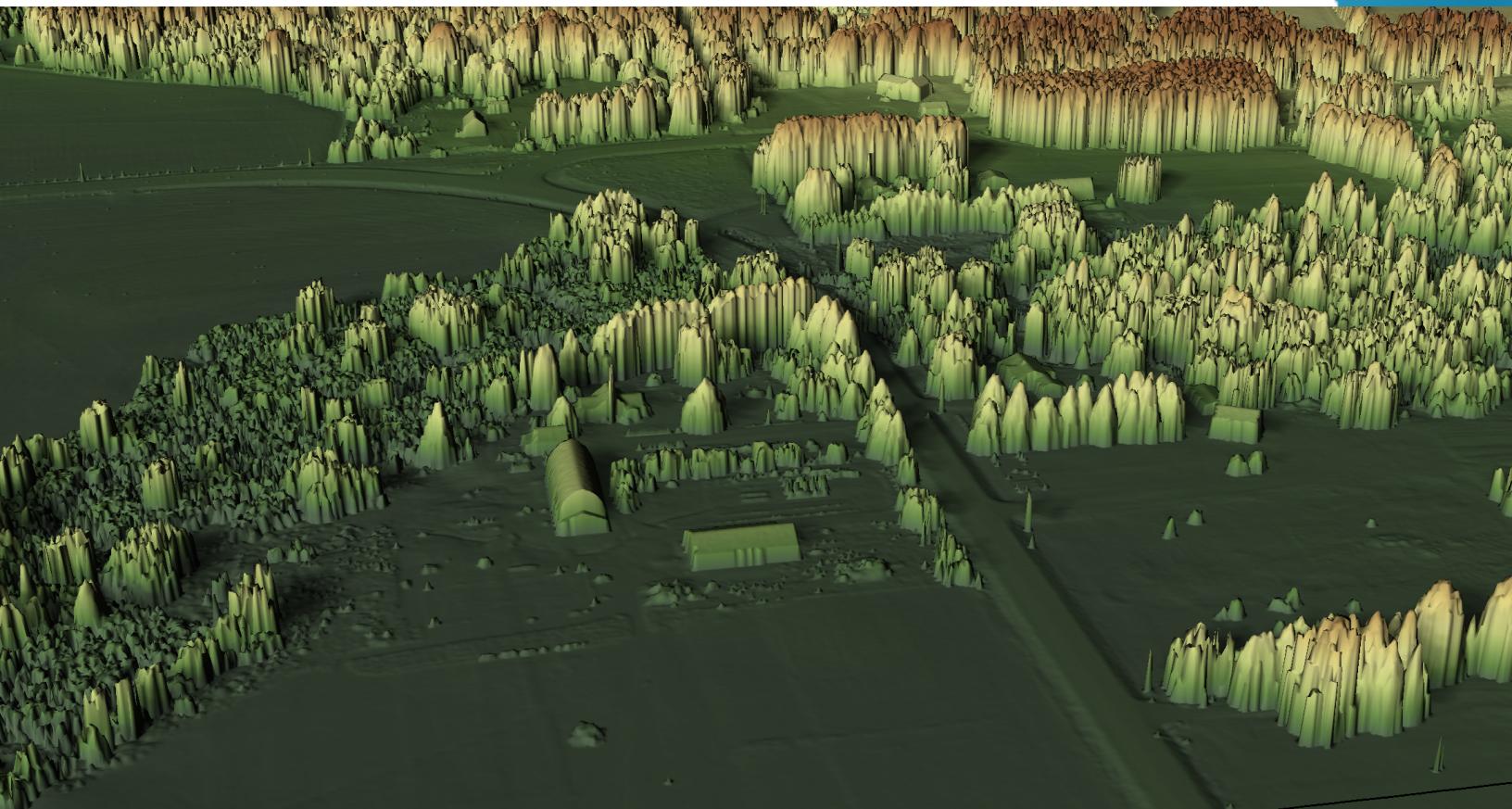




AN NV5 COMPANY



ASHLAND IRON FLORENCE 2019 D19 LIDAR PROCESSING REPORT | 2020

Submitted: September 8, 2021

Work Package: 183663
Work Unit: 209903

Prepared for:



