252-1)

This contract incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this address: www.arnet.gov/far.

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) PROVISIONS:

52.203-11 Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (SEP 2007)

52.204-05 Women-Owned Business (Other Than Small Business) (MAY 1999)

52.222-38 Compliance with Veterans' Employment Reporting Requirements (SEP 2010)

PART IV - REPRESENTATIONS AND INSTRUCTIONS

SECTION L - INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS

L-1 TYPE OF CONTRACT (APR 1984)(FAR 52.216-01)

The Government contemplates award of a Firm-Fixed-Price, Indefinite Delivery-Indefinite Quantity contract resulting from this solicitation.

L-2 INSTRUCTIONS FOR PREPARATION OF TECHNICAL AND PRICING PROPOSALS

The following instructions establish the acceptable minimum requirements for the format and content of proposals. Offeror's are advised to furnish all information in the sequence and format specified below. Failure to furnish all information requested may adversely affect the evaluation of the proposal. Proposals will be evaluated in accordance with the evaluation factors set forth in Section M of this solicitation.

2.1 General Instructions

- (a) Proposal must be prepared in two parts: Part I: Pricing Proposal, and Part II: Technical Proposal. Each of the parts shall be separate and complete in itself so that evaluation of one may be accomplished independently from evaluation of the other. The technical proposal must not contain any reference to cost or price.
- (b) Proposal should be precise, factual and responsive and must include, but is not limited to, the information listed below. Proposal content shall be organized in two separate parts and be submitted in the order indicated as follows:

2.2 PART I Pricing Proposal

- (a) Pricing information and related data shall be submitted as Part I of the offeror's proposal. For the base year (2011) the pricing proposal must contain three documents, a signed and dated Standard Form 33 (page 1 of the solicitation) with items 12 through 18 completed, the Contract Pricing Proposal (page 2 of the solicitation), and the signed task order pricing proposal (pages 1-3 of task order solicitation number SAC-TO-2-11-1) with quantities offered, unit price(s), and total price(s) for the item(s) indicated in the appropriate locations. Subsequent task orders will require only the signed task order pricing proposal for Part I.
- (b) Prices shall be based on estimated quantities specified in the solicitation. Awarded quantities and locations of small area aerial photography projects shall be made by issuance of authorized task orders in accordance with ordering procedures described below in Section L-3, Task Order Procedures.

2.3 PART II Technical Proposal

Response to the following technical statements will form the basis of a proposal's technical merit. Offerors are cautioned to address all requested information as completely and

accurately as possible. Data contained in Section K of the solicitation document shall be referenced in support of statements.

(a) Project Management Capability

- (1) Statement of technical approach to project management that would assure timely completion and shipment of all work by or before the required delivery schedule. Statement should include detailed description of planned approach, procedures, management techniques, capacities, and specialized equipment and processes to be used in performance of the work.
- (2) Statement of subcontractor management plan which includes a list of proposed subcontractors, what work they will perform, and how their performance will be managed and monitored.
- (3) Scheduling and site basing of aerial photo crew and aircraft based on knowledge of the weather patterns during the acquisition period of the project area(s).
- (4) Detailed overviews of the aerial photography film scanning processes and equipment, and digital orthorectification processing procedures and software.
- (5) Detailed overviews of direct digital orthoimagery processing procedures and software.

(b) Past Performance History

- (1) Past performance will be evaluated based on relevant performance history contained in USDA contract records of projects awarded by the Aerial Photography Field Office. Offerors past performance will be evaluated according to the following criteria and may include other relevant factors:
 - (i) Contract performance record;
 - (ii) Project completion record;
 - (iii) Delivery schedule compliance record.
- (2) If no previous contracts have been held by the offeror with the Aerial Photography Field Office, list two (2) references with which the offeror has held similar contracts. List past performance references in the space provided in Section K of the solicitation document.
- (3) If an offeror does not have, or have available, a past performance history, the offeror's proposal will not be evaluated favorably or unfavorably on past performance.

(c) Quality Control System

Detailed statement on contractor quality control system that will insure all contract materials submitted for inspection are in compliance with contract specifications. See Section C, Paragraph 1.1(c) for quality control requirements.

(d) Personnel Qualifications

List all professional and technical personnel intended to perform on this contract in the appropriate locations in Section K of the solicitation document. Recommended list includes Project Manager, Aircraft Pilot(s), Aerial Photographer(s), and key back-up or support personnel. Brief resumes may be provided on separate papers for the personnel listed, stating name, title, education, past experience, and years experience.

(e) Aircraft and Camera Availability

List all aircraft and cameras (both film and digital) intended to be used in completion of this contract in the appropriate locations in Section K of the solicitation document. If availability of equipment is contingent on other contractual commitments running concurrently with the work contemplated by this solicitation, indicate such in proposal statement(s). If aircraft and/or cameras are non-owned, indicate such in proposal statement(s).

(f) Incomplete Contracts

List all incomplete contracts which require performance during the approximate photographic period indicated in Section B and affect equipment and personnel listed herein. List shall include project name, client, and remaining linear miles. Total remaining linear miles shall be summarized in the appropriate location in Section K of the solicitation document.

2.4 Solicitation Document and Supporting Data

The offeror's proposal must include the following required information and supporting data specified in the solicitation document:

Section K:

- (a) Annual Representations and Certifications,
- (b) Incomplete Contracts as of Date of Proposal,
- (c) Aircraft to be used in the Performance of this Contract,
- (d) Film Cameras to be used in the Performance of this Contract,
- (e) Digital Sensors to be used in the Performance of this Contract,
- (f) Past Performance References (if required),
- (g) Key Personnel to Perform on the Contract,
- (h) Digital Camera/Sensor Sample Imagery.

Section L:

- (a) Camera Calibration Report(s),
- (b) Current Financial Statement.

The solicitation document may be submitted in its entirety, complete with Sections C through M (preferred), or at a minimum with Standard Form SF-33, and Sections B, K & L.

L-3 TASK ORDER PROCEDURES

The Government will use a simplified method of negotiations for issuance of task orders under the resulting multi-award contracts. All Contractors will be provided a fair opportunity to receive task order awards. The procedures explained below represent the Government's approach to task order issuance. Through Government and Contractor cooperation, it is anticipated that innovative approaches incorporating lessons learned may result in more efficient and effective performance of the work.

3.1 Base Year (2011) Procedures

- (a) Task order offers shall be submitted by Contractors as separate documents from their contract proposal to furnish small area aerial photography services. Task order offers shall be submitted for multiple requirements in states and/or areas that offerors can successfully complete given their current capacities, area of interest, and delivery schedule. The offer will include a pricing proposal that is based on the estimated quantities of sample sites, small area projects, or other requirements and services as specified.
- (b) Negotiation of proposed pricing, areas offered, and quantities shall be conducted using the source selection criteria specified in Section M. This source selection process will be used as a basis for contract award and task order issuance. Only proposals submitted by contractors whose overall scores are within the competitive range shall be considered for negotiation (see Section M-1.2 Competitive Range). Inclusion in negotiations does not guarantee a contract award. Negotiations shall be performed by oral communication with the Contracting Officer followed by electronic confirmation of agreement.
- (c) Task orders for negotiated prices, areas, and quantities will be issued immediately following contract awards by an authorized Government Contracting Officer only.

3.2 Option Year (2012) Procedures

Task orders for the option year period shall be issued in accordance with the following procedures:

- (a) A simplified Task Order Request for Proposal (TO-RFP) containing statements of work will be provided to contractors at the beginning of the new contract performance period. The TO-RFP will briefly describe for the new option year the new requirements, estimated quantities, photo acquisition periods, delivery schedules, and any other significant changes from the prior year requirements that are within the scope of the contract.
- (b) Contractors will be required to respond to the task order statement of work similar to the original RFP covering terms of pricing, areas of interest, and performance capacities.
- (c) Task order proposals submitted by the Contractors will be evaluated and negotiated based in part on the original technical proposal score as established in the original contract proposal evaluation. Contractors' original technical scores shall be updated

with revisions to past performance based on the their performance on task orders during the prior contract year, changes in capacity, and any other changes affecting the technical score. Contractor submitted pricing, areas of interest, estimated quantities, and delivery schedules will be evaluated and negotiated, resulting in task order awards. The goal of these procedures is to provide all Contractors a fair opportunity for issuance of task orders that provide the Government the best value.

