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LARIAC 6 – Quality Assurance and Product Delivery

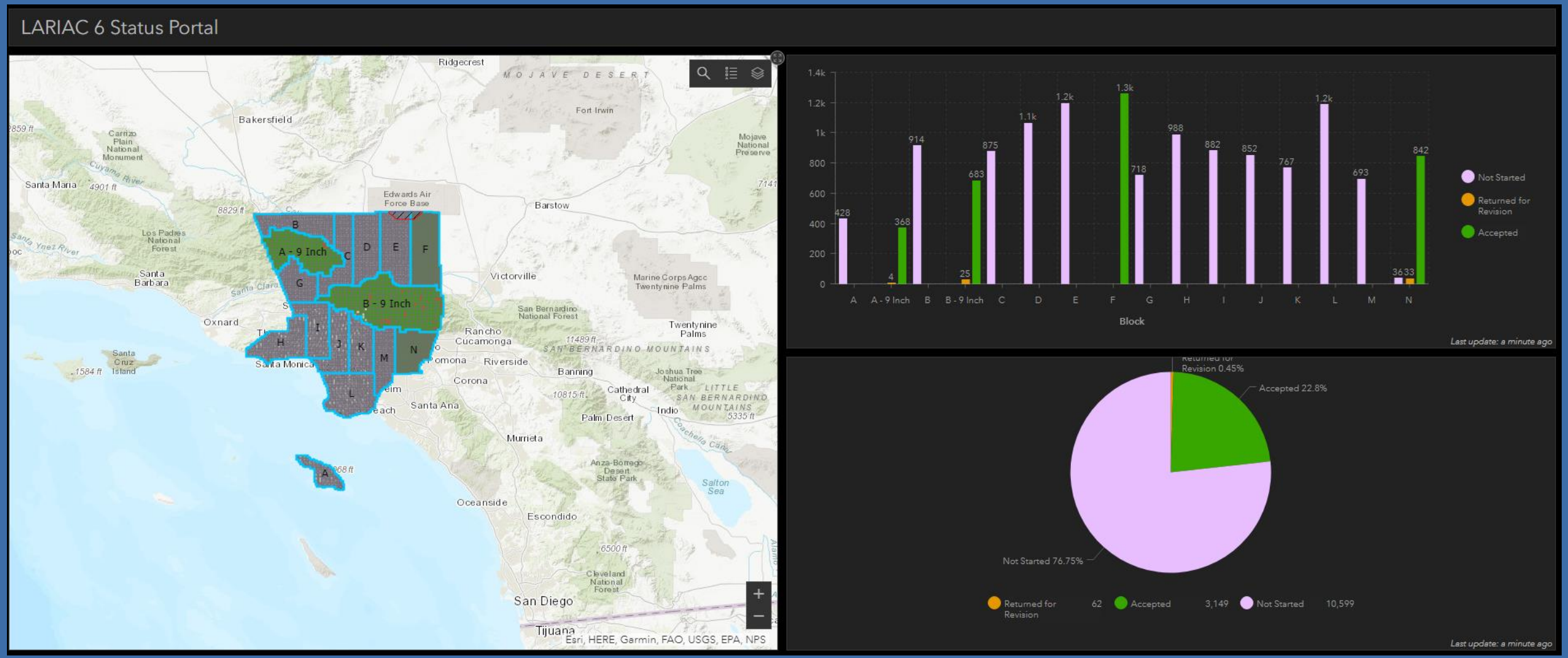
Raymond Miller & Josh Novac

July 8, 2021

Quality Assurance Process and Status

- Quality Assurance is 100% complete and all data have been recommended for acceptance.
- QC process occurred over 4 months of deliverables and 16 delivery blocks.
- Each block was tracked using an online portal and worksheet.

