



City of Missoula, Montana
Item to be Referred to City Council Committee

Committee: Administration and Finance
Item: Professional Service Agreement: City of Missoula Aerial Imagery Acquisition
Date: January 6, 2020
Sponsor(s): Lee Macholz
Prepared by: Lee Macholz, GIS Manager
Ward(s) Affected:
 Ward 1 Ward 4
 Ward 2 Ward 5
 Ward 3 Ward 6
 All Wards N/A

Action Required:

Approve an agreement with Aero-Graphics, Inc. for acquisition, data processing services, and delivery of digital geo-referenced aerial imagery covering the full extent of the City of Missoula’s Utility Service Area Boundary.

Recommended Motion(s):

I move the City Council: Approve and authorize the Mayor to sign an agreement with Aero-Graphics, Inc. for aerial imagery acquisition and processing in the amount not to exceed \$34,400.

Timeline:

Referral to committee: January 13, 2020
Committee discussion: January 15, 2020
Council action (or sets hearing): [Click or tap here to enter text.](#)
Public Hearing: [Click or tap here to enter text.](#)
Deadline: [Click or tap here to enter text.](#)

Background and Alternatives Explored:

The City of Missoula Information Technology Department Geographic Information System (GIS) Services and Missoula Redevelopment Agency have entered in to a memorandum of understanding (MOU to jointly pay for the acquisition, processing, and delivery of a 3-inch digital geo-rectified aerial image of the Missoula valley covering the full extent of the Utility Service Area Boundary. There are many business processes within the City of Missoula which rely on accurate, current, high-resolution aerial imagery. Departments that rely on this information include, but are not limited to: GIS Services, MRA, Development Services, Fire, Parks and Recreation, Police, and Public Works. The most recent aerial image acquisition made by the City of Missoula was in 2014. Best practice for municipal imagery is 2- to 3- year intervals. There has been significant growth and change in structures and land use in the Missoula valley in the 5 years since our current imagery was taken and we are in need of up-to-date data.

Some examples of business processes within the City that require accurate, current, high-resolution aerial imagery include:

- GIS Services uses imagery to help geo-reference as-built drawings to incorporate new utility infrastructure into the GIS database.

- GIS Services uses imagery daily to provide frame of reference for map products.
- MRA uses imagery for redevelopment planning and strategizing. One of MRA's most useful tools are the large aerial photo prints located on the walls of the Hal Fraser Conference Room. These large photo prints are the go-to reference tool when discussing projects with potential developers and have proven to be invaluable.
- Development Services uses imagery in the planning, transportation, and engineering divisions to discuss projects, detect change over time, analyze long-term planning goals, and extract data such as sidewalk and other infrastructure locations.
- Public Works uses imagery for planning purposes. The Storm Water, Wastewater, and Water utilities in particular rely on additional products that we are able to derive from geo-rectified imagery. Digital elevation data can be derived from this imagery and provide the utilities with a terrain model to use in system design and analysis.
- Police and Fire Departments use imagery within their E-911 software and it is important to have current, high-resolution imagery for their mapping needs to support officer and public safety.

By contracting for the acquisition and processing of aerial imagery for the City of Missoula, we are able to obtain an authoritative dataset that serves the needs of the business processes and departments which rely on aerial imagery. This process allow us to dictate the spatial resolution and accuracy of the product as well as the timeframe and sun angle of the flight time. This is necessary in order to reduce objects that obscure an image such as snow, leaves, shadows, clouds, and smoke. In Missoula, we typically have a brief window of opportunity to acquire clean imagery; we have a period of mere weeks from late March through April where we are watching snow on the ground, leaves on the trees, sun angle, and cloud cover. Thus, we need to be able to work with a contractor who has the ability to identify a potential weather window and get a plane to Missoula quickly. The contractor we have selected is based out of Salt Lake City, Utah and has extensive experience acquiring imagery in Montana during the desired conditions.

GIS Services put out a Request for Proposals (RPF) in the fall of 2019 and we received 10 responses from qualified firms. Aero-Graphics was selected based on the qualifications of the firm, their experience operating in mountainous regions of the west and Montana in particular, the qualifications of their key personnel, their project approach, and the total cost. Aero-Graphics scored highest in qualifications and approach and presented the lowest cost proposal.

The alternative to contracting for a custom, high-resolution image of the City is to utilize a subscription imagery service. This alternative is unacceptable for the needs of MRA, GIS Services, other departments that utilize this product, and the citizens of Missoula. While these services may provide a lower cost alternative in the short-term, you have to maintain an annual maintenance subscription in order to maintain access to the imagery. These services provide what we call referential imagery. They are referential, not authoritative, because we have no control over modifications that may have been done to the imagery, or even knowledge that modifications have occurred. We have no control over when the imagery is flown and thus, there is no guarantee of no-snow, leaf-off, cloud- and smoke-free imagery. Flights can occur at different times of the year, resulting in inconsistent and patchwork imagery. Furthermore, determining a date for a given image is often extremely difficult if not impossible. Services are copyright protected and we cannot download, archive, or distribute any imagery we ingest. We would not be able to utilize imagery from a subscription service as a basemap for any publicly-served web map or provide the imagery to citizens and consultants in the community who may request it. Finally, the accuracy and resolution of these images are not to the same standard as imagery we acquire by contracting the services ourselves. These issues limit the functionality and utility of the imagery as well as present problems if an image was utilized in a situation that results in some form of legal action. While Google Maps are great for finding your way around town and recognizing your house or place of business, these types of referential image services are insufficient to support the business needs of the City.

Financial Implications:

There is an MOU in place between the City of Missoula Information Technology Department Geographic Information System (GIS) Services and the Missoula Redevelopment Agency for joint payment as follows:

\$ 8,000 = MRA - (23%) of acquisition and processing

\$26,400 = City IT/GIS - (77%) of acquisition and processing

Funds are available and approved within the Fiscal Year 2020 budget.

Links to external websites: