

Proposal Request for Aerial Services

Champaign, Piatt, and Douglas Counties, Illinois



Issue Date:
Tuesday, November 15, 2022

Proposal Due:
2:00 pm
Friday, December 9, 2022

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1.0 Introduction

The Champaign County GIS Consortium (CCGISC), acting pursuant to the authority given by Champaign County as Lead Agency of CCGISC and as an administrative agent for Piatt and Douglas counties for the purpose of soliciting proposals as described herein, solicits qualified and interested firms to submit proposals for providing the services, supervision, labor, equipment, products and materials necessary to provide digital ortho-imagery services for areas within Champaign, Piatt, and Douglas counties as described in and meeting the specifications of the Scope of Work. The imagery and related products will be used within a GIS for parcel, infrastructure, and other mapping. Orthophotography was last acquired for Champaign, Piatt, and Douglas in 2020.

Champaign, Piatt, and Douglas counties are located about 135 miles south of Chicago, in the heart of East-Central Illinois. Champaign County was incorporated in 1833 and is approximately 1000 square miles in area, with a population of 209,192 (2020 census estimate). Approximately two-thirds of Champaign County's population lives within a 140 square mile area that surrounds the Cities of Champaign and Urbana, the Village of Mahomet, and the Village of Savoy.

Piatt County was incorporated in 1841 and is approximately 450 square miles in area, with a population of 16,355 (2020 census estimate). The largest community in Piatt County is Monticello with a population of approximately 5,900.

Douglas County, named for Stephen A. Douglas, was incorporated in 1859 and is approximately 420 square miles. Tuscola is the county seat and the largest city with a population of 4,650 (2020 census estimate).

This RFP does not commit CCGISC, Champaign County, Piatt County, or Douglas County to award a contract or pay for any costs incurred in the preparation of a proposal. CCGISC reserves the right to accept or reject any or all proposals received, or to cancel, in part or in whole, this RFP.

2.0 Scope of Work

The Champaign County GIS Consortium is interested in acquiring 4-band color infrared aerial imagery for Champaign, Piatt, and Douglas counties. The aerial imagery is to be processed to produce ortho-imagery. The CCGISC is soliciting bids for ortho-imagery covering a 2079 square-mile contiguous area (*Douglas 457; Piatt 499 square-miles; Champaign 1123 square-miles*).

2.1 Options

All bids need to include costs for **6-inch** and **3-inch** resolution ortho-imagery with the following options.

OPTION 1: Ortho-imagery covering a 2079 square-mile contiguous area. (*Douglas 417; Piatt 499 square-miles; Champaign 1163 square-miles*)

OPTION 2: Ortho-imagery covering a 2079 square-mile contiguous area (*Douglas 417; Piatt 499 square-miles; Champaign 1163 square-miles*) **with reduced building lean in the specified Urbana-Champaign city centers** (*approximately 1.85 square miles*).

OPTION 3: Ortho-imagery covering a 2079 square-mile contiguous area (*Douglas 417; Piatt 499 square-miles; Champaign 1163 square-miles*) **with building lean eliminated for specified points.**

OPTION 4: Ortho-imagery covering a 2079 square-mile contiguous area (*Douglas 417; Piatt 499 square-miles; Champaign 1163 square-miles*) **with reduced building lean in the specified Urbana-Champaign city centers and building lean eliminated for specified points.**

See Attachment A and B for illustrations of Options 1, 2, 3, and 4.

CCGISC will determine which, if any, option to proceed forward with based on the provided responses.

The resulting product is to meet the specifications as described herein.

2.2 Acquisition of Aerial Imagery

The Contractor shall adhere to the following specifications for the acquisition and delivery of the requested natural-color aerial imagery.

2.2.1 Coordinate System and Datum

All data shall be geo-referenced to the Illinois State Plane Coordinates, East Zone, US Survey Feet on the North American Datum (NAD) 1983 horizontal datum (2011 adjustment), and North American Vertical Datum (NAVD) 1988.

2.2.2 Flight Specifications

Imagery shall be flown when deciduous foliage is under leaf-off conditions. The target flight window shall be within February 27, 2023 and April 4, 2023, or as otherwise specified by CCGISC.