L-4 CAMERA CALIBRATION REPORT

Each offeror shall have on file with the Aerial Photography Field Office, or shall submit with the offer, one copy of a Report of Calibration from the U.S. Geological Survey or Manufacturer's Calibration Report for digital cameras, for each camera to be used. A camera calibration report will not be acceptable if more than three years old at the time of the scheduled date for receipt of offers. Please indicate which statement is correct:

- ☐ Calibration report on file at APFO.
- ☐ Calibration report submitted with offer.

L-5 CURRENT FINANCIAL STATEMENT

Offerors may be required to provide a "current" financial statement. For purposes of this solicitation, a current financial statement would be the most recent annual report, updated, if necessary, so that information reflects the company's financial status within 6 months. All data shall be certified by an authorized company officer as to its accuracy and veracity or validated by an independent certified public account. If necessary, the Contracting Officer may request additional financial information.

Financial information received will be treated as confidential and will not be used for purposes other than evaluation of financial responsibility. Failure to provide this information may delay or prohibit the Contracting Officer from making an affirmative decision on the offerors responsibility. Please indicate which statement is correct:

- ☐ Current financial statement on file at APFO.
- ☐ Current financial statement submitted with offer.

L-6 CONTRACT DIFFICULTIES AND CONTINGENCIES

Offerors are cautioned to examine the solicitation, visit the work location if necessary, and evaluate the facilities needed and difficulties attending the execution of the proposed contract. Considerations include local conditions, uncertainty of weather, availability of landing fields, restricted air space, and all other contingencies.

L-7 SERVICE OF PROTEST (SEP 2006) (FAR 52.233-2)

Protests, as defined in Section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO) shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from; Director, Acquisition Management, USDA/FSA/MSD/AG Code 0567, P.O. Box 2415, Washington, D.C. 20013-2415.

The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

L-8 INQUIRIES (FEB 1988) (AGAR 452.204-70)

Inquiries and all correspondence concerning this solicitation should be submitted in writing to the Contracting Officer. Offerors should contact only the contracting officer issuing the solicitation about any aspect of this requirement prior to contract award.

**L-9 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)
(FAR 52.252-1)**

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this address: www.arnet.gov/far.

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) PROVISIONS:

52.204-06 Data Universal Numbering System (DUNS) Number (APR 2008)

52.211-06 Brand Name of Equal (AUG 1999)

52.215-01 Instructions to Offerors - Competitive Acquisition (JAN 2004)

PART IV - REPRESENTATIONS AND INSTRUCTIONS

SECTION M - EVALUATION FACTORS FOR AWARD

M-1 PROPOSAL EVALUATION

Proposal evaluation is an assessment of the proposal and the offeror's ability to perform the prospective contract successfully. The Government shall establish an evaluation team that includes appropriate contracting, technical, and other expertise to ensure a comprehensive evaluation of proposals.

1.1 Technical Evaluation Team

The Technical Evaluation Team will evaluate, and rank according to technical merit, all proposals in accordance with the evaluation factors established in this solicitation. The team will not have access to the pricing proposal during the technical evaluation process. The offeror's proposal shall be in the format prescribed in Section L and shall contain a response to each of the areas identified.

1.2 Competitive Range

The Contracting Officer shall establish the competitive range based on ratings of each proposal against all evaluation criteria including price. The competitive range shall be comprised of all of the most highly rated proposals. The competitive range can be limited for purposes of efficiency (see FAR 52.215-1(f)(4)). If negotiations are conducted in the source selection process they shall occur after establishment of the competitive range.

1.3 Source Selection Decision

The Contracting Officer shall select for purposes of contract award(s) the overall superior proposal(s) which offers the "best" value to the Government, price and other factors considered. The decision shall be based on a comparative assessment of proposals against all source selection criteria in the solicitation. The Government contemplates multiple contract awards resulting from this solicitation.

M-2 EVALUATION FACTORS

Proposals shall be evaluated according to the following criteria including all supporting information furnished by the offeror with the proposal. The evaluation criteria are listed in descending order of importance with relative point values indicated. See Section L for instructions for preparation of technical and pricing proposals.

2.1 Technical Evaluation

<u>Evaluation Criteria</u>	<u>Relative Point Value</u>
(a) Project Management Capability	25
(b) Past Performance History	25
(c) Quality Control System	20

(d) Personnel Qualifications	10
(e) Aircraft and Camera Availability	10
(f) Incomplete Contracts	<u>10</u>
	100

2.2 Price Evaluation

While technical excellence is considered more significant than price, the proposed price between technically superior proposals shall be an important factor in selection of a proposal for award. The Government reserves the right to make an award to other than the lowest priced offeror, or other than the highest technically rated offeror, when the perceived benefits and tradeoffs provide the Government the greatest value.

The offeror's **contract** price proposal will be based on the estimated quantities of sites and requirements for the base year (2011) Task Order Pricing Proposal, Project 1 (SAC-TO-2-11-1). The Government's evaluation of price proposals shall be conducted by determining a relative unit price ranking for each proposal. All proposed prices will be scored according to their relationship to the lowest unit price offered by a responsive, responsible offeror. The lowest price receives the highest score, and higher prices receive successively lower ranking scores.

Offerors are cautioned that pricing proposals should be submitted initially on the most favorable terms which the offeror can submit to the Government. Offerors are requested to insert the total quantity of Sites, Exposures, and Scans, the average unit price and the total amount in the appropriate locations in Section B. In case of discrepancy between the average unit price and the extended price (total amount), the average unit price will be presumed to be correct, subject, however, to correction to the same extent and in the same manner as any other mistake.

2.3 Area of Interest

To ensure complete nationwide coverage, proposals will also be evaluated on the areas of interest indicated in the offeror's 2011 Base Year Task Order proposal.

2.4 Other Factors

The Contracting Officer will consider, in addition to the evaluation criteria, the prospective Contractor's responsibility record in terms of financial resources, business integrity and ethics, and other standards, as defined in the Federal Acquisition Regulation, Part 9.

M-3 CONTRACT AWARD

The Government intends to evaluate proposals and award contracts resulting from this solicitation after conducting discussions with offerors whose proposals have been determined to be within the competitive range.

3.1 Contract Award

The contract will be awarded to that responsive and responsible offeror whose proposal represents the greatest value and is determined to be in the best interest and the most

advantageous to the Government, price and other factors considered.

3.2 Possibility of Award Without Discussion

Notice is given to all offerors that there is a possibility that award may be made without discussion or further negotiation. Proposals should be submitted initially on the most favorable terms, from a price and technical standpoint, which the offeror can submit to the Government.

3.3 Required or Requested Information

Award will be made only in conjunction with proposals from responsible prospective Contractors. Failure to provide the information, material, and/or documentation either required in Sections K and L, or requested by the Contracting Officer, within eight (8) calendar days of the request, may result in the proposal being rejected.

M-4 EVALUATION EXCLUSIVE OF OPTIONS (APR 1984) (FAR 52.217-3)

The Government will evaluate offers for award purposes by including only price for the base requirement; *i.e.*, options will not be included in the evaluation for award purposes.

ATTACHMENT A

USDA AERIAL FILM CAMERA SPECIFICATIONS

1. PRECISION AERIAL MAPPING CAMERA

Tested and calibrated aerial cameras for taking aerial photographs are required. Camera systems must be compatible with precision stereoscopic mapping instruments and with analytical mensuration procedures used in photogrammetric surveys and in preparing accurate topographic maps.

1.1 Camera System "Report of Calibration"

One copy of the "Report of Calibration" from the U.S. Geological Survey, for any camera system to be used, is required to be either on file at the USDA, or submitted with the contractor's offer. A camera system "Report of Calibration" will not be acceptable if more than three (3) years old at the scheduled date for receipt of offers.

1.2 Calibration Tests

Tests to determine compliance with these specifications will be performed by the Optical Science Laboratory of the U.S. Geological Survey. The fee for the tests and the arrangements to have the tests performed are the responsibility of the contractor. Delays encountered in having camera systems tested by the USGS Optical Science Laboratory will not be considered reason for the USDA to accept offers lacking such reports. Each camera system submitted for calibration shall be accompanied by all magazines and filters that might be used with the camera. Controls and camera mounts should not be submitted unless requested by the calibrating laboratory. Instructions for operation of the camera, including directions for holding the shutter open for laboratory tests, shall accompany each camera unless ascertained to be on file with the calibrating laboratory.

1.21 Interval Between Tests

The interval between tests for camera system calibrations shall not exceed three (3) years, unless otherwise approved by the Contracting Officer. However, when there is any reason to believe that the dimensional relationship of the lens, fiducial marks, and film plane have been disturbed by partial disassembly or unusual mechanical shock, the camera must be submitted for recalibration at contractor expense.

