

United States Department of Agriculture



Natural Resources Conservation Service
National Centers Servicing Unit
501 W. Felix, Bldg 23
Ft. Worth, TX 76115

September 24th, 2010

Mr. Lawrence Hansen:
AMEC Earth & Environmental, INC.
1405 West Auto Drive
Tempe, AZ 85284-1016

Dear Mr. Hansen:

Enclosed is your signed copy of task order, AG-7482-D-10-0047 for LiDAR and Derivative Products for North Fork Ninnescah Watershed sites in Kansas and Portions of the Long Branch & South Fork Salt Creek Watersheds in Missouri. Performance period for this Task Order is from September 24th, 2010 through April 30th, 2011. Steve Nechero has been assigned as the Point of Contact (POC) on this task order. He can be reached at (817) 509-3366.

We look forward to establishing a successful relationship with your firm in the effort to perform LiDAR and Derivative Products as outlined in the Statement of Work.

Please call Barbara Bardin at (817) 509-3519 if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Judith A. Weber".

JUDITH A. WEBER
Contracting Officer

Enclosures

cc: Tommie Parham, Director, NRCS, NGMC, Ft. Worth, TX
Steve Nechero, POC, NRCS, NGMC, Ft. Worth, TX
Barbara Bardin, Contract Specialist, NRCS, NCSU, Ft. Worth, TX

ORDER FOR SUPPLIES OR SERVICES

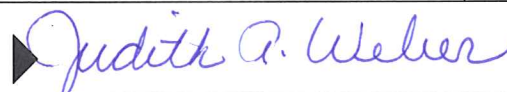
IMPORTANT: Mark all packages and papers with contract and/or order numbers.

1. DATE OF ORDER 09/24/2010		2. CONTRACT NO. (If any) AG-3A75-C-09-0021		6. SHIP TO:	
3. ORDER NO. AG-7482-D-10-0047		4. REQUISITION/REFERENCE NO. 458491		a. NAME OF CONSIGNEE USDA-NRCS-NAT CARTO & GEOSPATIAL CN	
5. ISSUING OFFICE (Address correspondence to) USDA-NRCS-NCSU 501 W. Felix ST. Building 23 Fort Worth TX 76115-3404				b. STREET ADDRESS FWFC, 501 W. FELIX STREET, BLD 23	
c. CITY FORT WORTH			d. STATE TX	e. ZIP CODE 76115	
7. TO:				f. SHIP VIA	
a. NAME OF CONTRACTOR AMEC EARTH & ENVIRON INC				8. TYPE OF ORDER	
b. COMPANY NAME				<input type="checkbox"/> a. PURCHASE <input checked="" type="checkbox"/> b. DELIVERY	
c. STREET ADDRESS 1405 WEST AUTO DRIVE 911641772 F				REFERENCE YOUR: Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.	
d. CITY TEMPE		e. STATE AZ	f. ZIP CODE 85284		
9. ACCOUNTING AND APPROPRIATION DATA				10. REQUISITIONING OFFICE IAS	
11. BUSINESS CLASSIFICATION (Check appropriate box(es))				12. F.O.B. POINT Destination	
<input type="checkbox"/> a. SMALL <input type="checkbox"/> d. WOMEN-OWNED		<input checked="" type="checkbox"/> b. OTHER THAN SMALL <input type="checkbox"/> e. HUBZone		<input type="checkbox"/> c. DISADVANTAGED <input type="checkbox"/> f. EMERGING SMALL BUSINESS <input type="checkbox"/> g. SERVICE-DISABLED VETERAN-OWNED	
13. PLACE OF		14. GOVERNMENT B/L NO.		15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date) 04/30/2011	16. DISCOUNT TERMS NET/30
a. INSPECTION Destination		b. ACCEPTANCE Destination			

17. SCHEDULE (See reverse for Rejections)

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	Tax ID Number: 91-1641772 DUNS Number: Not Available Non ARRA - LiDAR acquisition for the CEAP Watersheds Program Continued ...					