The sun angle for all flights shall be at least (30) degrees above horizon. In no case shall imagery be captured when the ground is obscured by haze, snow, fog, smoke, light streaks or dust. Aerial imagery shall be flown when streams are in their normal banks and there is no evidence of temporary standing water or excessive soil moisture. The imagery shall be free of clouds and cloud shadows, and be clear, sharp, and evenly exposed. Photographs shall not contain objectionable shadows caused by building relief or low solar altitude.

All airborne equipment must be properly installed and mounted in aircrafts that provide a stable aerial photography platform. These aircrafts must be properly maintained, registered, and operated according to the rules and regulations of the Federal Aviation Administration (FAA).

2.2.3 Digital Aerial Camera

The aerial camera shall be a digital camera equipped with low distortion, high-resolution optics, high geometric accuracy and forward motion compensation, and an airborne GPS and Inertial Measuring Unit (IMU). It must be capable of:

- Producing digital imagery necessary to meet the requirements of this RFP.
- Generating four-band imagery from separate co-registered IR, red, green, and blue bands.
- Supporting high geometric accuracy and forward motion compensation.

The successful Contractor must provide the most recent calibration report for the digital sensor.

2.2.4 Horizontal Accuracy

6-INCH ORTHOIMAGERY:

6-inch orthoimagery will conform to ASPRS Level 2 standards for 1" = 100' scale mapping with an orthoimage ground sample distance (GSD) of less than 6 inches. The orthoimagery will be produced to meet or exceed a horizontal accuracy of 1.4-foot RMSE according to ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014).

3-INCH ORTHOIMAGERY:

3-inch orthoimagery will conform to ASPRS Level 2 standards for 1" = 50' scale mapping with an orthoimage ground sample distance (GSD) of less than 3 inches. The orthoimagery will be produced to meet or exceed a horizontal accuracy of 0.7-foot RMSE according to ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014).

2.2.5 Flight Planning/Flight Lines

A flight map shall be submitted for the given project area prior to acquisition. It is suggested denser flight lines be used for options 2, 3, and 4. Appropriate endlap and sidelap shall be used for all options. Images with reduced and/or eliminated building lean shall be incorporated into the final deliverable.

The aerial mission shall be flown with coverage extending beyond the project boundary to ensure adequate coverage. All flight lines shall extend one full photo base beyond each end boundary, and all side boundaries shall be covered by a minimum of 25% of the photo image format.

The Contractor shall provide a map of proposed flight lines for all options in their response.

The Contractor shall provide proposed percentages of endlap and sidelap in their response as well as flying height and proposed tolerances for crab and camera tilt.

The Contractor shall explain the proposed method that will be used to reduce/eliminate building lean (options 2, 3 and 4) in the specified areas (Attachment B).

2.2.7 Aerial Imagery Review

Contractor shall review the processed digital imagery for the following:

- Adherence to the flight plan
- Ground Sample Distance
- Density
- Contrast
- Hot spots
- Clarity
- Shadow detail
- Overall quality

In addition, within 4-6 weeks of the aerial flight, the Contractor shall deliver the RAW images of the aerial flight for initial photo checking on portable (USB2 or USB3) external hard drives. Unacceptable aerial imagery shall be corrected at no additional cost to the CCGISC.

2.2.8 Camera Station Control

Airborne GPS (AGPS) - latitude, longitude - and altitude and Inertial Measurement Unit (IMU) - attitude and velocity - data shall be recorded at the instant of exposure. An AGPS/IMU data capture solution shall follow the necessary industry acceptable standards to meet the specifications as described in this Scope of Work. Geodetic positions corresponding to the photo centers at the instant of exposure shall be calculated and combined with supplemental ground control point values in an analytical aerotriangulation solution. The horizontal root-mean-square error (RMSE) shall be based on industry acceptable standards for the specified mapping scale.

The contractor shall use tightly coupled AGPS/IMU collection techniques that provide high accuracy camera station coordinates. It is suggested that during the acquisition of the imagery, dual frequency GPS receivers shall be referenced to at least two reference stations.

The Contractor shall produce a statistical report summarizing the results of the airborne GPS/IMU adjustment.

2.2.9 Supplemental Ground Control

Surveyed ground control shall be used to support the production and meet the accuracy standards of ortho-imagery as described herein. The CCGISC will provide a Registered Professional Land Surveyor (PLS) licensed by the State of Illinois for the capture of supplemental ground control. The Contractor will be required to coordinate the needed work with the PLS supplied by CCGISC. The capture of supplemental control needs to begin by January 3, 2023. The cost of the PLS will not be incurred by the Contractor, however, the contractor will be responsible for placing any panels if needed.