Prepared by:



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1. Summary / Scope

1.1. Summary

This report contains a summary of the Ashland Iron Florence 2019 D19, Work Unit 209903 LiDAR acquisition task order, issued by USGS under their Contract G16PC00016 on September 23, 2019. The task order yielded a project area covering approximately 720 square miles over Wisconsin. The intent of this document is only to provide specific validation information for the data acquisition/collection, processing, and production of deliverables completed as specified in the task order.

1.2. Scope

Aerial topographic LiDAR was acquired using state of the art technology along with the necessary surveyed ground control points (GCPs) and airborne GPS and inertial navigation systems. The aerial data collection was designed with the following specifications listed in Table 1 below.

Table 1. Originally Planned LiDAR Specifications

Average Point Density	Flight Altitude (AGL)	Field of View	Minimum Side Overlap	RMSEz
2 pts / m ²	2300 m	58.52°	20%	≤ 10 cm

1.3. Coverage

The QL2 boundary covers approximately 720 square miles over Iron County, Wisconsin . A buffer of 100 meters was created to meet task order specifications. Project extents are shown in Figure 1.

1.4. Duration

QL 2 LiDAR data was acquired from October 26, 2019 to May 20, 2020 in 10 total lifts. See “Section: 2.4. Time Period” for more details.

1.5. Issues

There were no major issues to report for this project.

WI_AshlandIronFlorence_2019_D19 Work Unit 209903
Projected Coordinate System: WISCRS Iron County
Horizontal Datum: NAD83 (2011)
Vertical Datum: NAVD88 (GEOID 12B)
Units: Feet

Lidar Point Cloud	Classified Point Cloud in LAS 1.4 format
Rasters	2-Foot GeoTiffs <ul style="list-style-type: none"> • Hydroflattened Bare Earth Model (DEM) • Highest Hit Digital Surface Model (DSM) • Highest Hit Digital Surface Model (DSM) Mosaic • Intensity Images
Vectors	Shapefiles (*.shp) <ul style="list-style-type: none"> • Project Boundary • LiDAR Tile Index • Coverage polygon ESRI Geodatabase (*.gdb) <ul style="list-style-type: none"> • Continuous Hydro-flattened Breaklines
Reports	Reports in PDF format <ul style="list-style-type: none"> • Focus on Delivery • Lidar Processing Report
Metadata	XML Files (*.xml) <ul style="list-style-type: none"> • Breaklines • Classified Point Cloud • DEM • Intensity Imagery • DSM