1.22 Contact for Calibration Tests

U.S. Geological Survey
National Mapping Division
560 National Center
Reston, Virginia 20192
Attention: Chief, Optical Science Laboratory
Phone: (703) 648-4692

1.23 Shipping Address for Calibration Tests

U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, Virginia 20192
Attention: Frank MacCue (703) 648-4692

1.3 Constructional Design Necessary to Permit Testing

To permit testing for determination of calibrated focal length, distortion, resolving power, fiducial mark locations, and stereomodel flatness, the constructional design of the camera shall be as follows:

1.31 Focal Plane

The focal plane shall be accessible from the rear so that a telescope placed behind the camera may view objects in front of the lens, limited only by the size of the focal plane opening. It shall be possible to place the surface of an optical flat having a thickness of 31 mm (1 1/4 in.) on the focal plane of the camera.

1.32 Focal Plane Frame

The focal plane frame shall be so constructed as to permit placement of a glass photographic plate on its surface so that the emulsion surface of the glass photographic plate lies in the true focal plane of the camera. The size of the frame image shall be 23 x 23 cm (9 x 9 inches).

1.4 Camera Components Required for Testing

1.41 Lens Cone Assembly

The lens cone assembly must be so constructed that the lens and fiducial marks comprise an integral unit. The design of the lens cone shall be such that it maintains the required precise relationship between the lens, fiducial marks, and focal plane on which the film platen shall be positioned. Construction shall be such as to maintain the dimensional relationship of these components under normal conditions of transportation, handling, and use, which can include considerable mechanical and thermal shock. The structure holding these components shall be supported in use in such a manner that stresses likely to change the required dimensional relationships cannot be transmitted to it from the supporting body or mount. The lens cone assembly shall be so designed and manufactured that all parts will return precisely to their original positions, should it be necessary for any reason to disassemble it. However, any disassembly of the lens cone assembly shall require recalibration at contractor's expense before further use.

1.42 Film Platen

Cameras shall be equipped with an approved means of flattening the film at the instant of exposure. The platen against which the film is held shall not depart by more than ± 0.013 mm from a true plane, when the camera/magazine vacuum is applied.

1.43 Shutter

The camera shall be equipped with a between-the-lens shutter of the variable-speed type. The range of speed settings shall be such that, for all anticipated combinations of flight heights, aircraft speeds, film speeds, and light conditions, the camera will produce high-resolution photographs. The effective exposure time and efficiency of the shutter as mounted in the camera will be measured at a maximum aperture and shall have a minimum efficiency of 70 percent at a speed of 1/200 second. This test shall be made in accordance with the "American National Standard Shutter Tests for Still-Picture Cameras," Method I, approved January 12, 1972, American national Standards Institute (PH3.48-1972) (R1978). The shutter shall have a speed of 1/400 second and slower for exposing film negatives during calibration.

1.44 Fiducial Marks

Either four or eight fiducial marks are required. If the four fiducial marks are in the corners of the format area, there must be a set of marks (V-notches or equivalent) in the frame at the midsides for use in centering diapositives in a stereoplotter. If there are eight fiducial marks, the corner fiducial marks shall form a quadrilateral whose sides are equal within ± 0.500 mm. The midside fiducial marks shall be equidistant within ± 0.500 mm from the adjacent corner fiducial marks. All fiducial marks and other marks intended for precise measuring shall be clear and well-defined on the aerial film and shall be of such a form and contrast that the standard deviation of repeated reading of the coordinates of each made on a precision comparator shall not exceed 0.002 mm. For cameras with projection type fiducial marks the projected images of all marks must be in sharp focus on the emulsion surface. Drawings in figure 1 show acceptable fiducial marks and their arrangements. Fiducials without a center point mark or intersecting lines will not be acceptable. Glass or plastic mounts for fiducial marks will not be acceptable.

1.441 The lines joining opposite pairs of fiducial markers shall intersect at an angle within one minute of 90 degrees. (See figure 2.)

1.442 The intersection of lines between fiducials--the indicated principal point--shall not be further than 0.030 mm from the point of autocollimation. (See figure 2.)

1.45 Filter

Only glass filters with metallic antivignetting coating shall be used to reduce the illumination for uniform distribution of light over the focal plane format. A microdensitometer trace will be made from the antivignetting

coating side of the filter to determine if any deterioration is present that would affect the uniformity of illumination in the focal plane. Deteriorations in excess of 50% of the height of the nominal curve for a lease type will be reason for rejection of a filter. The surface with the antivignetting coating shall be toward the camera lens. The filter shall have surfaces parallel within 10 seconds of arc, and its optical quality shall be such that its addition to the camera shall enhance the uniformity of focal plane illumination and not cause a reduction in image resolution. Glass filter combinations which may be required will be specified in Section B.

1.5 Lens and Platen/Magazine Identification

The camera or lens number, and the most recent calibrated focal length shall be recorded clearly on the film for each frame either on the inside of the focal plane frame or on a data strip between frames. An alpha numeric mark (or symbol) contained in the platen/magazine which identifies the platen/magazine may also be recorded if available on each frame of film. Data markers located on the inside of the focal plane frame shall not exceed 6.35 mm (0.25 inch) in height and 25.4 mm (1.0 inch) in length and shall not obscure any part of the fiducial marks.

1.6 Optical Requirements

Cameras will be given both a static and an operational type test made after final assembly of all parts of the camera system with the light filter in place on the lens. All tests of the lens cone assembly for determination of the calibration constants, calibrated focal length, distortion and resolution will be made using high contrast targets and Eastman Kodak Spectroscopic emulsion Type 157-01 on Kodak Aerial Calibration Plates. Cameras will be operationally tested for stereomodel flatness and resolution by exposing Eastman Kodak Double-X Aerographic film 2405 in the camera while mounted on a multicollimator camera calibrator. (The optical requirements for distortion, model flatness, and resolution for various focal length cameras are defined and tabulated in table 1.) The camera focal length stated in Section B must meet the minimum requirements for that focal length as shown in table 1.

1.61 Distortion

1.611 Radial

The distortion in image position as measured along radial lines from the principal point of symmetry. The value of the average radial distortion referred to the calibrated focal length shall not exceed the amount shown in table 1.

1.612 Decentering

The distortion in image position as measured perpendicular to radial lines from the principal point of symmetry. The value of the decentering distortion shall not exceed the amount shown in table 1. This value shall be evaluated for 153 mm cameras only.

1.62 Point of Symmetry

The calibrated principal point — the point of symmetry — shall not be further than 0.020 mm from the point of autocollimation for 153 mm focal length lenses and no further than 0.040 mm for all other focal length lenses. (See figure 2 / table 1.)

1.63 Resolution

Radial and tangential resolving power, in line pairs per millimeter, shall be no less than the value listed in table 1 for each focal length lens.

1.64 Test Aperture

All camera-lens calibration tests shall be made at the maximum aperture specified by the manufacturer for that lens.

1.65 Model Flatness

The model flatness test will be performed only for 153 mm and 88 mm cameras. Diapositives will be printed from two film exposures of the collimator targets on micro flat glass plates. Two stereomodels will be analytically formed from these using different halves of the exposures for each model. Each model thus formed will consist of a small fixed number of symmetrically arranged points. The allowable deviation from flatness, taken as the range between the maximum negative and the maximum positive value shall be no greater than $\pm 1/8000$ of the focal length of a nominal 6-inch (153-mm) camera, or $\pm 1/5000$ of the focal length of a nominal 3 1/2-inch (85-88 mm) camera. If elevation discrepancies exceed this value, the camera will not be acceptable. (See table 1.)