18. SHIPPING POINT		19. GROSS SHIPPING WEIGHT		20. INVOICE NO.		17(h) TOTAL (Cont. pages)
21. MAIL INVOICE TO:						
a. NAME USDA-NRCS-MSD		785,720.00				17(i) GRAND TOTAL
b. STREET ADDRESS (or P.O. Box) USDA-NRCS-MSD 501 W. FELIX ST, BLDG 23		785,720.00				
c. CITY FT. WORTH		d. STATE TX	e. ZIP CODE 76115-3404			

22. UNITED STATES OF AMERICA BY (Signature)				23. NAME (Typed) JUDITH A. WEBER TITLE: CONTRACTING/ORDERING OFFICER	
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**ORDER FOR SUPPLIES OR SERVICES
SCHEDULE - CONTINUATION**

PAGE NO

2

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER 09/24/2010	CONTRACT NO. AG-3A75-C-09-0021	ORDER NO. AG-7482-D-10-0047
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ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
001	<p>Admin Office: USDA-NRCS-NCSU 501 W. Felix ST. Building 23 Fort Worth TX 76115-3404 Agency Code (4): 16 Program Code (25): ZZZZZZZZ BOC: 2540 Sub BOC (2): ZZ Cost Org (7): ZZZZZZZ Job Code (8): ZZZZZZZZ Sub Cost Org (2): ZZ Budget Yr Start (2): 10 Budget Yr End (2): 11 Fund (6): 64T Budget Org (7): 80 Sub Budget Org (2): ZZ Report Category (4): ZZZZ Period of Performance: 09/24/2010 to 04/30/2011</p> <p>LiDAR acquisition for the CEAP Watersheds Program- in KS and MO in accordance with attached Statement of Work Product/Service Code: C211 Product/Service Description: ARCHITECT-ENGINEER SERVICES (NONCONSTR)</p> <p>The total amount of award: \$785,720.00. The obligation for this award is shown in box 17(i).</p>				785,720.00	

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

\$785,720.00

**Statement of Work
LiDAR and Derivative Products for North Fork Ninescah Watershed
For
USDA Natural Resources Conservation Service (NRCS) in Kansas**

I. PROGRAM SCOPE AND DESCRIPTION

Light Detection and Ranging (LiDAR) elevation data is to be collected for an area generally encompassing the North Fork Ninescah watershed in parts of Kiowa, Pratt, Stafford, Reno, Kingman and Sedgwick Counties, Kansas (1,064 sq. mi.), as shown on Attachment A. The actual project area of interest (AOI) will be provided as an ArcGIS shapefile. Derivative products will be processed from the LiDAR elevation data. The LiDAR and derivative product requirements, standards and specifications are provided in Section III (below).

II. PERIOD OF PERFORMANCE

The LiDAR must be collected during leaf-off, snow-free conditions in late fall 2010 or early winter 2011, and delivered by April 30, 2011.

III. DELIVERABLES, DATA ACCESS and DELIVERY

Deliverables include:

- Classified full point cloud data at:
 - Option 1 - 0.5 m Nominal Pulse Spacing (NPS) and 9.25 cm Vertical RMSE accuracy
 - Option 2 - 0.7 m Nominal Pulse Spacing (NPS) and 15 cm Vertical RMSE accuracy
- Bare earth hydro-enforced 1.0 m Digital Terrain Model (DTM)
- Digital Surface Model (DSM)
- Breaklines compiled from intensity images
- LiDAR intensity image

The minimum standards that will be used are the USGS NGP Base Lidar Specification v13. Deliverable specifications are as follows:

Requirement	Specifications
Nominal Pulse Spacing (NPS)	Shall be no greater than 0.5 NPS (Option 1) or 0.7 meter NPS (Option 2)
Collection Conditions	Leaf off, snow-free, less than 0.25 inches of precipitation in previous 3 days
Vertical Accuracy (in open terrain)	9.25 cm Vertical RMSE accuracy (Option 1) or 15 cm Vertical RMSE accuracy (Option 2)
Point Cloud Data	Full point cloud classified per ASPRS v.13 Point Record Format 1 or 3, 4, or 5 Classification Scheme (minimum): (01) Code 1 - Processed, but unclassified (02) Code 2 - Bare-earth ground (03) Code 7 - Noise (low or high, manually Identified, if needed)

