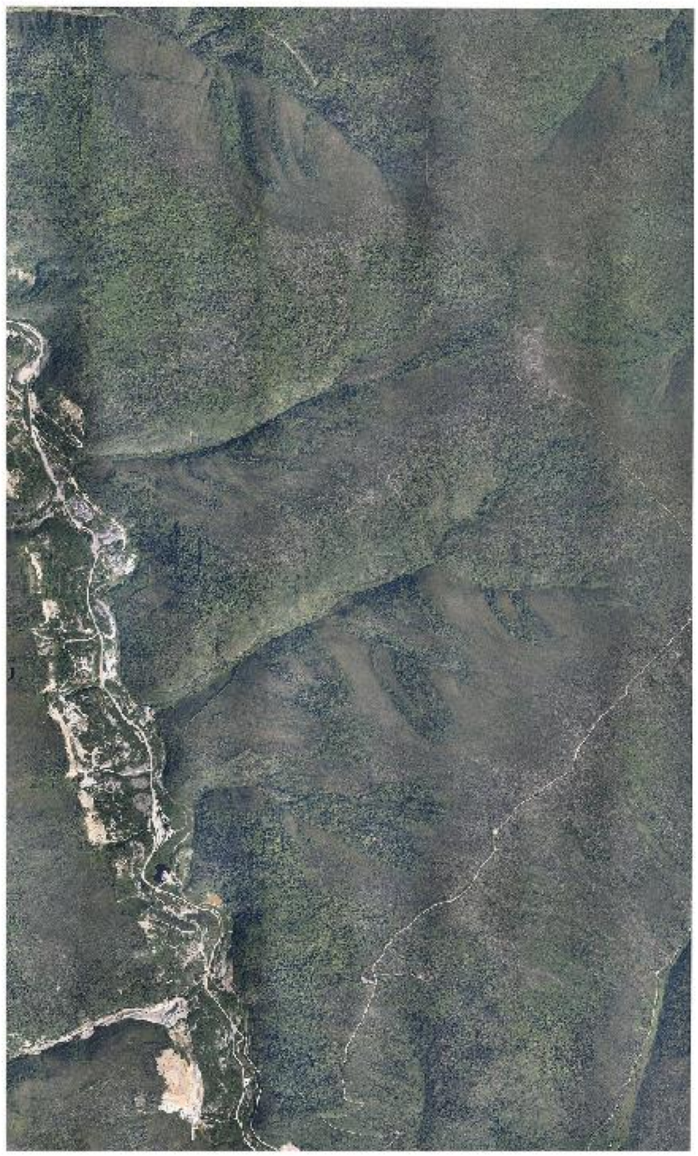
LiDAR Services International Inc.

White Gold Corp.

Bonanza – Hunker – Nolan – QV Yellow



LiDAR Survey Report

July 2021

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1. Survey Summary

LiDAR Services International Inc. (LSI) performed a LiDAR & Imagery survey for White Gold Corp. in July 2021 of the Bonanza, Hunker, Nolan and QV Yellow mine sites near Dawson City, Yukon totaling approximately 750 square kilometers. LiDAR data was collected and delivered with the following parameters:

- MATRIX LiDAR system installed in a Cessna 182 airplane owned and operated by Terrasaurus Ltd. of Kelowna, British Columbia
- Airborne data was collected in 6 flights from July 19 – 31, 2021 based out of the Dawson City Airport
- LiDAR data and imagery were collected at an average flying height of 850 m above ground level and a forward speed of 215 km/h
- Riegl LMS Q780 laser pulsed at a rate of 400 kHz, resulting in a computed average laser ground point spacing equal to 0.45 m and an average point density of 5.0 points/m^2
- Horizontal Datum: NAD83(CSRS) in meters
- Vertical Datum: CGVD2013 orthometric heights in meters
- Map Projection: UTM Zone 7N (Central Meridian = -141 degrees longitude)
- Deliverables included:
    - LiDAR point clouds classified to Ground, DTM Key Point, Low Vegetation (0 – 1 m) and High Vegetation (>1 m) in LAS v1.2 format.
    - Bare Earth and Full Feature gridded points at 1 m and 5 m spacing in ASCII XYZ format.
    - Greyscale hillshades of Bare Earth and Full Feature surfaces at 1 m pixel resolution in GeoTIFF format.
    - Ortho-mosaicked colour digital imagery with 10 cm pixel resolution in compressed ECW and GeoTIFF formats
    - Index map in DWG and PDF formats

2. MATRIX LiDAR System

The MATRIX LiDAR system was installed in a Cessna 182 airplane, shown in Figure 1, owned and operated by Terrasaurus Ltd. of Kelowna, British Columbia.