Figure 1
EXAMPLES OF ACCEPTABLE FORMS OF FIDUCIAL MARKS

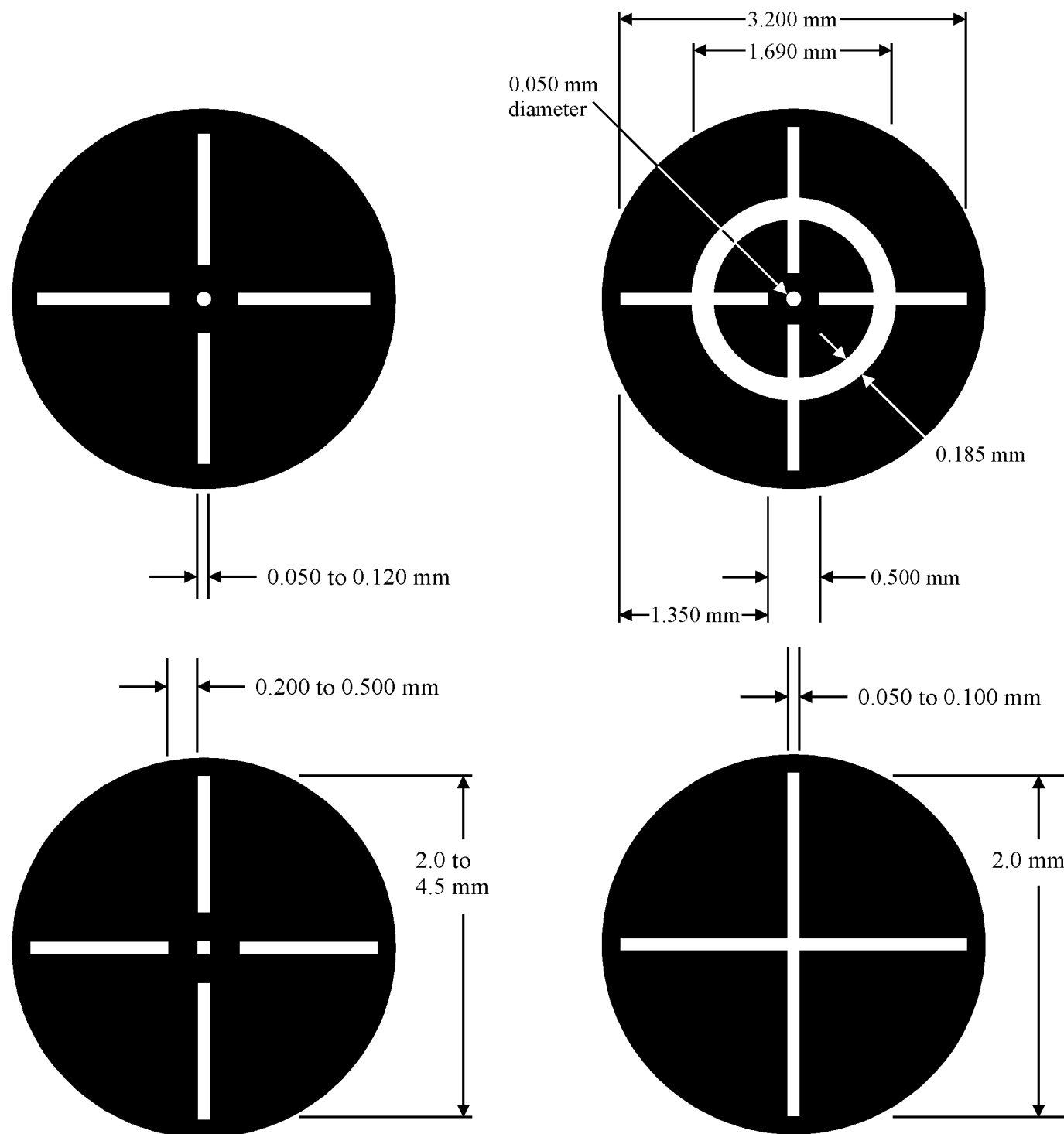
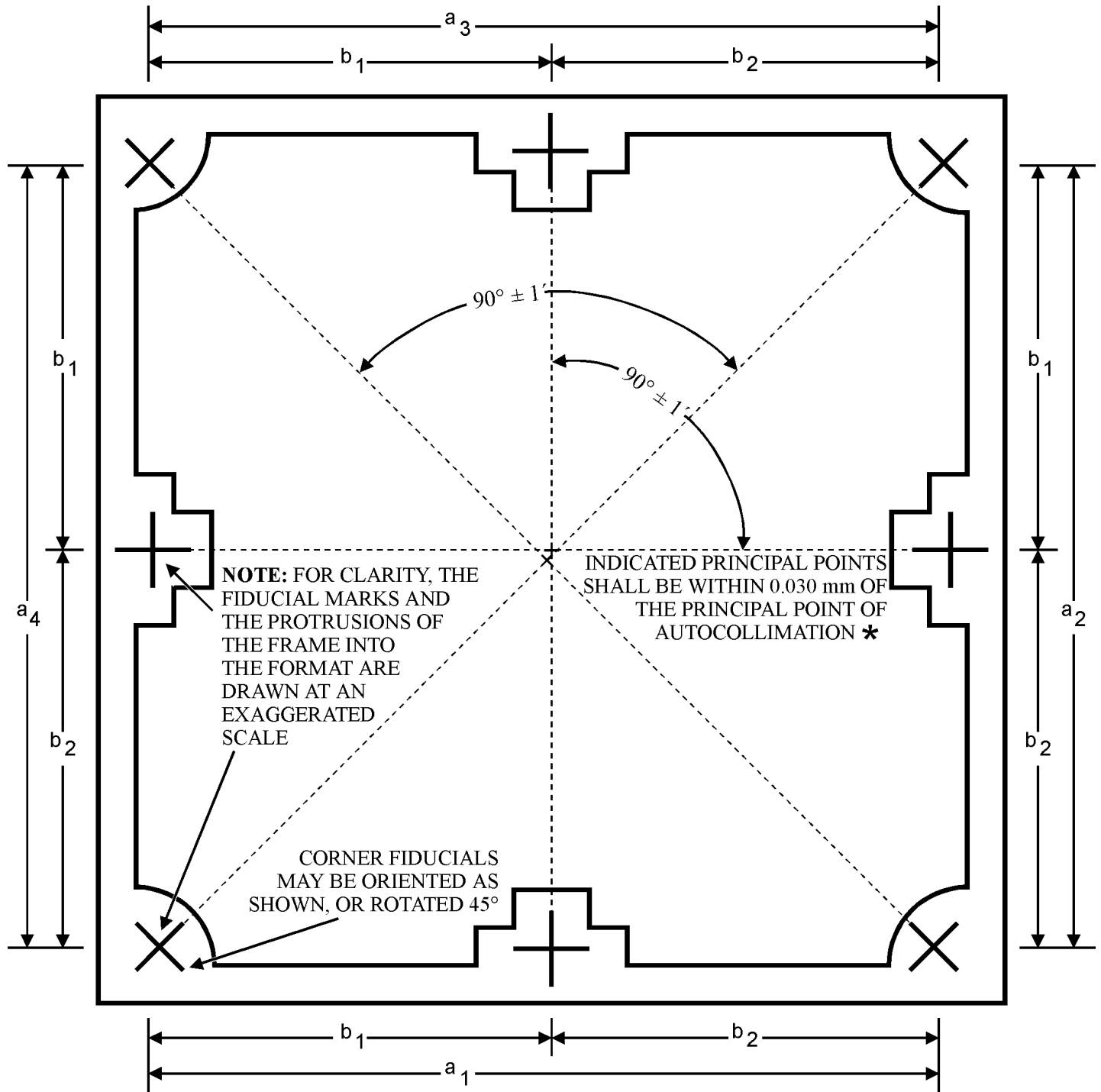


Figure 2
ARRANGEMENT OF FIDUCIAL MARKS



$a_1 = a_2 = a_3 = a_4$ (within 0.500 mm)

$b_1 = b_2$ (± 0.500 mm)

* THE CALIBRATED PRINCIPAL POINT - THE POINT OF SYMMETRY - SHALL BE WITHIN 0.015 mm OF THE PRINCIPAL POINT OF AUTOCOLLIMATION FOR 153 mm FOCAL LENGTH LENSES AND 0.030 mm FOR ALL OTHER FOCAL LENGTH LENSES.

USDA OPTICAL REQUIREMENTS

Table 1

TABULATION OF OPTICAL REQUIREMENTS

Focal Length	88mm	153mm	210mm	305mm
Focal Length Within	± 4mm	± 3mm	± 4mm	± 5mm
Useable Angular Field	120°	90°	70°	50°
Field Angle-From Axis out to:	54.5°	40°	30°	22.7°
DISTORTION - At Maximum Aperture				
Radial Distortion - Tolerance (um)	± 15	± 10	± 20	± 20
Decentering Distortion - Tolerance (um)	-	≤ 8	-	-
MODEL FLATNESS - (um) Total Difference	± 17	± 19	-	-

INDICATED PRINCIPAL POINTS (Fiducial Centers)

The indicated principal points - fiducial centers - shall fall within a 0.040mm radius circle around the principal point of autocollimation.

CALIBRATED PRINCIPAL POINT (Point of Symmetry)

The calibrated principal point - point of symmetry - shall fall within a 0.020mm radius circle around the principal point of autocollimation for 153mm focal length lenses and 0.040mm for all others.