Requirement	Specifications
	<p>(04) Code 9 - Water (05) Code 10 – Ignored Ground (Breakline Proximity) <i>Note: Class 7, Noise, is included as a convenience for the data producer. It is not required that all "noise" be assigned to Class 7.</i> <i>Note: Class 10. Ignored Ground is for points previously classified as bare-earth but whose proximity to a subsequently added Breakline requires that it be excluded during Digital Elevation Model (DEM) generation.</i></p>
Datum	Vertical: NAVD 88 Horizontal: NAD 83
Coordinate System	UTM Zone14N
Units	Vertical: Feet Horizontal: Meters to two decimal places
Metadata	Project level metadata, including data accuracy and collection specifications, will accompany each product delivered. In the metadata documentation, specific reference will be made to funding sources.
Break Lines	Break lines (created from the intensity Image) shall be collected for all rivers, streams, lakes ponds, and reservoirs at the minimum necessary for Option 1 (0.5 NPS) - to support 1 foot contours Option 2 (0.7 NPS) - to support 2 foot contours (Hydro Flattened breaklines shall be delivered in geodatabase format.)
DEM's (DTM & DSM)	1.0-m hydro-enforced DTM/DEM, to be delivered as a ESRI Terrain Object File Geodatabase for Bare Earth return. 1.0-m DSM/DEM, to be delivered as a ESRI Terrain Object File Geodatabase for First return. DEM tiles will show no edge artifacts or mismatch. (Georeference information shall be included in raster files. Tiled delivery, without overlap & DEM tiles will show no edge artifacts or mismatch.)
Intensity Image	Intensity image in grayscale GeoTiff format (Shall match the referenced tiling scheme)
Tile Size	Mass Points: 1500m x 1500m filled to project shapefile, using USGS base lidar spec v13 for overlap on incomplete tiles. Tiled deliverables shall conform to the tiling scheme, without added overlap. Tiling scheme will be used for all tiled deliverables. Tiled deliverables shall edge-match seamlessly in both the horizontal and vertical. NOTE: Tile Coverage: Tiles which lie completely within the project area shall be complete to the tile edges. Tiles which lie partially outside the project boundary shall be complete to the project boundary with enough overlap beyond the

Requirement	Specifications
	project boundary to ensure that no parts of the project are omitted.
Data Delivery Method	On portable hard drive

Notification of Data Collection

The contractor shall notify the NRCS project coordinator of the scheduled LiDAR collection date at least one (1) week prior to, and again one (1) day prior to the scheduled collection. The contractor shall provide the NRCS project coordinator confirmation of the commencement of the LiDAR collection on the day the collection commences. The purpose of the notifications is to provide NRCS the opportunity to collect ground-based data concomitant with LiDAR data collection.

IV. QUALITY ASSURANCE REVIEWS AND ACCEPTANCE OF DATA

All QA/QC reviews of the data will be evaluated on the National Standard of 95% of the points meeting the standard over the entire dataset. If the inspection reveals deficiencies or defects, the data or issues will be required to be resolved at no additional cost to NRCS. Initial acceptance of the deliverables by NRCS does not relieve the LiDAR provider from the responsibility to correct defective work with no further cost to NRCS for a period of one year following initial acceptance.

Preliminary Review of Data

Within 14 days of the LiDAR data collection, the contractor shall deliver a partial data set to the USDA-NRCS National Cartography & Geospatial Center (NCGC) for a preliminary review of the data. The partial data set shall include data for both cropland and forest cover types.

Cursory Review of Completed Deliverables

Upon completion of the deliverables identified in Section III of this document, the contractor shall deliver a copy of the deliverables to the NCGC for review. NRCS shall have 90 days to inspect the data for quality and completeness, and return the data to the contractor. Should deficiencies in the data be discovered, the NCGC POC will provide documentation of deficient data to the Contractor. The Contractor will evaluate what action to take to correct the data, or provide technical support in order for users to correct the data. Resolution of data deficiencies will be based on the mutual consent of NRCS and the contractor.

Independent QA/QC Review

NRCS, at its option, may elect to contract the services of an independent contractor for QA/QC review of all deliverables to ensure conformance to the specifications identified in Section III of this document. If the independent QA/QC review reveals any defect or deviation in the manufacture of the items that would make them unfit for the purpose intended, the Contractor will be required to satisfactorily remedy such conditions at no additional cost to NRCS. The independent QA/QC review will be completed within one year of the initial acceptance of the deliverables by NRCS.

V. USE AND DISTRIBUTION RIGHTS: All deliverable data and documentation shall be free from restrictions regarding use and distribution. Data and documentation provided under this Task Order shall be freely distributable by government agencies.