WI_AshlandIronFlorence_2019_D19

Work Unit 209903 Boundary

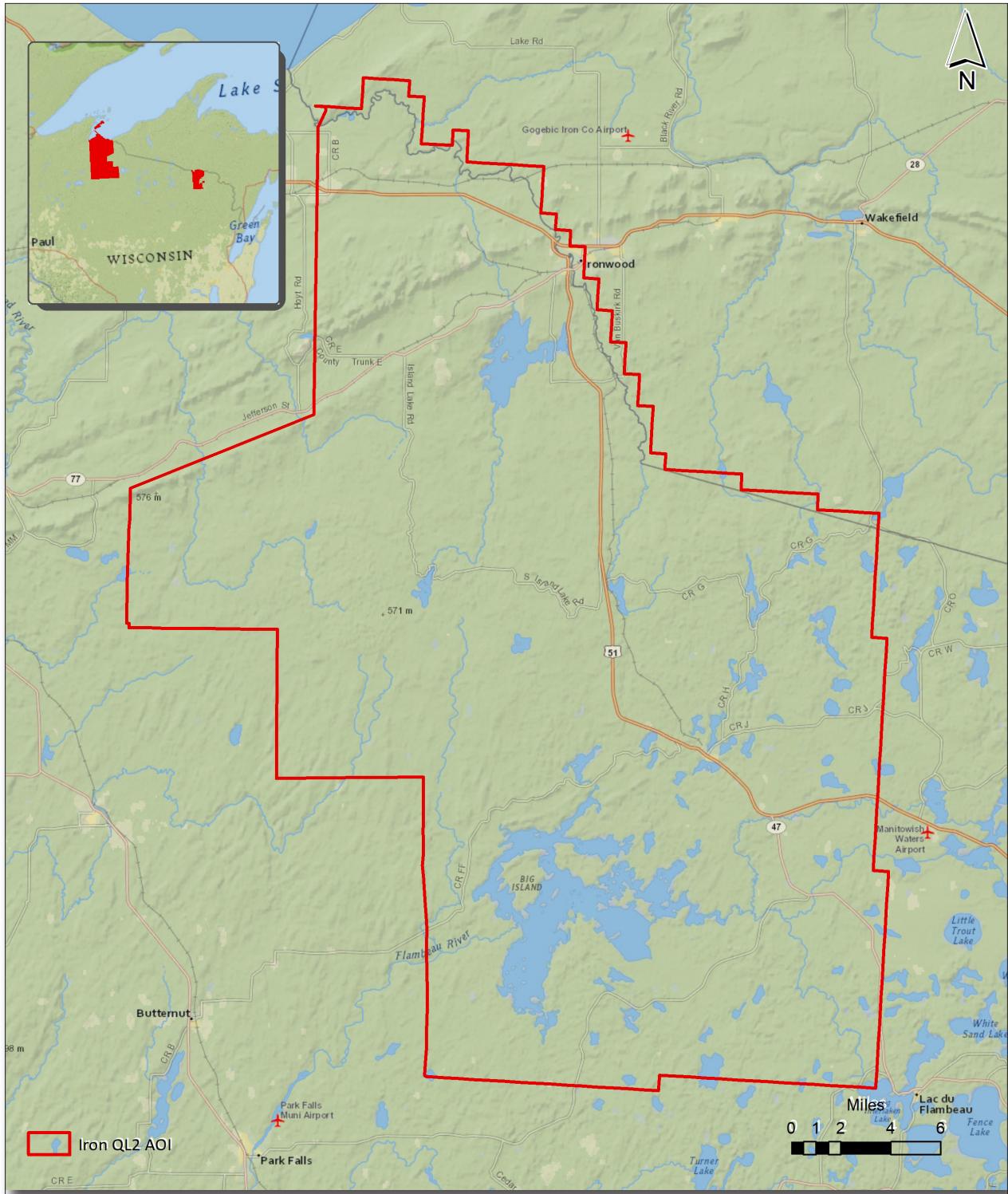


Figure 1. Work Unit Boundary

2. Planning / Equipment

2.1. Flight Planning

Flight planning was based on the unique project requirements and characteristics of the project site. The basis of planning included: required accuracies, type of development, amount / type of vegetation within project area, required data posting, and potential altitude restrictions for flights in project vicinity.

Detailed project flight planning calculations were performed for the project using RiPARAMETER planning software. Planned flight lines are shown in Figure 2.

2.2. LiDAR Sensor

Quantum Spatial utilized a Riegl VQ1560i LiDAR sensor (Figure 3), serial numbers 3070 and 4040, for lidar data acquisition.

The Riegl 1560i system has a laser pulse repetition rate of up to 2 MHz resulting in more than 1.3 million measurements per second. The system utilizes a Multi-Pulse in the Air option (MPIA). The sensor is also equipped with the ability to measure up to an unlimited number of targets per pulse from the laser.

A brief summary of the aerial acquisition parameters for the project are shown in the LiDAR System Specifications in Table 2.