2.3 **Digital Ortho-Imagery Production**

2.3.1 *Digital Elevation Model/Digital Surface Model*

To support the production of the orthoimagery, the CCGISC can provide the Contractor with a 2019 Digital Surface Model (DSM) created from a 2019 QL2+ Lidar acquisition project with 0.5-meter nominal spacing. The DSM meets the ASPRS Positional Accuracy Standard for Digital Geospatial Data (2014) for a 10-cm RMSEz Vertical Accuracy Class.

2.3.2 *Aerotriangulation*

The aerial triangulation shall be sufficient to support softcopy digital photogrammetric feature accuracy requirements outlined by ASPRS Level II standards as described in the ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014).

The Contractor shall document the used aerotriangulation process/methods and deliver a report of the analytical aerotriangulation results. Coordinates and residual values shall be reported for all points. RMSE values shall be completed and reported for the final adjustment. Discarded points shall be noted and discussed.

CHECKPOINTS

The calculation of the positional values (x,y,z) for the independent checkpoints shall be used for NSSDA product accuracy reporting. The CCGISC will provide a Registered Professional Land Surveyor (PLS) licensed by the State of Illinois for the capture of checkpoints. The cost of the PLS will not be incurred by the Contractor. The placement of any required panels will be the responsibility of the Contractor and the Contractor will be required to coordinate the needed work with the PLS. Checkpoint capture must begin no later than the first week in April 2023 to provide enough time for the PLS to complete capture by the first week in May 2023.

2.3.3 *Digital Ortho-imagery*

Digital ortho-imagery shall be produced from the processed digital aerial imagery. Each image (raster file) shall be geo-referenced. The DEM shall be applied to the raster file to rectify the image to eliminate distortion. The rectification process shall involve the solution of the appropriate photogrammetric equations for each pixel in the output image. Solution of photogrammetric equations at anchor points only, and warping the content of the original image between anchor points (rubber-sheeting) shall not be permitted. All ortho-imagery shall be edge-matched, radiometrically corrected, and color balanced. Once the imagery has been processed, it shall be structured and formatted in a seamless image database and sampled to the final output resolution. Reduced and/or eliminated building lean tiles (*options 2, 3, and 4*) shall be incorporated into the final deliverable.

RADIOMETRIC CHARACTERISTICS

All orthophotos shall be composed of four (4) R, G, B, IR spectral bands: Red (R), Green (G), Blue (B), and IR (infrared). The radiometric resolution of each band shall be at least eight (8) bits, where the image brightness for each band is represented by 256 levels, ranging from 0 to 255. No data areas shall be assigned a unique value that is not found within the imagery

IMAGE QUALITY

Orthophotos shall not contain defects or inconsistencies in tone and density between individual orthophotos.

Radiometric Distortion: The Contractor shall correct distortions caused by elevated or depressed structures such as bridges, rail beds, overpasses, and steep terrain. The CCGISC shall reject any image that contains these types of distortions.

Image Mosaicking: During the mosaick process, the image judged to have the best contrast shall be used as the reference image. All other images shall have their brightness values adjusted to that of the reference image. Join lines between overlapping images shall be chosen so as to minimize tonal variations. Localized adjustment of the brightness values shall be performed to minimize tonal differences between join areas. Mosaic lines should not cross through buildings, bridges, or other fabricated structures not at ground level. Visible seams or sutures within a digital orthophoto which exhibit a noticeable “edge” or “feather” effect shall be grounds for rejection of that digital orthophoto.

Edge Matching: The digital images are to be edge matched with no pixel gaps between geographic partitions. The maximum mismatch/offset shall not exceed to ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014)

Band to Band Registration: Misalignment between any color bands shall not exceed 1 pixel.

TILING SCHEME AND NAME

The Contractor shall deliver the GeoTIFF images with associated TFW files as well as compressed jpeg 2000 with associated jpw files. Both files are to be aligned with and named according to the provided 2,500 feet x 2,500 feet index grid.

DATA DELIVERY

All ortho-imagery shall be delivered on external hard drive(s) (USB2/USB3). Each drive shall contain the following reference information:

- Identification number
- Our name - Champaign County GIS Consortium
- Consultant name
- Date of delivery
- Listing of tiles

PRODUCT ACCURACY AND PRODUCT ACCURACY REPORTING

All inputs and processes such as aerotriangulation, control, general methodologies, and sensor calibrations used in the production of digital ortho-imagery shall be sufficient to ensure that all final digital ortho-imagery deliverables meet the defined project accuracy standards.

Product accuracy shall be reported according to NSSDA specifications which are available at <http://www.fgdc.gov/standards/projects/FGDC-standards-projects/accuracy/part3/chapter3>.

3.0 Deliverables

All reports, documentation, and maps shall be delivered as an Adobe Acrobat (.pdf) document.

The Contractor shall certify in writing that the all deliverables described herein meet the technical standards of this RFP.

ACQUISITION OF AERIAL IMAGERY (SECTION 2.2)

- Copy of the most recent calibration report for the digital sensor.
- Camera certification report
- GIS layers and map of the project area outline and flight lines.
- One set of RAW imagery within 4-6 weeks of aerial acquisition.
- A statistical report summarizing the results of the airborne GPS/IMU adjustment.

DIGITAL ORTHO-IMAGERY PRODUCTION (SECTION 2.3)

- A report describing the aerotriangulation process and analytical aerotriangulation results.
- Coordinates and residual values shall be reported for all points. RMSE values and ground elevation accuracy shall be completed and reported for the final adjustment. Discarded points shall be noted and discussed.
- Final product accuracy shall be reported according to most recent NSSDA guidelines.
- Digital orthorectified imagery in both GeoTIFF format with associated TFW files & compressed jpeg 2000 format with associated jpw files, meeting all standards and specifications as described herein.

METADATA

- FGDC compliant metadata for the ortho-imagery.

3.1 Quality Control of Deliverables

The CCGISC has the right to perform its own quality control and due diligence. Any image or other deliverable not meeting the requirements of this Scope of Work may be rejected for non-compliance. CCGISC shall have ninety (90) calendar days to evaluate a deliverable.

4.0 Contractor Responsibilities

- It shall be the responsibility of the Contractor to obtain flight clearances for any airports or other facilities that may interfere with flight plans.
- Quality control and responsibility for adherence to standards and specifications described herein rest with the Contractor.
- The Contractor shall be responsible for obtaining any necessary clearances related to controlled air space. The Contractor must also obtain all licenses, permits, and clearances necessary for performance of the Scope of Work.

5.0 Suggestions or Modifications to the Scope of Work

Contractors may and are even encouraged to provide alternate approaches or modifications to the specifications as found in Scope of Work. However, for a Contractor to be considered, a response to the provided Scope of Work following the Proposal Submittal Guidelines found in Section 6.0 must be supplied. Any modifications and or suggestions are to be supplied in addition to the response of the provided Scope of Work.

6.0 Proposal Format / Requirements

All responses must follow the same format. To be accepted for evaluation, the response format must address all required components in order.

The requirement of a response format is to simplify 1) the response preparation and 2) the evaluation process, to ensure that all responses receive the same orderly review.

All responses must include the following components:

1. Cover Letter

- a. A brief statement of the respondent's understanding of the project
- b. The name, title, phone number, fax number, E-mail address, and street address of the person in the proposer's organization who will respond to questions about the response.
- c. Highlights of the respondent's proposal and ability to perform the project services

2. Company Overview

- a. Company Name / Address / Telephone /Fax Numbers
- b. Contact Person
- c. Type of Organization
- d. Total Number of Staff

3. Brief Company History Summary of Related Experience

- a. Project Name / Location / Dollar Value / Owner Information. Include Contact Person with Phone Number.
- b. Start / Finish Dates.
- c. Services Provided
- d. Key Team Members and Consultants in Project Team.

4. Financial / Legal

- a. Provide a Copy of Last Year-End Financial Statement or Letter from Accountant / Bank Regarding Firm's Financial Position. Financial References may be substituted for Financials, if necessary, but Financial Statement would be preferred.
- b. State of Illinois Business License.
- c. Provide Insurance Coverage Certification. See Attachment C for insurance guidelines.
- d. Provide Statement of Current Legal Actions Relating to Current or Past Projects.

5. Project Team

- a. Organizational Chart
- b. Individual Team Members /Position Title / Job Function
- c. Resumes
- d. Preliminary Staff Allocation Schedule by Percent
 - Per Month
 - Overall Totals
 - Consultants Percentage Allocation Schedule

6. Project Approach

- a. Describe detailed approach to Scope of Work.
- b. Describe unique or innovative approaches to any of the required services.
- c. Provide estimate of project completion term with anticipated delivery schedule of project deliverables.
- d. Describe experience in meeting the stated project specifications and deliverables.