VI. NRCS POINTS OF CONTACT

Project Coordinator: Steven Nechero
USDA-NRCS
501 W. Felix Street, Bldg 23
Fort Worth, TX 76115
Phone: (817) 509-3366
Fax: (817) 509-3469
Steven.nechero@ftw.usda.gov

Contract Specialist: Barbara Bardin
USDA-NRCS
501 W. Felix Street, Bldg 23
Fort Worth, TX 76115
Phone: (817) 509-3519
Fax: (817) 509-3594
Barbara.bardin@ftw.usda.gov

**Statement of Work
LiDAR and Derivative Products for portions of the Long Branch
& South Fork Salt Creek Watersheds
For
USDA Natural Resources Conservation Service (NRCS) in Missouri**

I. PROGRAM SCOPE AND DESCRIPTION

Light Detection and Ranging (LiDAR) elevation data is to be collected for an area generally encompassing portions of the Long Branch & South Fork Salt Creek watersheds in parts of Boone, Monroe, Callaway and Audrain Counties, Missouri (552 sq. mi.), as shown on Attachment A. The actual project area of interest (AOI) will be provided as an ArcGIS shapefile. Derivative products will be processed from the LiDAR elevation data. The LiDAR and derivative product requirements, standards and specifications are provided in Section III (below).

II. PERIOD OF PERFORMANCE

The LiDAR must be collected during leaf-off, snow-free conditions in late fall 2010 or early winter 2011, and delivered by April 30, 2011.

III. DELIVERABLES, DATA ACCESS and DELIVERY

Deliverables include:

- Classified full point cloud data at:
 - Option 1 - 0.5 m Nominal Pulse Spacing (NPS) and 9.25 cm Vertical RMSE accuracy
 - Option 2 - 0.7 m Nominal Pulse Spacing (NPS) and 15 cm Vertical RMSE accuracy
- Bare earth hydro-enforced 1.0 m Digital Terrain Model (DTM)
- Digital Surface Model (DSM)
- Breaklines compiled from intensity images
- LiDAR intensity image

The minimum standards that will be used are the USGS NGP Base Lidar Specification v13. Deliverable specifications are as follows:

Requirement	Specifications
Nominal Pulse Spacing (NPS)	Shall be no greater than 0.5 NPS (Option 1) or 0.7 meter NPS (Option 2)
Collection Conditions	Leaf off, snow-free, less than 0.25 inches of precipitation in previous 3 days
Vertical Accuracy (in open terrain)	9.25 cm Vertical RMSE accuracy (Option 1) or 15 cm Vertical RMSE accuracy (Option 2)
Point Cloud Data	Full point cloud classified per ASPRS v.13 Point Record Format 1 or 3, 4, or 5 Classification Scheme (minimum): (01) Code 1 - Processed, but unclassified (02) Code 2 - Bare-earth ground (03) Code 7 - Noise (low or high, manually Identified, if

Requirement	Specifications
	<p>needed (04) Code 9 - Water (05) Code 10 – Ignored Ground (Breakline Proximity) <i>Note: Class 7 Noise, is included as a convenience for the data producer. It is not required that all "noise" be assigned to Class 7.</i> <i>Note: Class 10. Ignored Ground is for points previously classified as bare-earth but whose proximity to a subsequently added Breakline requires that it be excluded during Digital Elevation Model (DEM) generation.</i></p>
Datum	Vertical: NAVD 88 Horizontal: NAD 83
Coordinate System	UTM Zone14N
Units	Vertical: Feet Horizontal: Meters to two decimal places
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Requirement	Specifications
	to the project boundary with enough overlap beyond the project boundary to ensure that no parts of the project are omitted.
Data Delivery Method	On portable hard drive

Notification of Data Collection

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IV. QUALITY ASSURANCE REVIEWS AND ACCEPTANCE OF DATA

All QA/QC reviews of the data will be evaluated on the National Standard of 95% of the points meeting the standard over the entire dataset. If the inspection reveals deficiencies or defects, the data or issues will be required to be resolved at no additional cost to NRCS. Initial acceptance of the deliverables by NRCS does not relieve the LiDAR provider from the responsibility to correct defective work with no further cost to NRCS for a period of one year following initial acceptance.