Quality Assurance Process and Status



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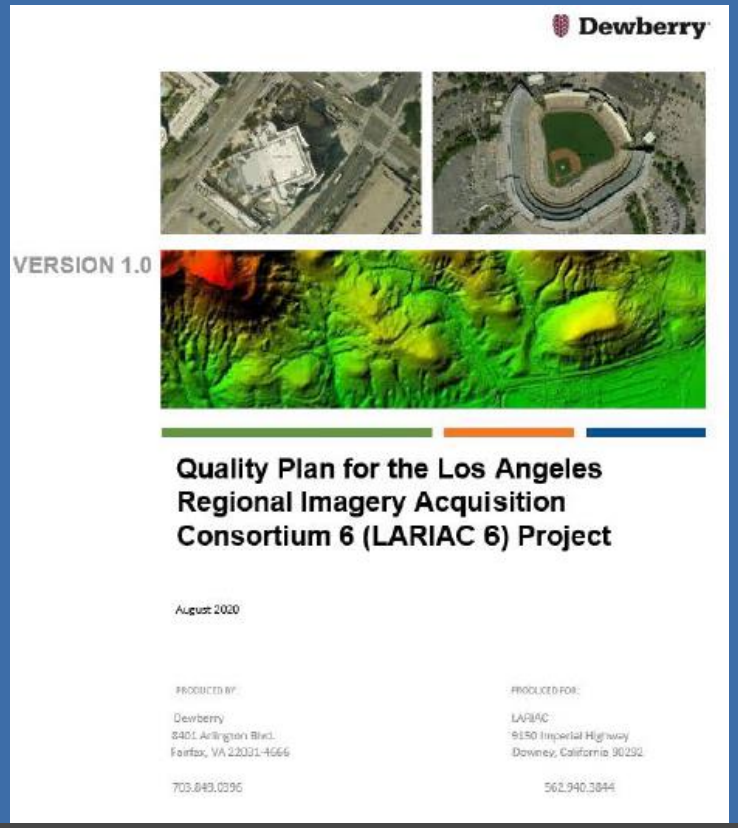
Quality Assurance Process and Status

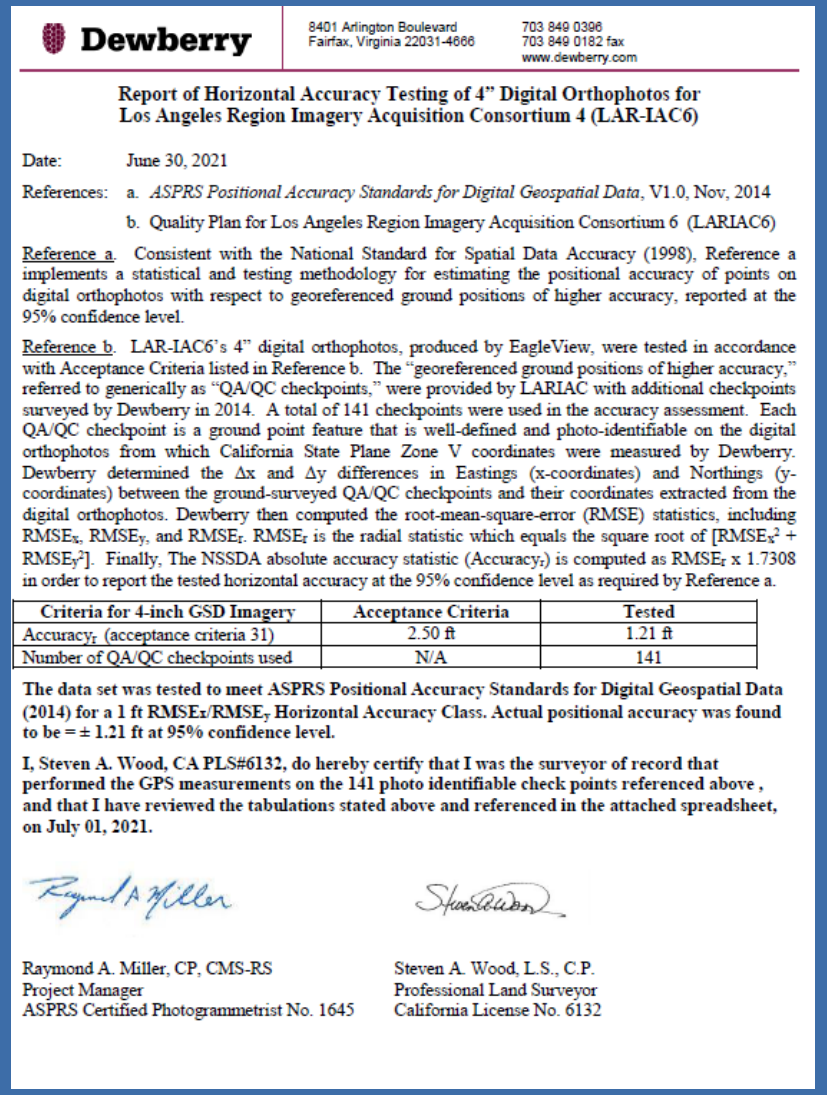
- Designed to follow the agreed upon quality plan which lists acceptance criteria.
  - Quality plan was delivered to LARIAC program and is available.