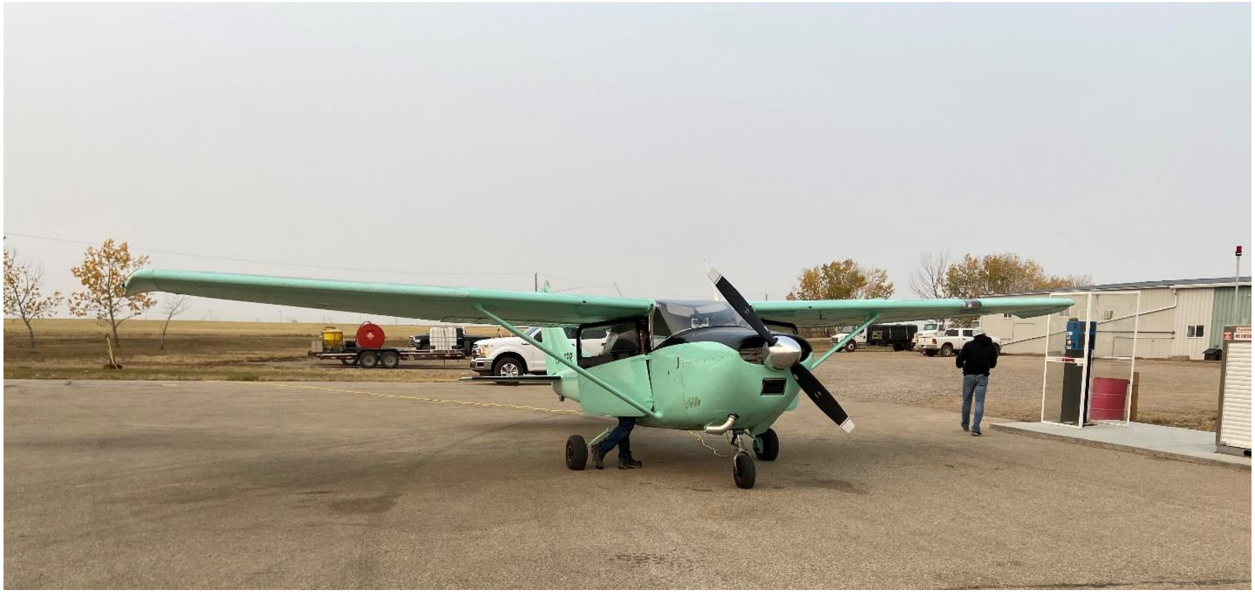

Figure 1: Cessna 182 with MATRIX LiDAR System

The Riegl LMS Q780 laser scanner, inertial measurement unit, digital camera, computers, and data storage devices were mounted to the floor in the rear of the aircraft, as shown in Figure 2. The GPS antenna was mounted on top of the fuselage and the operator controlled the MATRIX system with a laptop from the front passenger seat. Transport Canada has approved the installation of the MATRIX LiDAR system into this survey aircraft.

Key sensors utilized in the MATRIX installation for the LiDAR survey include:

- Riegl LMS Q780 laser scanner and data recorder
- NovAtel SPAN-SE dual frequency GPS receiver
- IXSEA AIRINS 200 Hz Inertial Measurement Unit (IMU)
- Canon EOS-5DS 50 megapixel digital frame downward camera

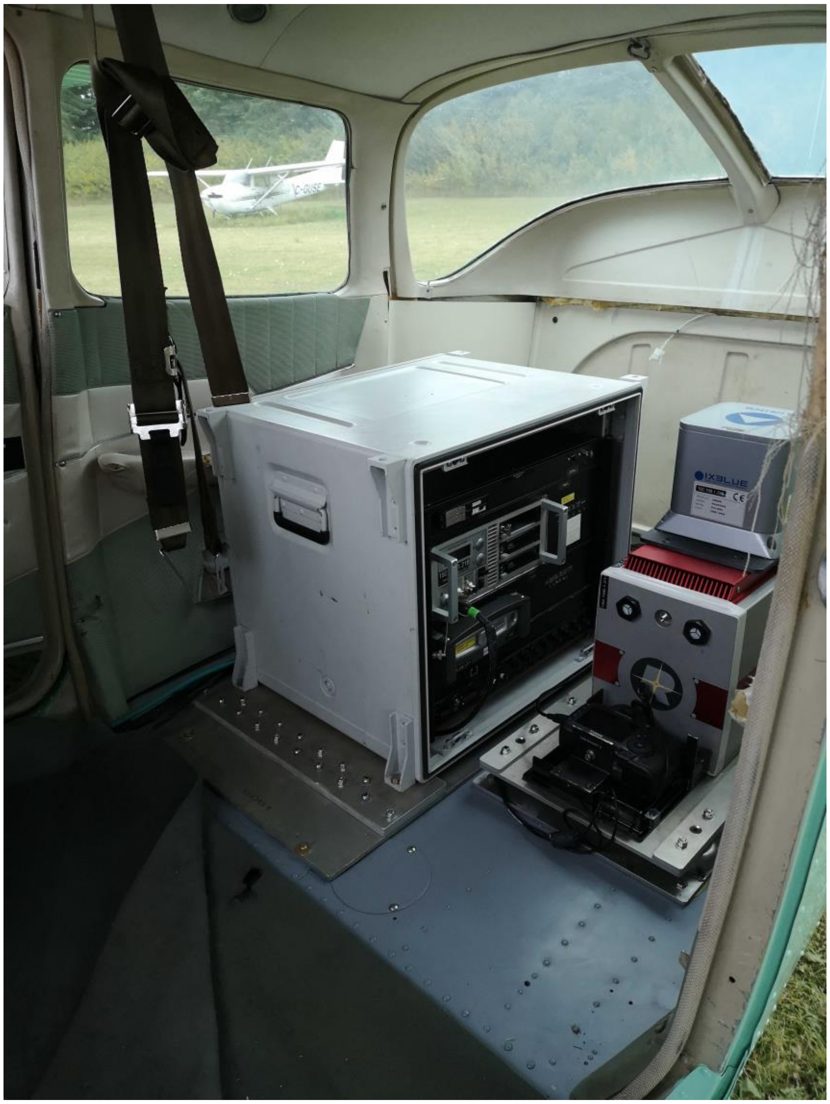

Figure 2: Q780 Laser, IMU and Computers Mounted in Cessna 182

3. Survey Control

To ensure accurate absolute and relative positioning of the LiDAR data during data collection, kinematic differential GPS (DGPS) surveying techniques were used. DGPS involves having a static GPS receiver collecting data at a known ground control point in the vicinity of the project area simultaneously with the collection of the kinematic GPS from the aircraft. After the mission, during the post processing, the static and kinematic sets of raw GPS data were combined together and processed, resulting in an accurate positioning solution of the aircraft.

In support of the survey, a control point was established by LSI at the Dawson City Airport. The three-dimensional coordinates of the control point were determined via the Canadian Geodetic Survey of Natural Resources Canada CSRS-PPP service. The coordinates of the control point were determined from two independent static sessions via the CSRS-PPP service, each several hours long, and then averaged for a final position as shown below in Table 1. The control point is in the NAD83(CSRS), UTM Zone 7 projection with orthometric heights in the CGVD2013 datum and computed using the CGG2013 geoid model.

Table 1*: LiDAR Control Coordinates & Positions (NAD83 (CSRS), UTM Zone 7N, CGVD2013)*

Control Point	Latitude	Longitude	Easting (m)	Northing (m)	Orthometric Height (m)
DawsonAir	64 02 40.14939	-139 07 37.61823	591451.096	7103315.451	367.683