Preliminary Review of Data

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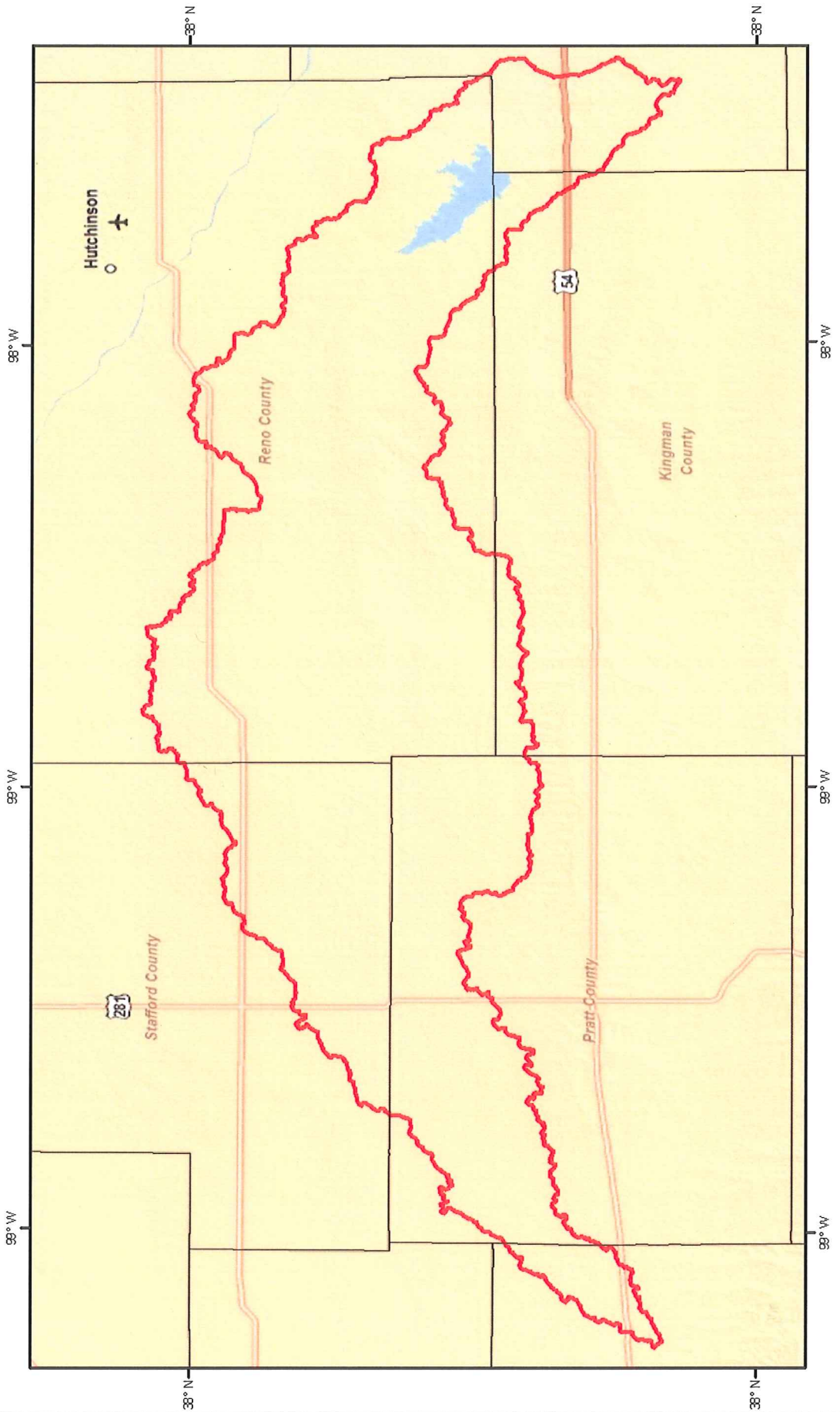
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
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Phone: (817) 509-3519
Fax: (817) 509-3594
Barbara.bardin@ftw.usda.gov

KANSAS ELEVATION ACTIVITIES



 North Fork Ninnescan Subbasin LIDAR area of interest (1064 square miles)