7. Firm / Individual Commitment to Project

- a. Future Availability
- b. Current Contractual Commitments

8. Cost Proposal

- a. An itemized cost for each task – including time estimates and separate costs for Champaign, Piatt, and Douglas counties.
- b. Provide costs for each of the products as described in the Scope of Work.

9. Project References

- a. list of at least three (3) current references for whom comparable work has been performed
- b. Include client name, person to contact, address and telephone number with each project reference.

7.0 Proposal Submittal

One (1) digital copy (*PDF format*) of the proposal must be received on or before **Friday, December 9, 2022 at 2:00 pm.**

The digital proposal shall be emailed to:

Leanne Brehob-Riley, GIS Director at lbrehob-riley@co.champaign.il.us

The email subject line shall state “*RFP 2022 – 001: Aerial Photography Services*”.

Inquires pertaining to Request for Proposal must include “RFP 2022-001 Questions” in the subject line. Questions should be referred via email by 4:30 pm, local prevailing time, on or before Wednesday, November 30, 2022 to:

Leanne Brehob-Riley, GIS Director
(217) 819-4050
lbrehob-riley@co.champaign.il.us

Addenda question answers will be posted on the Champaign County GIS Consortium’s website at:
<https://www.ccgisc.org/administration.aspx>

8.0 Proposal Evaluation

Selection shall be made of Contractors deemed to be fully qualified and best suited among those submitting proposals, on the basis of the following factors:

- **Proposed Scope of Services:** The proposal will be evaluated based on the Contractors demonstrated understanding of the Scope of Work.
- **Qualifications of the Project Team:** The quality and experience of the proposed staff and the proper balance of relevant skills.
- **Delivery Schedule**
- **Proposal Content:** The proposal will be evaluated for brevity, professional accuracy, and content. There is no need for elaborate presentation documents or brochures.
- **Cost:** Please note that while costs shall be considered, it will not be the sole determining factor.

9.0 General Information and Requirements

CONTRACT: Should a contract be awarded as a result of this RFP; the contract will be with Champaign County as the lead agency of CCGISC.

RIGHTS OF CCGISC: The CCGISC, acting pursuant to the authority given by Champaign County as Lead Agency of CCGISC and as an administrative agent for Piatt and Douglas counties for the purpose of soliciting proposals as described herein reserves the right to accept or reject all or any part of any proposal, waive informalities and award the contract to the proposer that best serves its interests.