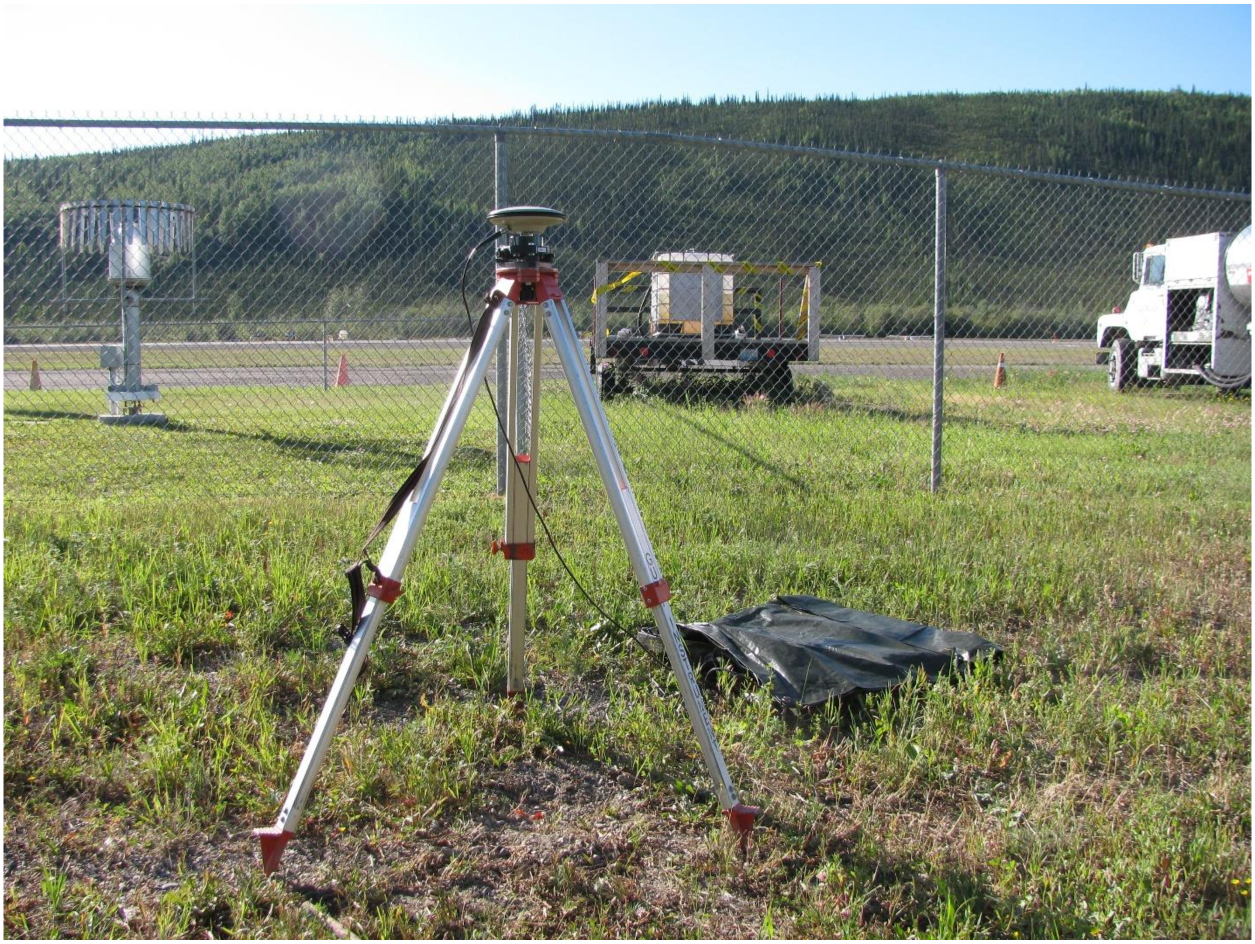

Figure 3: Dawson Airport GPS Control Point

4. Data Collection

4.1 Airborne LiDAR Survey

The LiDAR and imagery data of the Bonanza, Hunker, Nolan and QV Yellow mine sites were collected in six flight missions from July 19 – 31, 2021, based out of the Dawson City Airport. The project consisted of pre-planned flight lines flown at an average height of 850 m above ground level and a forward speed of 215 km/h. The Riegl LMS Q780 laser pulsed at a rate of 400 kHz and the laser scanned at a rate of 134 Hz, resulting in an average point spacing of 0.45 m or 5.0 points per square meter. The Canon EOS-5DS digital camera took a photo every 3.5 seconds resulting in 60% forward overlap between consecutive photos.