Horizontal Accuracy Assessment			
B	4 inch GSD, equivalent to 1"=100'-scale (1:1200)	Measure of Acceptability	Status (Not Started/Pass/Returned) + Values
B.1.	Ground Resolution	0.33 U.S. survey foot (2 decimals)	Pass
B.2.	Tile size	2640' x 2640' (8000 pixels x 8000 pixels)	Pass
B.3	RMSE of known ground points measured on the image See ASPRS Class I Standards Page 8, Table 16, and NSSDA Part 3,	RMSEx = RMSEy = 1.0-ft / RMSEr = = 1.4142*RMSEx = 1.4142*RMSEy = 1.41ft	Pass
B.4	NSSDA radial accuracy	NSSDA accuracy (20+ points) such that 1.73 * RMSEr < 2.5'	Pass
B.5	Mismatch of features along mosaic lines and production block boundaries of equal scale	Equal to or less than 4 pixels on well-defined ground features (roads, sidewalks, curbs).	Pass
C.6.	Mismatch of features between 1-foot and 4-inch images	Equal to or less than the combination of the B.3. and C.5. criteria (4.3') on well-defined ground features (roads, sidewalks, curbs).	Pass



Quality Assurance Process and Status

- Horizontal Accuracy for ortho products was test against the project criteria.
- Horizontal Accuracy = 1.21 feet @ 95% confidence level
- Final report was reviewed and signed by Dewberry Certified Photogrammetrist and California Licenses Surveyor.



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8401 Arlington Boulevard
Fairfax, Virginia 22031-4666

703 849 0396
703 849 0182 fax
www.dewberry.com

Report of Horizontal Accuracy Testing of 4" Digital Orthophotos for Los Angeles Region Imagery Acquisition Consortium 4 (LAR-IAC6)

Date: June 30, 2021

References: a. *ASPRS Positional Accuracy Standards for Digital Geospatial Data*, V1.0, Nov, 2014

b. Quality Plan for Los Angeles Region Imagery Acquisition Consortium 6 (LARIAC6)

Reference a. Consistent with the National Standard for Spatial Data Accuracy (1998), Reference a implements a statistical and testing methodology for estimating the positional accuracy of points on digital orthophotos with respect to georeferenced ground positions of higher accuracy, reported at the 95% confidence level.

Reference b. LAR-IAC6's 4" digital orthophotos, produced by EagleView, were tested in accordance with Acceptance Criteria listed in Reference b. The "georeferenced ground positions of higher accuracy," referred to generically as "QA/QC checkpoints," were provided by LARIAC with additional checkpoints surveyed by Dewberry in 2014. A total of 141 checkpoints were used in the accuracy assessment. Each QA/QC checkpoint is a ground point feature that is well-defined and photo-identifiable on the digital orthophotos from which California State Plane Zone V coordinates were measured by Dewberry. Dewberry determined the Δx and Δy differences in Eastings (x-coordinates) and Northings (y-coordinates) between the ground-surveyed QA/QC checkpoints and their coordinates extracted from the digital orthophotos. Dewberry then computed the root-mean-square-error (RMSE) statistics, including $RMSE_x$, $RMSE_y$, and $RMSE_r$. $RMSE_r$ is the radial statistic which equals the square root of $[RMSE_x^2 + RMSE_y^2]$. Finally, The NSSDA absolute accuracy statistic ($Accuracy_r$) is computed as $RMSE_r \times 1.7308$ in order to report the tested horizontal accuracy at the 95% confidence level as required by Reference a.

Criteria for 4-inch GSD Imagery	Acceptance Criteria	Tested
$Accuracy_r$ (acceptance criteria 31)	2.50 ft	1.21 ft
Number of QA/QC checkpoints used	N/A	141

The data set was tested to meet ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014) for a 1 ft $RMSE_r$/$RMSE_r$ Horizontal Accuracy Class. Actual positional accuracy was found to be = ± 1.21 ft at 95% confidence level.