RESOLUTION

Measured on Spectroscopic Plate at Maximum Aperture

Minimum Radial & Tangential Resolution in Line Pairs per mm
LENS HALF ANGLE

Lens	0°	7.5°	15°	22.7°	30°	35°	40°	45°	50°	54.5°
86mm Wild Super Aviogon II Zeiss S-Pleogon A or equivalent	59	59	49	42	35	30	17	14	12	12
153mm Wild U. Aviogon Zeiss Pleogon A Jena Lamegon Pl or equivalent	57	57	48	48	40	34	14			
210mm Wild N-Aviogon II Zeiss Topargon or equivalent	49	49	42	35	29					
305mm Wild N. Aviotar Zeiss Topar or equivalent	48	48	28	24						

ATTACHMENT B

GENERAL DIRECT-DIGITAL CAMERA SPECIFICATION

(Dated December 19, 2008)

1.0 INTRODUCTION AND BACKGROUND

The U.S. Federal Government has not yet established an independent government evaluation and calibration policy for digital camera systems since digital sensor technology is still rather new. Until a policy is developed and implemented, the U.S. Department of Agriculture (USDA), Farm Service Agency (FSA) has proceeded to validate the quality and capabilities of current digital camera systems by obtaining relevant information from camera manufacturers and data providers. The following specifications and requirements have been developed to ensure that any digital camera proposed for use on this contract meet minimum requirements to provide the highest quality image tiles and ortho products.

2.0 DIGITAL CAMERA SPECIFICATIONS AND REQUIREMENTS

This document covers general digital camera specifications and requirements for the 2011 NRCS Small Area Contract where direct digital imagery may form part of a Task Order and is not applicable to any other USDA aerial photography contract. Acquisition of the digital imagery may be from airborne or space borne platforms as specified in the individual task order(s). Digital cameras for acquiring precise vertical digital imagery are required to be tested and calibrated (geometrically and radiometrically). Digital camera systems proposed for use must be of comparable precision and quality with traditional stereoscopic mapping cameras. Digital camera systems must also be compatible with analytical mensuration procedures used in photogrammetric surveys and in preparing accurate orthophotography. Only digital camera systems approved by the Contracting Officer, which meet the requirements of these specifications as determined by appropriate camera system documentation and sample imagery submitted, shall be used on task orders that form part of this contract.

3.0 GENERAL REQUIREMENTS

Digital camera systems must be tested and calibrated with appropriate certification documentation. The digital camera must be geometrically stable and suitable for use in precise, high-accuracy photogrammetric orthoimagery applications. The digital camera system shall provide the following:

3.1 Ground Sample Distance

The camera shall provide the resolution and field of view necessary to meet the ground sample distance (GSD) requirement, as specified in Section B of the contract.

3.2 Single-chip Sensor Systems

The digital camera shall capture red, green, and blue, and near infrared bands (channels). Digital camera systems that use a single-chip sensor, such as a Bayer pattern color filter array, are permitted on this project if the system has method of acquiring and co-registering all color bands (channels), such as a dual boresighted camera system.

3.3 Pan Sharpening

Color interpretation or pan sharpening will be permitted to achieve the required GSD requirements if the panchromatic to color resolution ratio is no greater than 1:5.

3.4 Color Band and Depth

The camera shall capture a minimum of 12-bits per color band (channel).

3.5 Radiometric Accuracy

If the camera system requires more than one camera to acquire the multi-spectral data or the system contains more than one lens and/or shutter (mechanical or electrical), the difference in radiometric values between bands (channels) of a calibrated neutral object shall be less than $\pm 5\%$. For example, a 12-bit image shall not have more than ± 205 difference in between any color band.

3.6 Exposure Control

An automatic exposure control device is permitted, but a manual override capability is required for some types of terrain to achieve proper coverage and exposure.

3.7 Calibration Reports

The Contractor shall submit to the Contracting Officer any new or updated calibration reports that are issued after Government's approval for use within 10 business days of the report release/publication. The calibration reports shall include the same system information listed in Paragraph 4.1 below.

3.8 System Maintenance

The contractor shall perform all maintenance in accordance with the manufacturers recommended and established procedures. The contractor shall maintain a complete history of all maintenance done to the digital camera system and have it available for Government inspection. The contractor shall provide certification that the system has

been maintained, preventive maintenance and calibration performed, to the manufacturer's requirements.

3.9 Malfunctions

The contracting officer shall be notified of all digital camera system malfunctions within 72 hours with a written report of the malfunction. A malfunction is defined as a failure in any element or process of the digital camera system that causes an interruption of the normal operations of the system. Any malfunctions or failures of global positioning systems or inertial measurement unit systems shall be reported directly to the Contracting Officer.

4.0 DIGITAL CAMERA APPROVAL REQUIREMENTS

All digital camera systems must be approved by the Contracting Officer before acquiring imagery under this contract. When requesting approval, the Contractor shall submit an "digital camera approval package" that contains a report of calibration (see Paragraph 4.1), sample digital imagery (see Paragraph 4.2), and camera documentation (see Paragraph 4.3).

4.1 Calibration Reports

The package shall include the manufacturer and any owner/operator calibration report(s), if performed, for each digital camera proposed for use. The contractor shall follow manufacturer's specifications for appropriate owner calibration and/or recalibration. The calibration reports shall address the geometric performance of the system, and at a minimum, include:

- (a) Date of report
- (b) The name of the person or company performing the calibration
- (c) The methodology and procedures used for calibration
- (d) Final calibration parameters, such as calibrated focal length, lens distortion values, radiometric calibration parameters, and principal point location.

NOTE: The government recognizes that individual calibration reports, procedures, and parameters may be unique to a certain manufacturer since equipment and systems vary from manufacturer to manufacturer.

4.2 Sample Imagery Requirements

The package shall include sample images from the digital camera proposed for use. The sample imagery must be at the same resolution and represent similar terrain (agriculture, cropland, forest, etc.) for the project that the Contractor is requesting approval for. The digital camera sample imagery shall provide the following minimum characteristics:

- (a) Display the same GSD resolution being offered as indicated in Section B of the contract.

- (b) It may be collected no less than 12-bits per color band (channel), but be re-sampled to 8-bits per band for sample image delivery.
- (c) Color band (channels) order shall be RGB, NRG, and RGBN for natural color, infrared, and multi-spectral, respectfully (where N is the near infrared).
- (d) Sample image shall be ortho-rectified, with geodetic standards of North American Datum 1983 (NAD83) and UTM projection with the appropriate Zone indicated.
- (e) Sample shall be delivered in a GeoTIFF file formatted, using the TIFF/GeoTIFF requirements indicated in the contract.
- (f) The sample imagery shall fit on one standard DVD/CD-ROM, formatted as described in the contract.

4.3 Digital Camera Documentation Requirements

The package shall include detailed documentation of the digital camera and post-processing system proposed for use. Documentation may include brochures, technical specifications, marketing material, manufacturer's user manuals, or other descriptive literature. The documentation shall contain at a minimum the following information:

- (a) General overview information
- (b) Product configuration description
- (c) Camera component description
- (d) Technical specifications
- (e) Computer management and storage systems
- (f) Image acquisition and processing workflow.

4.4 Multiple Camera Approval

The use of more than one type of digital camera system (i.e.: DSS, ADS40, UltraCam) in the acquisition of the same project area is prohibited unless a waiver from the Contracting Officer is obtained.

ATTACHMENT C

USDA DIRECT-DIGITAL SMALL AREA ORTHOIMAGERY TILE SPECIFICATION

(Dated December 19, 2008)

USDA Farm Service Agency
Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, UT 84119-2020
(801) 844-2910

1.0	SCOPE	2
2.0	APPLICABLE DOCUMENTS	2
3.0	GENERAL REQUIREMENTS	2
3.1	General	2
3.2	Image Quality.....	3
3.3	Radiometric Resolution	4
3.4	Spatial Resolution	4
3.5	Horizontal Accuracy	4
3.6	File Format.....	5
4.0	VERIFICATION.....	6
4.1	General	6
4.2	Image Quality.....	6
4.3	Radiometric Resolution	7
4.4	Spatial Resolution	7
4.5	Horizontal Accuracy	7
4.6	File Format.....	7
5.0	NOTES.....	8
	Figure 1, <u>UTM Zones</u>	9
	Table 1, <u>Required TIFF Tags</u>	10
	Table 2, <u>Required GeoTIFF Specific Tags</u>	10
	Table 3, <u>Approved Private Tags</u>	11
	Table 4, <u>Required GeoTIFF MetaTags</u>	11
	List 1, <u>Tag Listings</u>	13
	List 2, <u>Sample “tiffinfo” Output</u>	14
	List 3, <u>Sample ListGeo Output</u>	14

1.0 SCOPE

This document establishes the technical criteria to be used in the production of direct-digital orthoimagery tiles on task orders associated with the 2011 USDA-NRCS-2-11 Indefinite Delivery/Indefinite Quantity (IDIQ) Contract issued by the Aerial Photography Field Office. This specification is not applicable to imagery required to be delivered unprocessed.