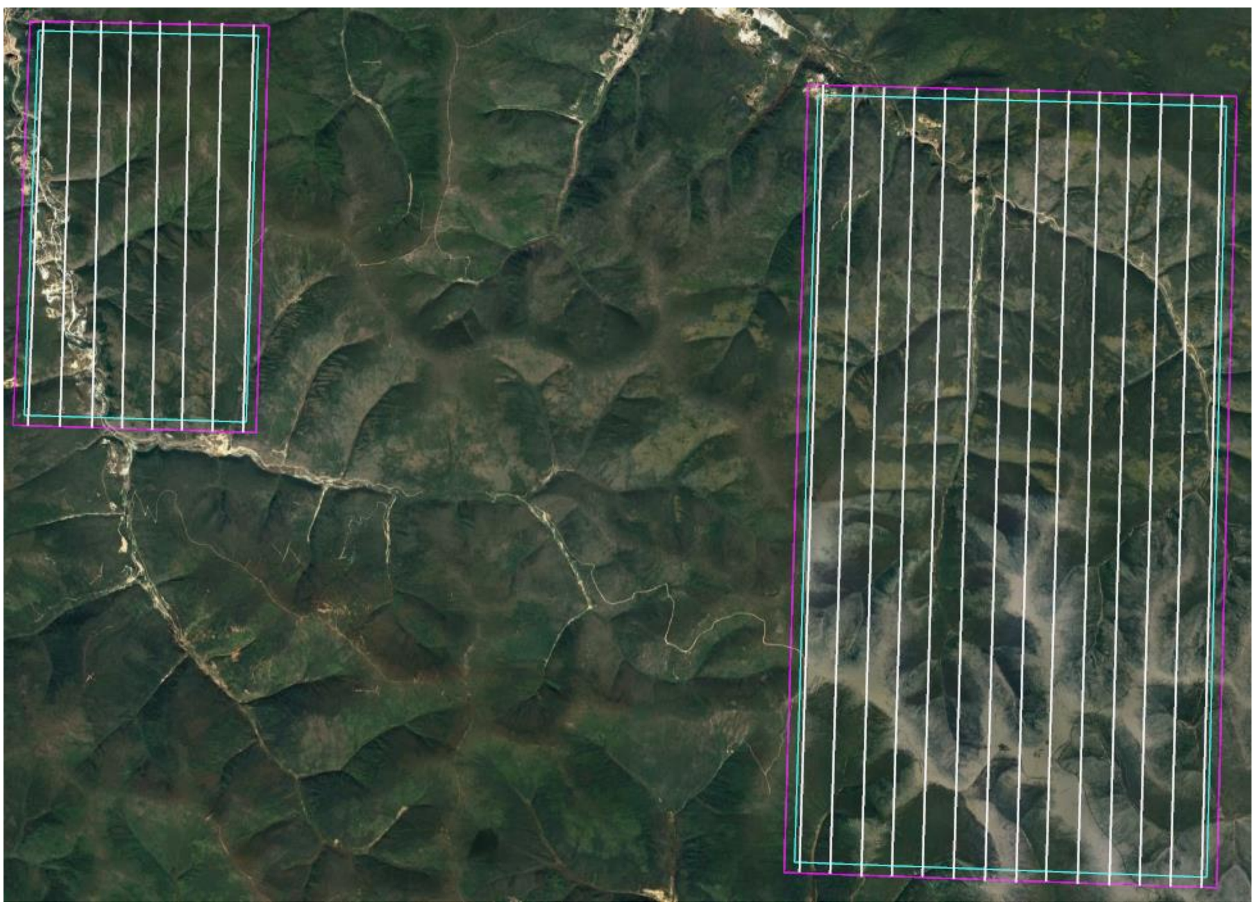

Figure 4: Bonanza & Hunker Project Areas and Flight Lines

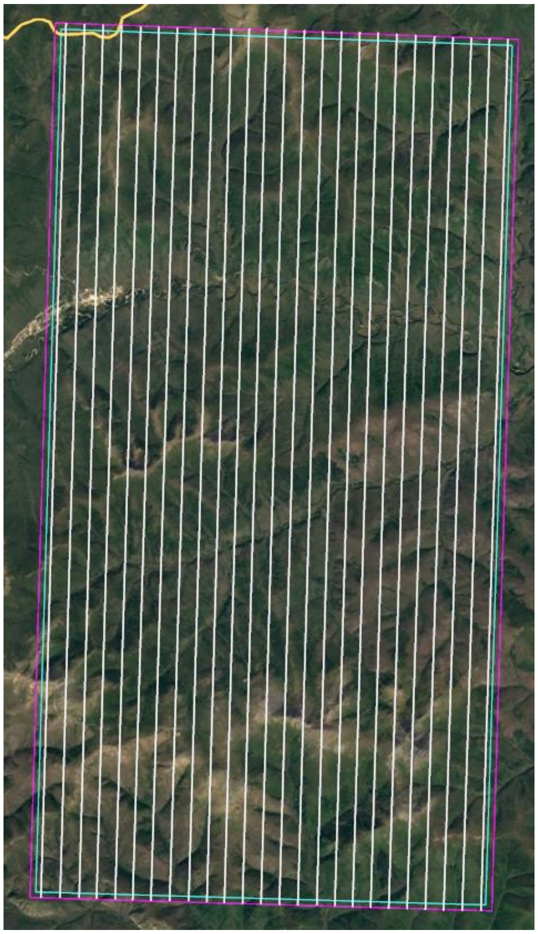

Figure 5: Nolan Project Area and Flight Lines

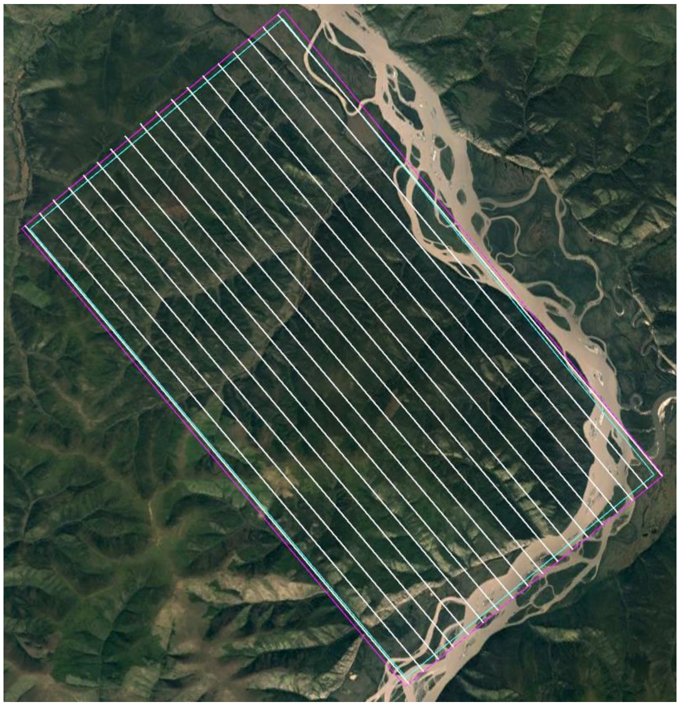

Figure 6: QV Yellow Project Area and Flight Lines

4.2 Data Quality Control and Validation

LiDAR calibration passes were flown over the Dawson City Airport. The calibration passes allow for the determination and verification of the roll, pitch and heading misalignment angles between the IMU measurement axis and the laser sensor. The calibration passes consisted of multiple flight lines flown at orthogonal and parallel headings at the project flying height and speed. During post processing, the flight line relative accuracies were determined and confirmed the high quality of the IMU-laser boresight alignment and the trajectory solutions.

Ground check points were also collected at the Dawson City Airport to help verify the absolute accuracy of the LiDAR data. The check points were collected on foot with a pole-mounted GPS antenna as shown in Figure 7, and post-processed in a DGPS solution referenced to the same control network as the project.