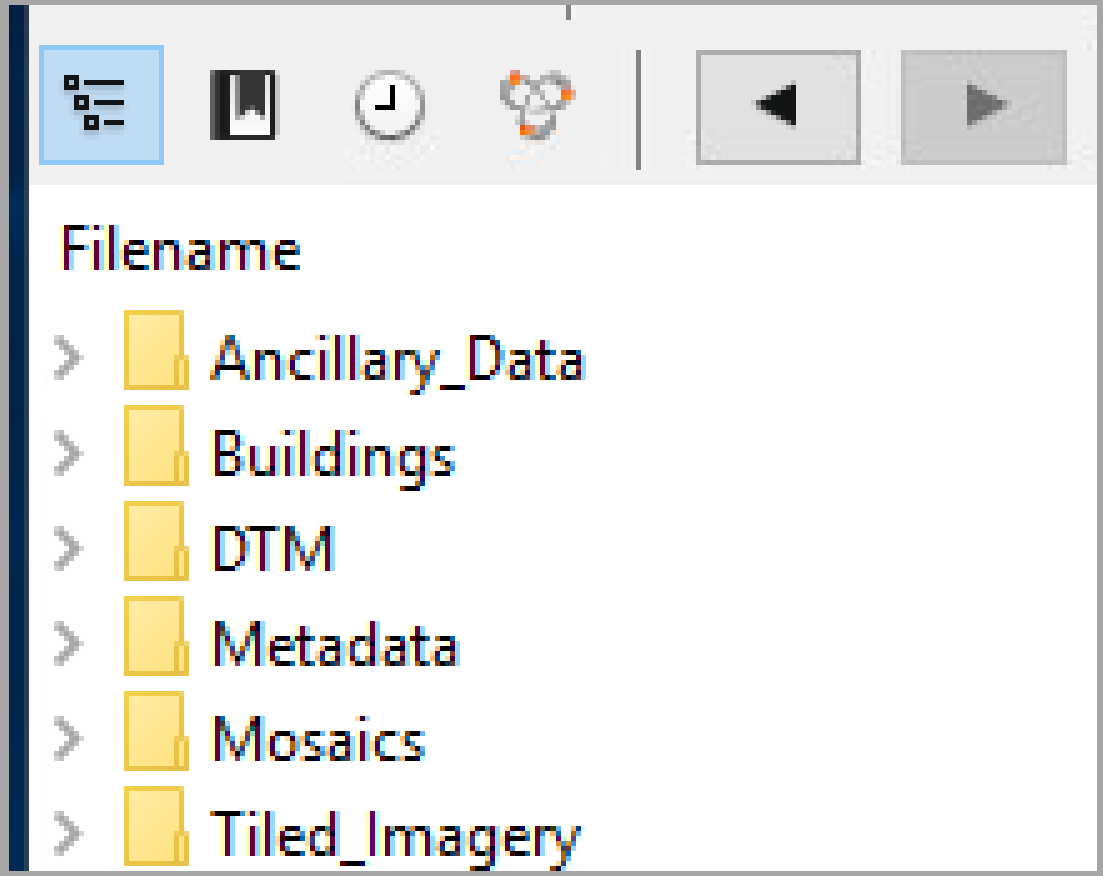
I, Steven A. Wood, CA PLS#6132, do hereby certify that I was the surveyor of record that performed the GPS measurements on the 141 photo identifiable check points referenced above , and that I have reviewed the tabulations stated above and referenced in the attached spreadsheet, on July 01, 2021.

Raymond A. Miller, CP, CMS-RS
Project Manager
ASPRS Certified Photogrammetrist No. 1645

Steven A. Wood, L.S., C.P.
Professional Land Surveyor
California License No. 6132

Product Delivery

- Participants were provided with an option for hard drive delivery or cloud-based delivery.
  - All participant data was also stored on our cloud service regardless of hard drive request to ensure access for up to 3 years.
- All initial participant deliveries are complete.
  - Several participants reported issues with downloading larger files and hard drives deliverables were required.