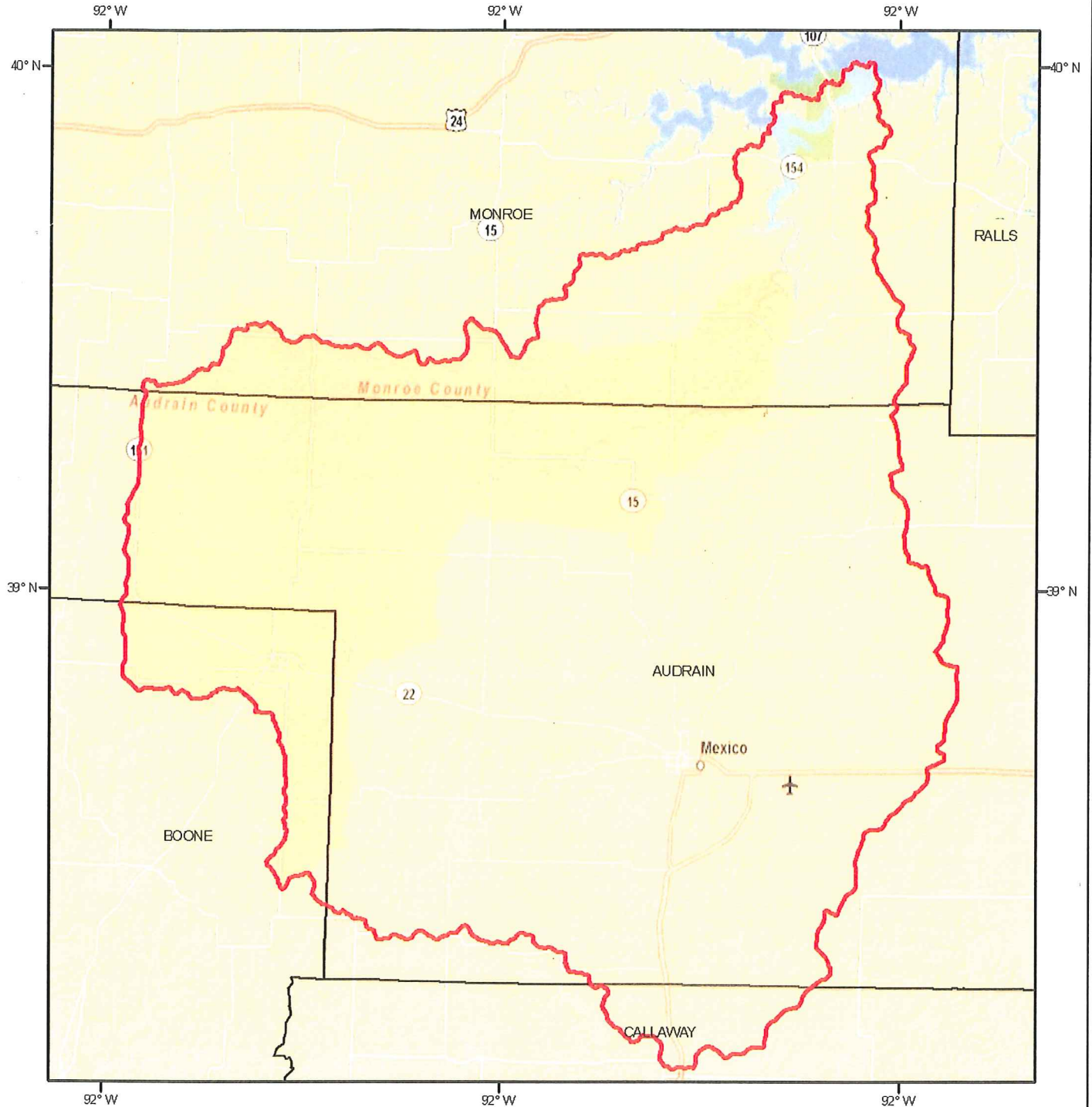
 World Street Map



Source:
 USDA, NRCS NCGC Geospatial Data Warehouse
 and information for NRCS KS State Office.
 Albers Equal Area Projection NAD83.

USDA, NRCS, National Cartography & Geospatial Center, Fort Worth, Texas 2010.