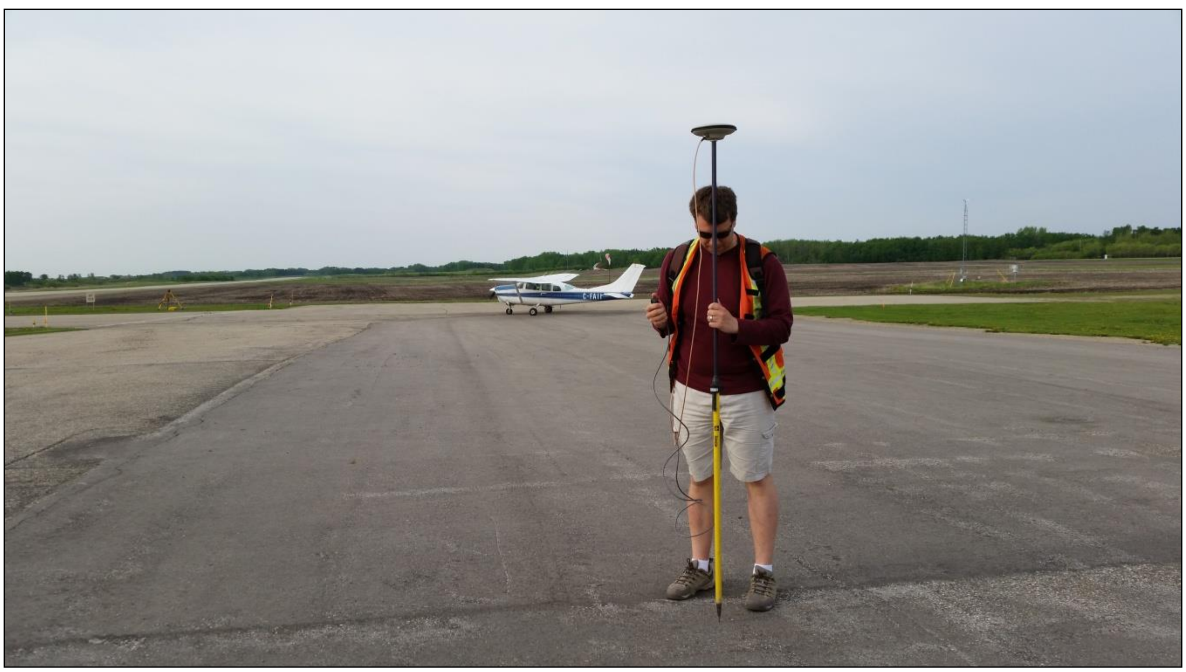

Figure 7: Ground Check Point Collection

The ground points were classified from each calibration pass to create triangulated surface models which were compared to the independently observed ground check points. The average resulting residuals and statistics from the calibration passes are tabulated as follows:

***Table 2**: Calibration Check Point Residuals*

Calibration	Avg dZ (m)	Min dZ (m)	Max dZ (m)	Avg Mag (m)	RMS (m)	Std Dev (m)
Dawson Airport	-0.016	-0.069	0.082	0.028	0.033	0.029

The tested fundamental vertical accuracy of the LiDAR data for the project was better than 10 cm at a 95% confidence interval.

5. Data Processing and Deliverables

The LiDAR data and imagery for the Bonanza, Hunker, Nolan and QV Yellow project areas were delivered to White Gold Corp. with the following specifications:

- Horizontal Datum: NAD83(CSRS) in meters
- Vertical Datum: CGVD2013 orthometric heights in meters
- Mapping Projection: UTM Zone 7N (central meridian -141 degrees longitude)
- LiDAR LAS v1.2 point clouds classified to Ground, DTM Key Point, Low Vegetation (up to 1 m above ground) and High Vegetation (greater than 1 m above ground)
- Bare Earth and Full Feature grid points at 1 meter and 5 meter spacings in ASCII XYZ format
- Greyscale hillshades of Bare Earth and Full Feature surfaces at 1 m pixel resolution in GeoTIFF format
- Ortho-mosaic color digital imagery with 10 cm pixel resolution in compressed ECW and GeoTIFF formats
- Index map in DWG and PDF formats

5.1 LiDAR Point Clouds

5.1.1 LiDAR Tiles

Unclassified point clouds were generated for each individual flight line from the raw laser data, the GPS-IMU post-processed solution, and the measured system calibration parameters. The point clouds were then imported into 1km x 1km tiles covering the project area using Terrasolid software. The number for each tile was derived from the southwest corner coordinate of the tile, i.e. Tile 5827089 has a southwest corner coordinate of E: 582000m, N: 7089000m.