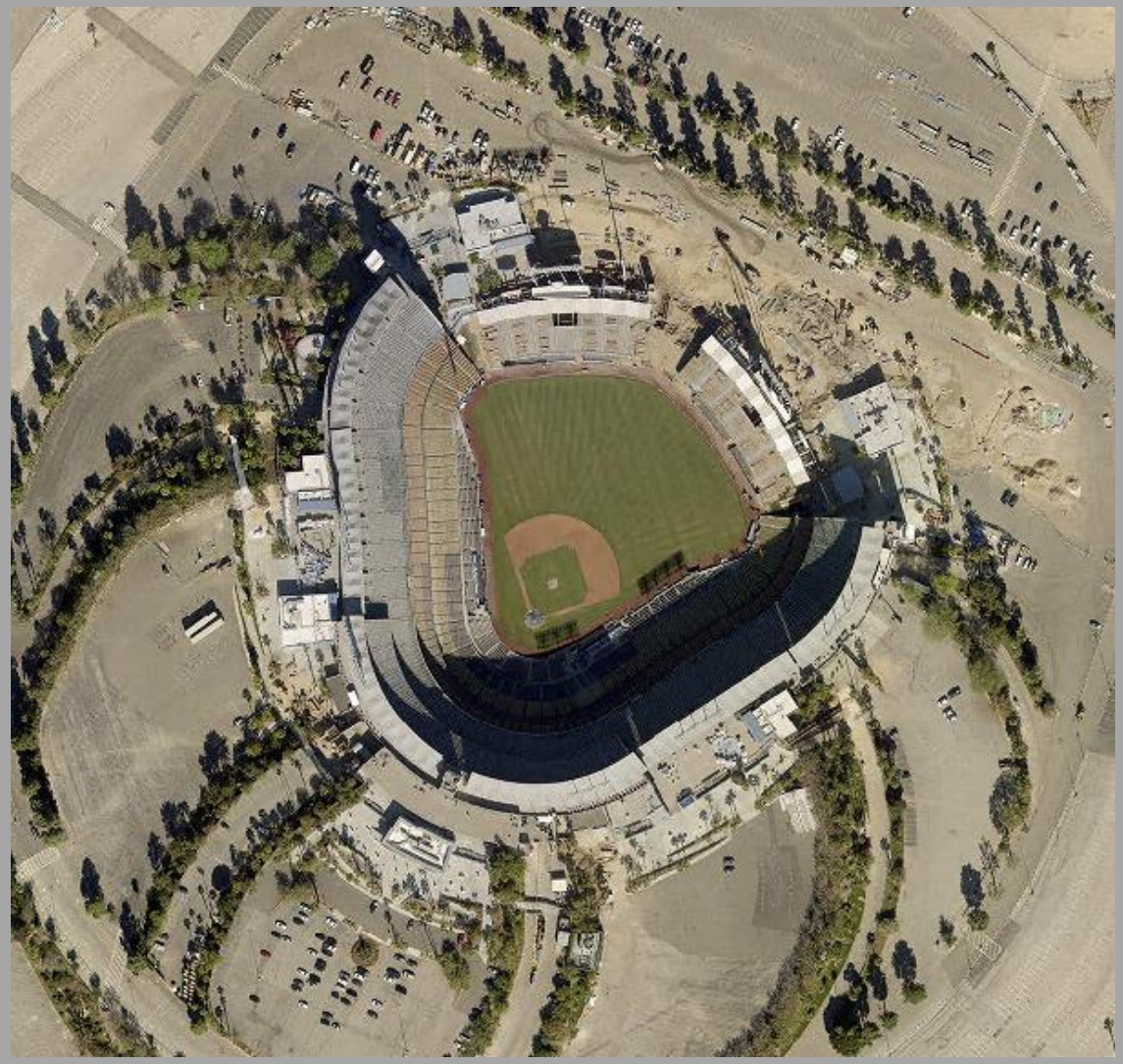


Product Delivery

- Countywide deliverables were provided via hard drives for all ortho and oblique deliverables.
- The total amount of data delivered for LARIAC 6 (including all copies) was 154 Terabytes (154,000 GB)
  - Participant deliverables accounted for 11 Terabytes of data.
  - Each countywide deliverable was 13 Terabytes.