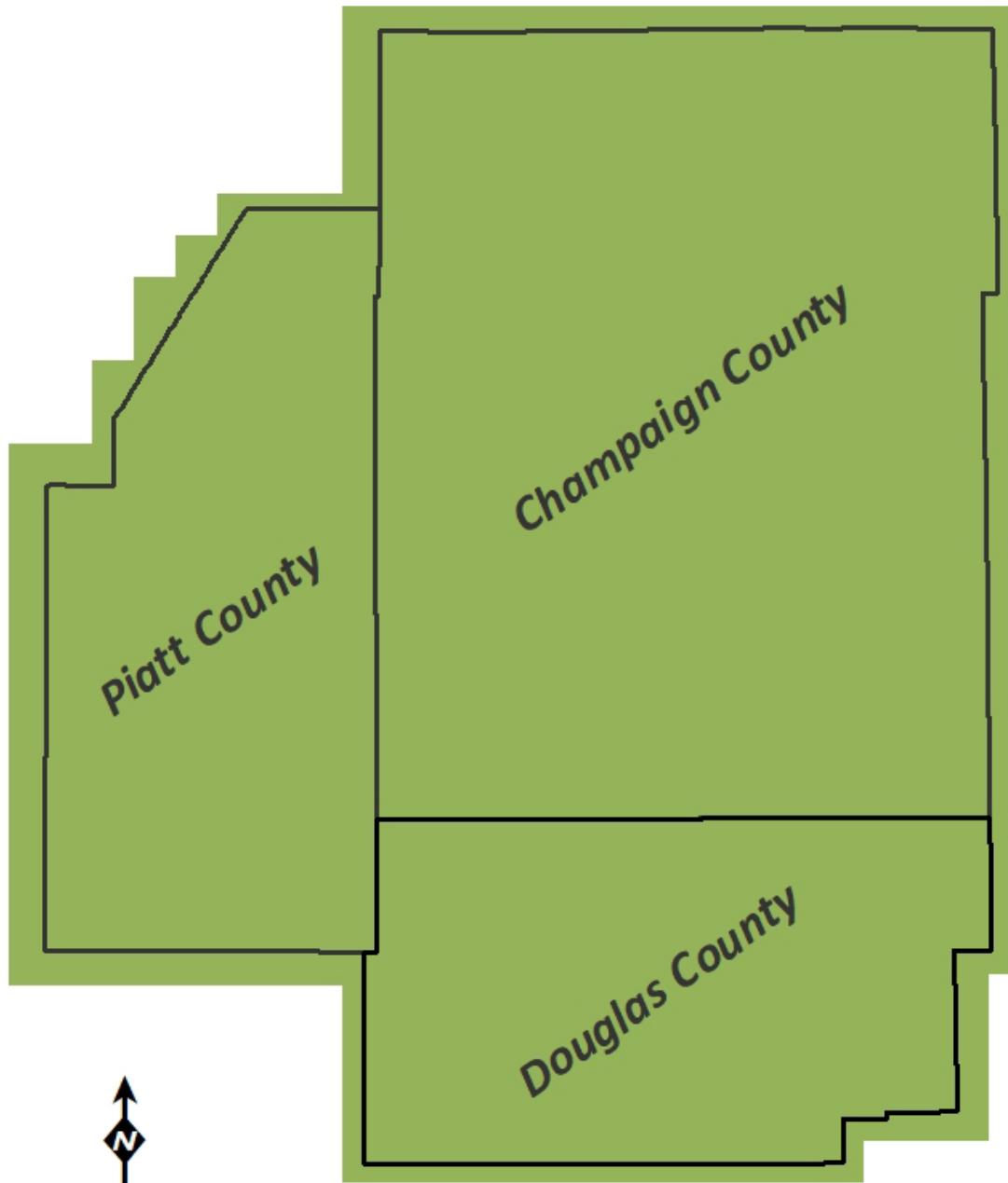
REALISTIC COST ESTIMATES: While cost estimates are requested with responses, the practice of “low balling” a cost in response to this RFP is STRONGLY DISCOURAGED. Should a contractor attempt to negotiate project costs unjustifiably higher than estimates indicated in the RFP, the negotiations will be IMMEDIATELY TERMINATED.

SUBCONTRACTORS: All proposers shall include a list of all subcontractors with their proposal.

OFF SHORE SERVICES: The use of subcontractors or service providers outside of the United States of America will NOT be accepted. The contractor will provide a signed statement assuring the CCGISC that all required services will be performed within the United States of America.


LICENSE REQUIREMENT: All firms doing business in Champaign County are required to be licensed in good standing with the State of Illinois.

Attachment A



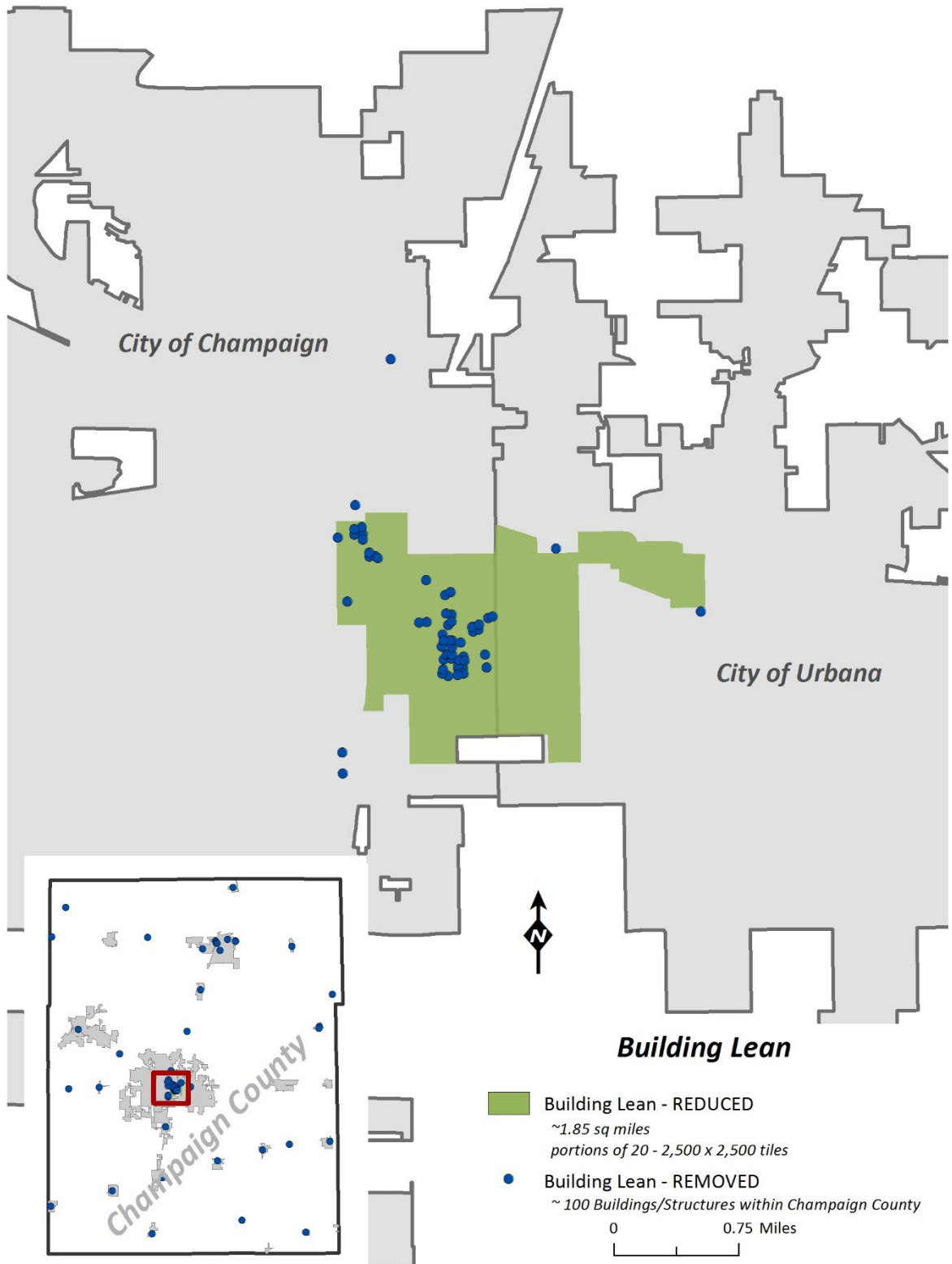
0 3.5 7 Miles

Proposed Capture Area

 Capture Area - 6 inch and 3 inch

(2079 total sq miles - Champaign 1123 sq miles; Piatt 499 sq miles; Douglas 417 sq miles)

Attachment B



Attachment C

INSURANCE GUIDELINES

1. **Binders/Certificates of Endorsements/Endorsements/Coverage Verification:**

All vendors submitting bids must provide binders or certificates of endorsement insurance forms as completed by authorized agent or broker. Insurance coverage must be placed with an insurance company that has at least a Best A rating. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. CCGISC reserves the right to require complete, certified copies of all required insurance policies at any time. If subcontractors are to be utilized, vendors shall include them as insured's and shall furnish separate certificates of insurance and endorsements for each subcontractor.

2. **Adjustments to Insurance Policy:** Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, cancelled by either party, reduced in coverage or in limits except after twenty (20) days prior written notice by certified mail, return receipt requested, has been given to CCGISC.

3. **Minimum Limits of Insurance:** Vendors shall maintain each category of insurance and its corresponding minimums-

\$1,000,000 combined single limit **per occurrence** for bodily injury, personal injury and property damage. Contractual Liability, Broad Form Property Damage, Products and Completed Operations Liability insurance is to be carried in sufficient **aggregate value** as to sufficiently cover this project.

Policies are to contain the following provisions:

1. CCGISC, its officials and employees are to be covered as insured's as respects: liability arising out of activities performed by or on the behalf of the vendor; products and completed operations of the vendor, or all automobiles utilized by the vendor. The coverage shall contain no special limitations on the scope of protection afforded to CCGISC, its officials or employees.
2. The vendor's insurance coverage shall be primary insurance as respects CCGISC, its officials and employees. Any insurance issued to CCGISC, its officials or employees shall be in excess of that vendor's insurance and shall not contribute with it.
3. Any failure to comply with the reporting provisions of the policies shall not affect coverage provided to CCGISC, its officials or employees.
4. The vendors insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.