2.0 APPLICABLE DOCUMENTS

In the event of conflict between the contents of this specification and the documents referenced herein, the contents of this specification shall take precedence.

- 2.1 TIFF Specification Revision, 6 dated June 3, 1992 (Adobe Systems Inc.). The Tagged Image File Format (TIFF) is a copyrighted standard of Adobe Systems, Inc.
- 2.2 GeoTIFF Revision 1.0 Specification, dated December 28, 2000 (Version 1.8.2). The GeoTIFF Format Specification is a public domain extension of TIFF that provides a robust and flexible method of storing georeferencing information in a TIFF file.

3.0 GENERAL REQUIREMENTS

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) has several programs, such as the National Resources Inventory (NRI) and Wetlands Reserve Program (WRP), programs orthoimagery for various program uses including, but not limited to photo interpretation, area and point delineation, and Geographic Information Systems (GIS) measurements in support of multiple natural resource management and inventory programs. The complex nature and the need for consistent but radiometric correct imagery require the tiles to adhere to exact format and content of this specification.

3.1 General.

- (a) Geographic Extent. Each site/location shall cover the entire area with a mandatory meter buffer of 400 (± 40) on all four cardinal directions. Extents shall be computed by projecting the geographic corners and side midpoints to the appropriate projection, then adding the buffer on each side of the resulting minimum bounding rectangle.
- (b) Non-image data. Titles shall not contain any non-image data. Non-image data includes, but not limited to, borders, fiducial marks, and artifacts. Non-image data also includes “fill” induced by a lack of elevation surface model coverage that results in white, black, or spurious intensity values.
- (c) Datums and Coordinates. All tiles shall be projected in the North American Datum of 1983 (NAD83), using the corresponding native Universal Transverse

Mercator (UTM) zone (see Figure 1, UTM Zones) with coordinates in meters. The vertical datum for all tiles shall be North American Vertical Datum of 1988 (NAVD88). The latest datum version shall be used.

- (d) Image Mosaicking. Tiles may be created using multiple digital images (“chips”) to produce the final product. Specular reflections in tiles should be minimized, especially in agriculture areas, by patching the area using chips from other imagery.
 - (1) Radiometry Balance. When a mosaic of two or more chips is made, the brightness and color values of the other chips will be adjusted to match that of the principal chip. The join lines between the overlapping chips will be chosen to minimize tonal variations. Localized adjustment of the brightness and color values will be done to reduce radiometric differences between join areas.
 - (2) Edge-Matching. All chips shall not have more than ± 3 pixels offset between the principal chip.

3.2 Image Quality. All tiles shall have proper histograms and tone balance. Color imagery shall also have proper color balance and saturation. When adjusting the radiometric values on multi-spectral tiles, the natural color (RGB bands) should take precedence over the near infrared band.

- (a) Clipping. The tiles shall have a tonal range that prevents the clipping of highlight or shadow detail from the image. When calculated against the luminosity histogram (using the RGB bands), the cumulative pixel count between the 5 and 250 histogram bin values shall not be less than 98.0%, with a preferred value greater than 99%.
- (b) Contrast. When calculated against the luminosity histogram (using the RGB bands), the difference between the histogram bin value that contains 99.0% of the cumulative pixel count and the value that contains 1.0% shall be greater than 140 but less than 160 (with a goal of 150). If the cumulative pixel count percentage falls between two histogram bin values, the close value shall be used. For example, if the luminosity value 222 contains 99% of the cumulative pixel count and value 44 contains 1% count, therefore the difference is 178.
- (c) Histogram Median. When calculated against the luminosity histogram (using the RGB bands), the tiles shall have a median bin value between 108 and 148.
- (d) Color Balance. All tiles should have a neutral tonal range without the dominance of any individual color. The difference between the minimum and maximum value in a RGB triplet of any nearly neutral objects within the image shall be less than 5.
- (e) Band-to-Band Registration Accuracy. Misregistration between any color bands shall not exceed 1 pixel.

- (f) Image blemishes, scratches and artifacts. Imagery shall be free of blemishes, scratches, and artifacts that obscure ground feature detail. The following table defines the maximum acceptable limits for blemishes, scratches, and artifacts. Clusters of blemishes, scratches, and artifacts that do not individually meet these criteria may be considered unacceptable.

Acceptable Image blemishes, scratches and artifacts	
1 pixel wide	100 pixels in length
2 pixels wide	60 pixels in length
3 pixels wide	20 pixels in length
4 – 12 pixels wide	12 pixels in length

3.3 Radiometric Resolution.

- (a) Color Imagery. All imagery shall be an 8-bit RGB image in accordance with Section 6, RGB Full Color Images, of the TIFF Specification.
- (b) 4-Band Imagery. All imagery that contains both natural color and near infrared shall meet the same requirements as color imagery specified in the paragraph (a) above and shall have the samples saved in the following order: Red, Green, Blue, and infrared (RGBN).

- 3.4 Spatial Resolution. The spatial resolution will be specified in the individual task orders. Tiles produced under this specification shall not be resampled from the original image or original capture, with resolution greater or less than the following numbers:

Ground Sample Distance (GSD)	Original Image Resolution	
	Minimum (cm)	Maximum (cm)
8 centimeters	4	9
15 centimeters	9	16.5
30 centimeters	16	33

- 3.5 Horizontal Accuracy. All tiles shall have 95% of all well-defined points tested fall within the specified distance in the task order.
- 3.6 File Format. All tiles shall be produced using a georeferenced tagged image format (GeoTIFF) in accordance with this specification, the GeoTIFF 1.0 Specification, and the baseline TIFF 6.0 Specification (stated in order of precedence). All tiles shall be readable by older applications that assume TIFF 5.0 or an earlier version of the specification. List 1, Tag Listings, List 2, Sample “tiffinfo” Output, and List 3, Sample ListGeo Output shows an example of a TIFF tag listing.

Tiles that use designated “Extended TIFF 6.0 file” features, as defined in Section 2 of the TIFF Specification, shall not be used. This includes, but not limited to, any of the major new extensions such as “tiled images.” Features designated as “not recommended for general data interchange” are considered extensions to the baseline TIFF specification and shall not be used.

(a) Tagged Image File Format (TIFF) Requirements

- (1) All public tags shall conform to the TIFF Specification and shall not be modified outside of the parameters given in the specification. Use of tag numbers not specified in the TIFF Specification for either Grayscale or RGB full color images, depending on color band of the tiles, is not permitted. As a minimum, the TIFF tags listed in Table 1, Required TIFF Tags, and Table 2, Required GeoTIFF Specific Tags, shall be included when creating tiles under this specification.
- (2) Tags numbered 32,768 or higher, sometimes called private tags, are reserved and shall not be used unless listed in Table 3, Approved Private Tags. Enumeration constants numbered 32,768 or higher are reserved and shall not be used.
- (3) Tags numbered in the “reusable” 65,000-65,535 range shall not be used.
- (4) All tile files shall be created using the little-endian byte order as specified in the TIFF Specification. Bytes 0-1 of the Image File Header must be “II” (4949.H).
- (5) All tiles files shall only have a single Image File Directory (IFD).
- (6) Tiled TIFF files are not allowed.

- (b) Georeferenced Tagged Image Format (GeoTIFF) Requirements. A GeoTIFF file is a TIFF file, and inherits the file structure as described in the corresponding portion of the TIFF Specification. All GeoTIFF specific information is encoded in several additional reserved TIFF tags, and contains no private Image File Directories (IFD's), binary structures or other private information invisible to standard TIFF readers.

The GeoTIFF specification uses a MetaTag (GeoKey) approach to encode dozens of data elements into just six TIFF tags. GeoKeys are structurally similar to TIFF tags, but at one lower level of abstraction. As a minimum, the four tags listed in Table 4, Required GeoTIFF MetaTags, shall be included when creating tiles under this specification.