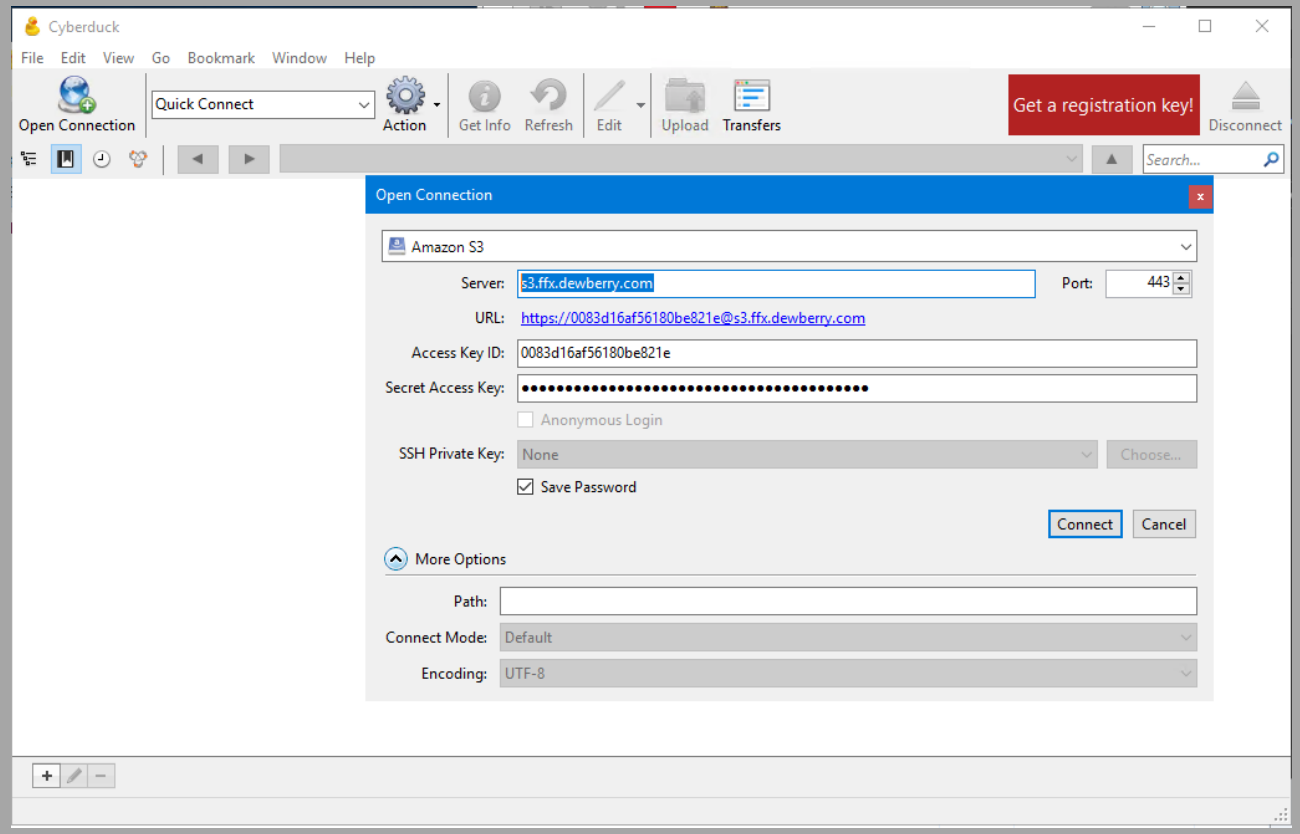
Product Delivery

- Products included
  - Tiled Imagery
    - Geotiff
    - JPEG2000 (10:1)
  - Mosaics
    - MrSID
    - ECW
    - ESRI ArcGrid
  - AT Reports
  - Metadata
  - Building Footprints
  - DTM
    - XYZ Format



Cloud Deliverables

- All participants should have received an email with instructions on how to download the deliverables.
  - These will be available for 1 year with no download restrictions.
- The countywide deliverables will be stored and available for 3 years via the cloud platform.
  - The ortho delivery is approximately 6 TB and the oblique warehouse is approximately 7 TB.



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Thank You

Project Manager

rmiller@dewberry.com

Raymond Miller, CP, CMS, GISP, PMP

Associate, Project Manager
Geospatial, Mapping, and Survey Services
1000 N. Ashley Drive, Suite 801
Tampa, FL 33602-3718
D 813.421.8641 C 941.518.9955

Technical Manager

jnovac@dewberry.com

Joshua Novac, GISP

Senior Associate, Sr Geospatial Technology Mgr
Geospatial, Mapping, and Survey Services
990 South Broadway, Suite 400
Denver, CO 80209-4275
D 813.421.8632