MISSOURI ELEVATION ACTIVITIES



MO_LiDAR_AOI_September2010 (552 square miles)

MO_LiDAR_AOI

HU_10_NAME

South Fork Salt River

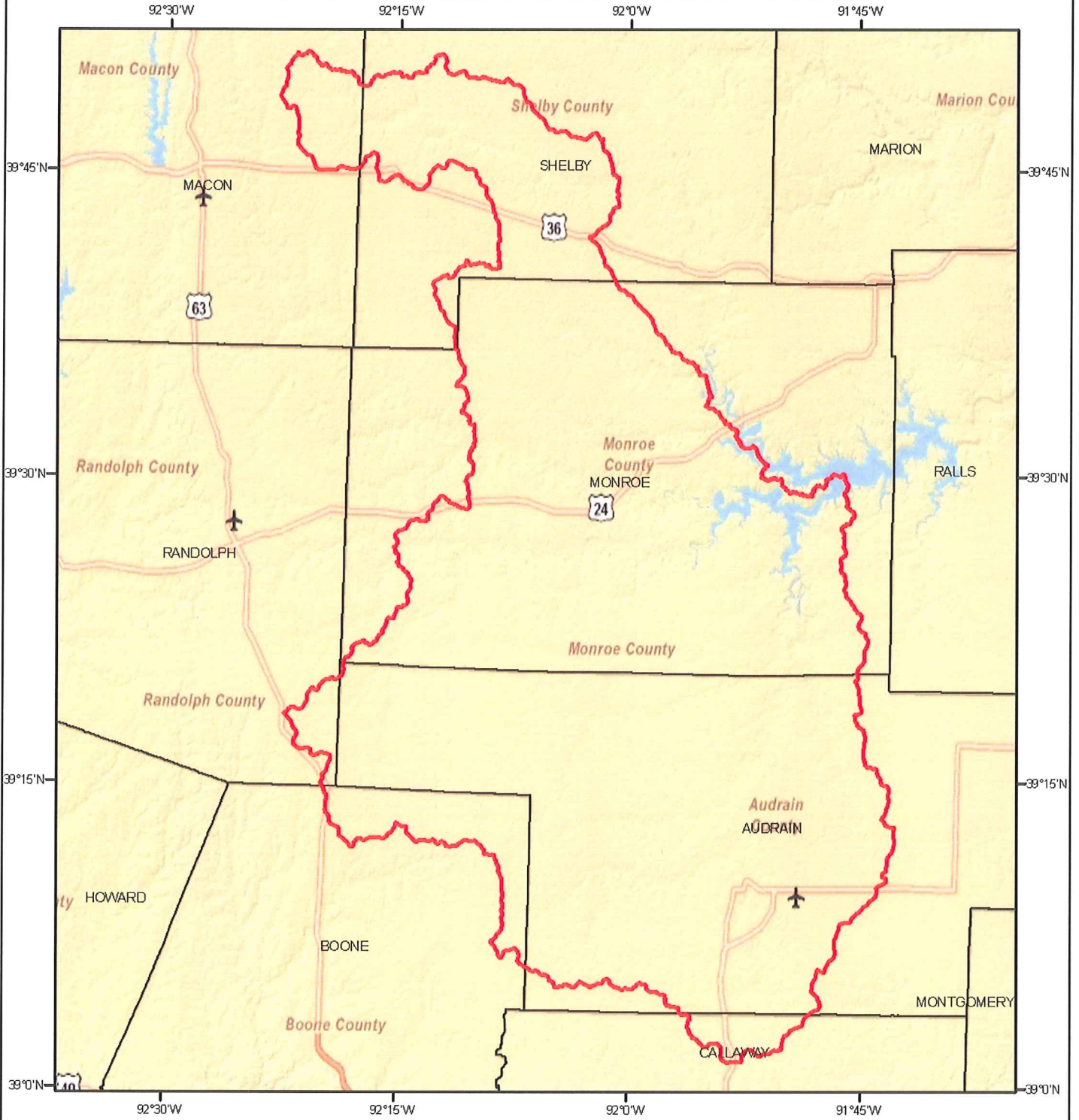
Long Branch



September 2010 1008786

Source:
USDA NRCS NCGC Geospatial Data Warehouse
and information from NRCS MO State Office.
Albers Equal Area Projection NAD83.

MISSOURI ELEVATION ACTIVITIES



MO_LiDAR_AOI_23September2010 (1060 sq mi)



Source:
 USDA NRCS NCGC Geospatial Data Warehouse
 and information from NRCS MO State Office.
 Albers Equal Area Projection NAD83.

23 September 2010 1008786