4. VERIFICATION

Any tiles not meeting the requirement in Section 3 may be rejected for non-compliance. Each tile or, at the APFO's determination, a random sample from the lot may be inspected using the following methods. The use of automated processes, such as computer scripts, may be substituted for visual verification.

4.1 General.

- (a) Geographic Extent. Visual verification will be done to verify tiles coverage.
- (b) Non-image items. Visual verification will be done to ensure tiles do not contain any non-image.
- (c) Datums and Coordinates. Verification of georeferencing, correct datums and coordinate systems, by shall be accomplished by visually viewing the image using GIS software other than the software used to create the image.
- (d) Image Mosaicking. Visual verification will be done to verify tonal and brightness values across chips used to create the tiles and to verify edge-matching against adjacent tiles.

4.2 Image Quality.

- (a) Clipping. Visual or automated verification on the luminosity histogram will be done to verify overall clipping.
- (b) Contrast. Visual or automated verification on the luminosity histogram will be done to verify image contrast range.
- (c) Histogram Peak. Visual or automated verification on the luminosity histogram will be done to verify peak histogram value.
- (d) Color Balance. Visual or automated verification on the luminosity histogram will be done to verify overall clipping. Visual verification will be done to each tiles verify proper histogram and tone balance.
- (e) Band-to-Band Registration Accuracy. Visual verification on the luminosity histogram will be done to verify band-to-band registration.
- (f) Image blemishes, scratches and artifacts. Visual verification on the luminosity histogram will be done to verify that the image does not contain artifacts.

4.3 Radiometric Resolution. Visual verification will be done to verify bit depth and compliance with TIFF Specification.

4.4 Spatial Resolution. Visual verification will be done to measure spatial resolution.

- 4.5 Horizontal Accuracy. Visual verification will be done to verify tiles horizontal accuracy. This may include measurements compared against existing ground control points, control imagery or other means at the disposal of USDA.
- 4.6 File Format. Automated computer scripts will be used to verify that all GeoTIFF and TIFF Specifications are complied with. Correct encoding of all required Meta-Keys (also called GeoKeys) shall be confirmed by referencing each GeoKey using a software application designed to check each against the specifications.

5.0 NOTES

Reserved.

5.1 DEFINITIONS

Band – a range of wavelengths of electromagnetic radiation. Also, image data gathered at this wavelength range. Sometimes referred to as channel.

Brightness value – a number (normally 0-255 in a 8-bit image) representing a discrete intensity gray level of a pixel in an image.

Chip – each separate piece of a mosaick image that contributes to the final image.

Clipping – The presence of pixels exhibiting the minimum or maximum digital count in an image's dynamic range.

Dodging – manipulation of the intensity of part of a photograph by selectively shading or masking.

Field – refers only to the entire field, including the value, of the geokey (as defined in the TIFF Specification).

Ground Sample Distance (GSD) – the area of ground represented in each pixel in x and y components.

Image File Directory – contains information about the image. There must be at least 1 IFD in a TIFF file and each IFD must have at least one entry.

Metadata – description of the content, quality, condition, and other characteristics of the data.

Private tags – TIFF tags numbered 32,768 or higher. Private tags are not defined in the TIFF Specification.

Public tags – TIFF tags that are defined by the TIFF Specification.

Resample – interpolation of pixel values based upon neighboring pixel values.

Tag – refers only to the identifying number portion of the geokey (as defined in the TIFF Specification).

Figure 1, UTM Zones

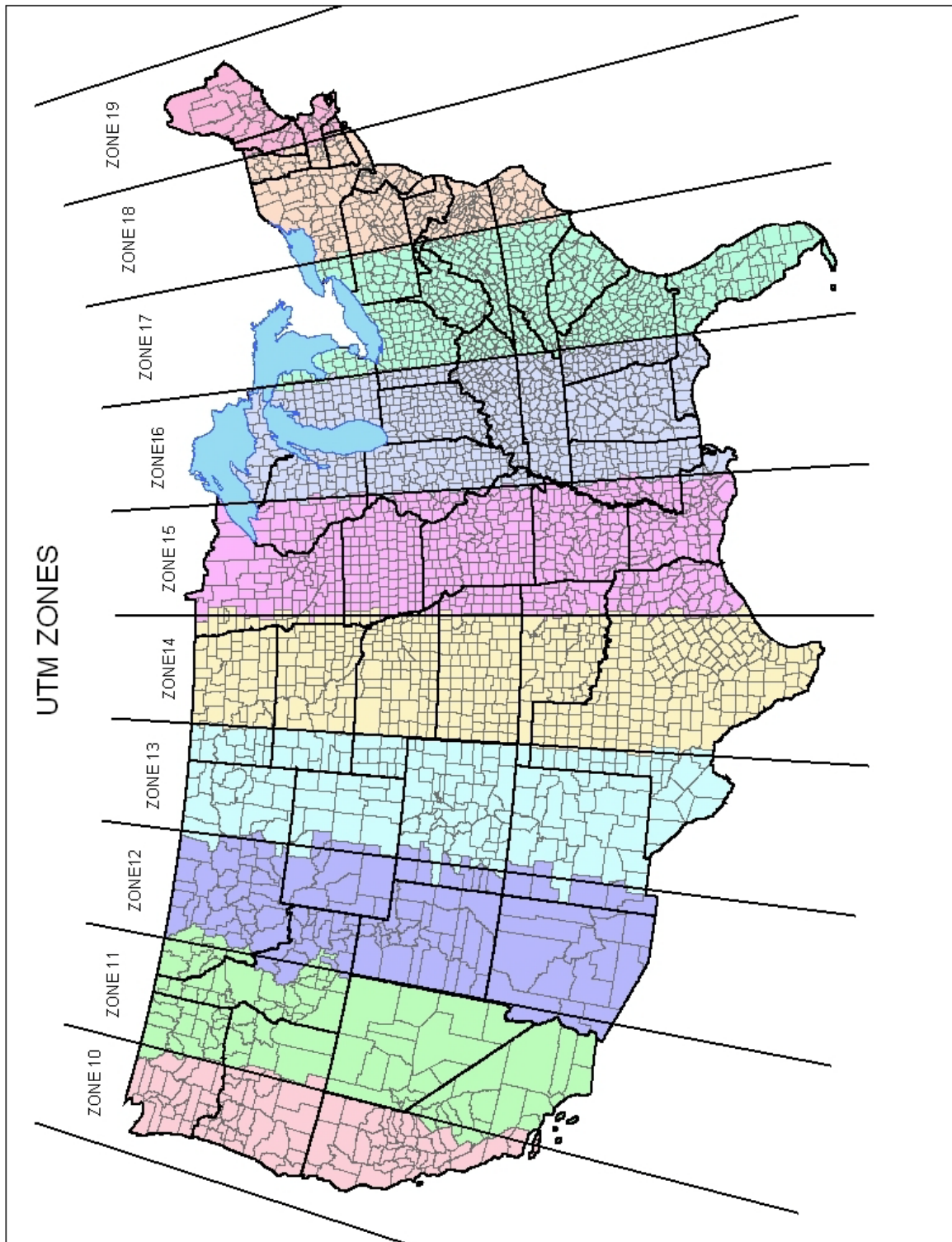


Table 1, Required TIFF Tags

TAG NAME	DESCRIPTION
ImageDescription tag (270.d, 10e.h)	The ImageDescription tag shall contain the program name. Tag should read: “2009 NRCS Digital Pilot Program”
DocumentName tag (269.d, 10d.h)	The DocumentName tag shall have the following form: <loc> _<r> where: <loc > - site/location id number listed in the boundary shapefile <r> - GSD resolution (in centimeters) Example: 01001-020401R_15

Table 2, Required GeoTIFF Specific Tags

TAG NAME	DESCRIPTION
ModelPixelScaleTag (33550.d, 830e.h)	The X and Y values must be populated and be equal to the ground distance of one tile pixel.
ModelTiepointTag (33922.d, 8482.h)	This tag specifies the (X,Y) ground coordinates of the (0,0) image pixel, by convention in the upper left corner of the image. All tiles shall use the UTM project reference frame. GeoTIFF allows considerable flexibility in how an image is tied to the ground, but tiles image data should be tied to the (0,0) pixel. The Z coordinate value should be set to 0. See section 2.6.1 of the GeoTIFF specification.
GeoAsciiParamsTag (34737.d, 87b1.h) (required)	This tag is used to store all the ASCII-valued GeoKeys. See section 2.4 of the GeoTIFF specification.
GeoKeyDirectoryTag (34735.d, 87af.h) (required)	This tag references all non-ASCII GeoKeys. All projection and datum information is stored in GeoKeys. See section 2.10.2.2 of this standard and section 2.4 of the GeoTIFF specification.