The LAS v1.2 point clouds were delivered with the following feature codes:

- 2: Ground
- 3: Low Vegetation (0 to 1 meter above ground)
- 5: High Vegetation (greater than 1 meter above ground)
- 8: DTM Key Point

5.1.2 Ground Points

An initial automatic ground classification was applied to the tiles. The automatic ground macro classified ground points using a sequence of steps that identifies the lowest LiDAR point in an area and then finds neighboring ground points based on user-specified iteration angles and tolerances. After the automatic ground classification, trained technicians inspected those points and either added or removed points from the *Ground* class that were incorrectly classified by the automatic ground macro. This was done using the Terrasolid suite of LiDAR editing tools in the MicroStation environment.

5.1.3 DTM Key Points

After completion of the manual ground editing, *DTM Key Points* were classified from the *Ground* point class. The automatic *DTM Key Point* classification selects key points from the *Ground* class and chooses neighboring *Ground* points using a horizontal tolerance of 10 m and a vertical tolerance of 10 cm. That is, the maximum horizontal distance between *DTM Key Points* is 10 m and the maximum vertical distance is 10 cm. The points that were not selected for the *DTM Key Points* were left in the *Ground* class.

The *DTM Key Points* are a subset of the *Ground* points taken directly from the *Ground* class. The *DTM Key Point* class typically has up to 90% less points than the original *Ground* class, depending on the terrain. ***Since the DTM Key Points are taken from the Ground class, it is important that the Ground class never be used by itself. Either the DTM Key Point class can be used alone, or the DTM Key Point and Ground classes can be used together.*** The *DTM Key Point* and *Ground* classes together will produce the maximum possible terrain detail, with the largest number of points.

5.1.4 Vegetation

The remaining non-ground points were then classified into two separate classes: *Low Vegetation* (0 m to 1 m above ground) and *High Vegetation* (greater than 1 m above ground). The vegetation classes contain all objects and structures above the ground, including buildings, transmission lines, bridges, fences, vehicles, and piles of non-earth materials.

5.2 Grid Points

Bare Earth grid points were created at 1-meter and 5-meter intervals for each tile and delivered in ASCII XYZ format. The Bare Earth grid point elevations were derived from a Triangulated Irregular Network (TIN) surface model of the *DTM Key Point* and *Ground* classes in the LiDAR point cloud tiles.

Full Feature grid points were also created at 1-meter and 5-meter intervals for each tile and delivered in ASCII XYZ format. The Full Feature grid point elevations were derived from the highest point in the *High Vegetation* class within each 1-meter or 5-meter cell. The Bare Earth grid point elevations were applied for cells having no *High Vegetation* points.

5.3 Hillshades

Geo-referenced grayscale raster images with a 1 m pixel size were delivered in GeoTIFF format. The Bare Earth hillshade images were derived from the 1-meter Bare Earth grid points and the Full Feature hillshade images were derived from the 1-meter Full Feature grid points. The hillshades were created using a 315 degree sun azimuth and 45 degree sun angle.

5.4 Orthoimage Mosaics

Geo-referenced colour digital orthoimage mosaics with 10 cm pixel size were delivered in compressed ECW and GeoTIFF formats. The mosaics were divided into tiles using the same tile structure as the LiDAR tiles and trimmed to the project boundary. The compressed ECW tiles were created using a 5:1 compression ratio.

LSI greatly appreciates the opportunity to have performed this LiDAR survey for White Gold Corp., and is available for any questions or comments regarding the survey or the contents of this report.

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Data Recovery Request

Data collected and delivered by LSI will remain available on the FTP link provided for a period of one year. After this period, any request for access to the data will be subject to a fee based on the work required to complete retrieval, and any requested reprocessing. Please submit the completed form to info@lidarservices.ca.

Access is available to the hiring client only. All other requests must include a letter authorizing the release of data, or proof of transfer of ownership of the hiring client to accompany this request.

Hiring Client	White Gold Corp.
Original PO#	N/A
LSI Reference Number	21-427
Date of Original Delivery	November 30, 2021

Contact Name: ______________________

Company: ______________________

Contact phone/email: ______________________

Date Required: ______________________

Data Requested: ______________________

By signing below, I acknowledge that I am an authorized signatory of the company, and understand that the above information is provided to obtain a quote on retrieval of archived information.

______________________ ______________________

Printed Name/Title Date

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Signature