Table 3, Approved Private Tags

TAG NAME	ID (OWNER)
ModelPixelScaleTag	33550 (SoftDesk)
ModelTransformationTag	34264 (JPL Carto Group)
INGR Packet Data Tag	33918 (Intergraph)
INCR Flag Registers	33919 (Intergraph)
IrasB Transformation Matrix	33920 (Intergraph)
UnUsed	33921 (Intergraph)
ModelTiepointTag	33922 (Intergraph)
GeoKeyDirectoryTag	34735 (SPOT)
GeoDoubleParamsTag	34736 (SPOT)
GeoAsciiParamsTag	34737 (SPOT)

Table 4, Required GeoTIFF MetaTags

TAG NAME	DESCRIPTION
GTModelTypeGeoKey (1024.d, 400.h) (required)	The required value is 1 (ModelTypeProjected).
GTRasterTypeGeoKey (1025.d, 401.h) (required)	a. The required value is 1 (RasterPixelIsArea) which is the default value. b. The "PixelIsArea" raster grid space uses coordinates I and J, with (0,0) denoting the upper-left corner of the image, and increasing I to the right, increasing J down. The first pixel-value fills the square grid cell with the bounds top-left = (0,0), bottom-right = (1,1) and so on; by extension this one-by-one grid cell is also referred to as a pixel. An N by M pixel image covers an area with the mathematically defined bounds (0,0),(N,M). c. This raster space designates the upper-left corner of an image. The coordinate pair values for this location shall be "a whole number of pixels." Each value "must be integer multiple of the resolution" of the tile image. d. The desired result is to have "Exact Pixel Registration," meaning that pixels from multiple images line up exactly. This should not be confused with overlaps or gaps, but the cells have to fall on an even multiple of the cell width and height from one another, and adjacent images cannot have cells starting halfway, or partially into the cells of the original image.

ProjectedCSTypeGeoKey (3072.d, c00.h) (required)	This key contains a coded value for the projection, datum, and possibly plane coordinate zone. Legal values for this key are listed in section 6.3.3.1 of the GeoTIFF specification.
PCSCitationGeoKey (3073.d, c01.h) (required)	This is a free text field for describing the projection and datum. Tile images are projected into the UTM coordinate system. These fields shall describe the projection, zone, and datum and shall be in the following form: <datum>/UTM Zone <number> <N/S> where: <datum> - common datum abbreviation, NAD83. <number> - UTM zone number. Example: NAD83/UTM zone 15N
GTCitationGeoKey (1026.d, 402.h) (required)	This is a free text field for providing a description of the tile. The GeoKey contents shall be in the following form. <program>_<loc>_<xx>_<r>_<yyyymmdd> where: <program> - Program Name (i.e., NRCS-Pilot). <loc> - site/location id number listed in the boundary shapefile <r> - GSD resolution (in centimeters). <yyyymmdd> - date of acquisition. b. Example: NRCS-Pilot_01001-020401R_15_20090714
ProjLinearUnitsGeoKey (3076.d, c04.h) (required)	This key contains a coded value for the linear units used by the projection. Legal values for this key are listed in section 6.3.3.1 of the GeoTIFF specification. Tiles shall use the code value of 9001 ("Linear_Meter").

List 1, Tag Listings

The following table summarizes the TIFF, GeoTIFF, and GeoKey requirements. The values in the table are consistent with the TIFF and GeoTIFF specifications, but there are fewer options than are allowed by TIFF. Additional guidelines and requirements for the values of tags and keys are detailed in the body of this standard. Additional public tags and keys may be used at the data producer's option, providing they do not conflict with the required tags.

TIFF tags required by baseline TIFF:

<u>TagName</u>	<u>Decimal</u>	<u>Hex</u>	<u>Type</u>	<u>Value</u>
ImageWidth	256	100	SHORT or LONG	
ImageLength	257	101	SHORT or LONG	
BitsPerSample	258	102	SHORT	8,8,8
Compression	259	103	SHORT	1
PhotometricInterpretation	262	106	SHORT	2
Orientation	274	112	SHORT	1
StripOffsets	273	111	SHORT or LONG	
SamplesPerPixel	277	115	SHORT or LONG	3
RowsPerStrip	278	116	SHORT or LONG	1
StripByteCounts	279	117	LONG or SHORT	

TIFF tags defined by GeoTIFF:

<u>TagName</u>	<u>Decimal</u>	<u>Hex</u>	<u>Type</u>	<u>Value</u>
ModelPixelScaleTag	33550	830E	DOUBLE	
ModelTiepointTag	33922	8482	DOUBLE	
GeoAsciiParamsTag	34737	87B1	ASCII	
GeoKeyDirectoryTag	34735	87AF	SHORT	

GeoKeys defined by GeoTIFF and used by APFO:

<u>TagName</u>	<u>Decimal</u>	<u>Hex</u>	<u>Type</u>	<u>Value</u>
GTModelTypeGeoKey	1024	400	6.3.1.1 code	1
GTRasterTypeGeoKey	1025	401	6.3.1.2 code	1
GTCitationGeoKey		1026	402	ASCII
ProjectedCSTypeGeoKey	3072	C00	6.3.3.1 code	
PCSCitationGeoKey	3073	C01	ASCII	
ProjLinearUnitsGeoKey	3076	C04	SHORT	

List 2, Sample “tiffinfo” Output

This listing is an output of the libtiff utility program “tiffinfo”.

```
TIFF Directory at offset 0x2370bc4
Image Width: 3247 Image Length: 3815
Resolution: 200, 200 (unitless)
Bits/Sample: 8
Compression Scheme: none
Photometric Interpretation: RGB color
Document Name: “Garvin NE 3309401:
Image Description: “USDA-FSA-APFO National Agriculture Imagery Program”
Samples/Pixel: 3
Rows/Strip: 1
Planar Configuration: single image plane
```

List 3, Sample ListGeo Output

The following is an example of a GeoTIFF tag and GeoKey listing from a NAIP image. This listing is the output of the libgeotiff utility program “listgeo”. The projection information below the line “End_Of_Geotiff” is implied by the standard projection and is not stored explicitly in the data file. The descriptions are retrieved from libgeotiff lookup tables in the listgeo application.

```
Geotiff_Information:
Version: 1
Key_Revision: 1.0
Tagged_Information:
  ModelTiepointTag (2,3):
    0      0      0
    337962  3763838  0
  ModelPixelScaleTag (1,3):
    2      2      1
  End_Of_Tags.
Keyed_Information:
  GTModelTypeGeoKey (Short,1): ModelTypeProjected
  GTRasterTypeGeoKey (Short,1): RasterPixelIsArea
  GTCitationGeoKey (Ascii,45): "2004 NAIP n_3309403_nw_15_2_20050714"
  ProjectedCSTypeGeoKey (Short,1): PCS_NAD83_UTM_zone_15N
  PCSCitationGeoKey (Ascii,21): "NAD83 / UTM zone 15N"
  ProjLinearUnitsGeoKey (Short,1): Linear_Meter
  End_Of_Keys.
End_Of_Geotiff.
```

List 3, Sample ListGeo Output (con't)

PCS = 26915 (name unknown)

Projection = 16015 ()

Projection Method: CT_TransverseMercator

ProjNatOriginLatGeoKey: 0.000000 (0d 0' 0.00"N)

ProjNatOriginLongGeoKey: -93.000000 (93d 0' 0.00"W)

ProjScaleAtNatOriginGeoKey: 0.999600

ProjFalseEastingGeoKey: 500000.000000

ProjFalseNorthingGeoKey: 0.000000

GCS: 4269/NAD83

Datum: 6269/North American Datum 1983

Ellipsoid: 7019/GRS 1980 (6378137.00,6356752.31)

Prime Meridian: 8901/Greenwich (0.000000/ 0d 0' 0.00"E)

Projection Linear Units: 9001/metre (1.000000m)

Corner Coordinates:

Upper Left (337962.000,3763838.000) (94d45'16.56"W, 34d 0' 9.55"N)

Lower Left (337962.000,3756208.000) (94d45'11.47"W, 33d56' 1.94"N)

Upper Right (344456.000,3763838.000) (94d41' 3.51"W, 34d 0'13.09"N)

Lower Right (344456.000,3756208.000) (94d40'58.63"W, 33d56' 5.47"N)

Center (341209.000,3760023.000) (94d43' 7.54"W, 33d58' 7.53"N)