WI_AshlandIronFlorence_2019_D19 Work Unit 209903 Planned Flight Lines

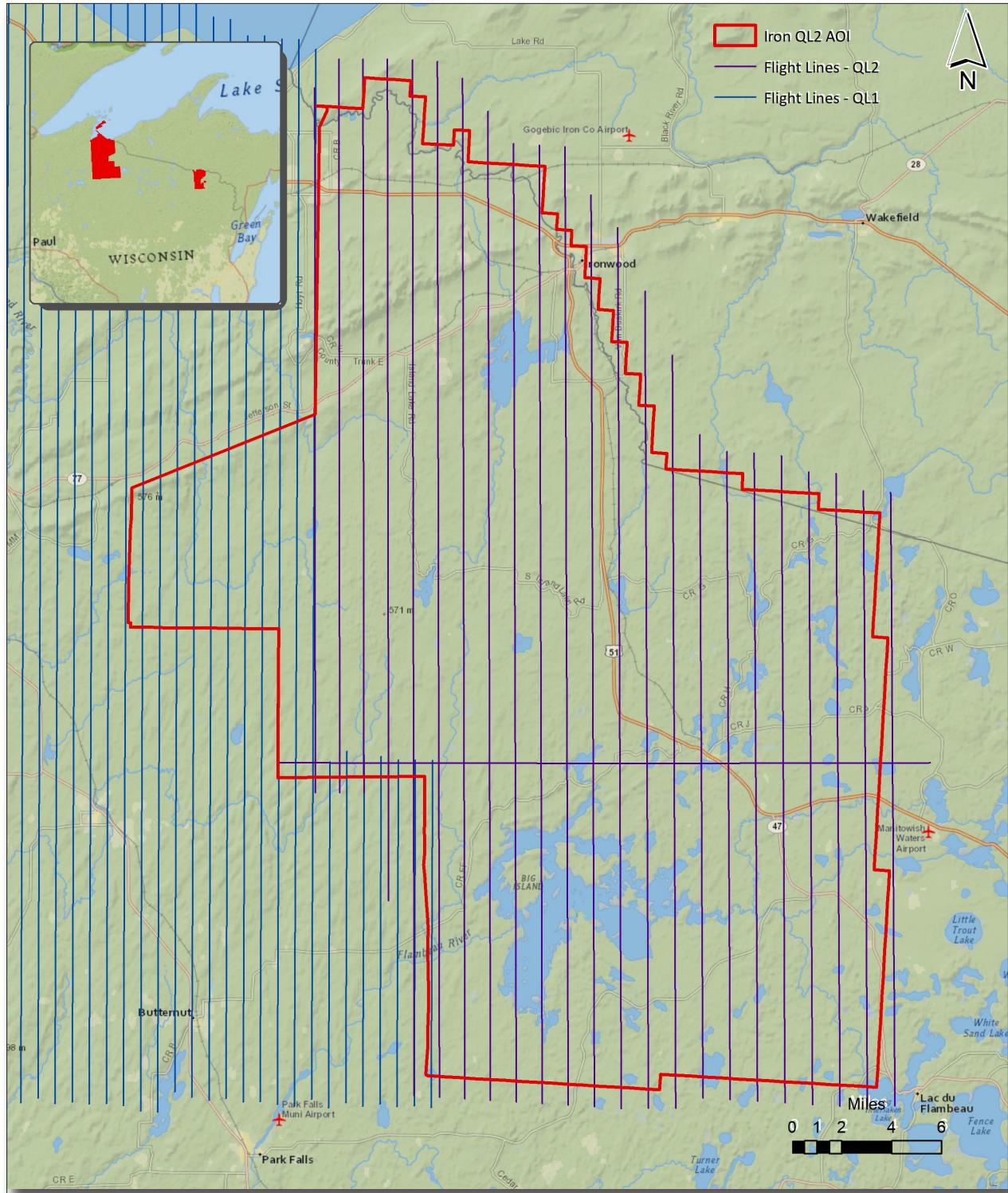


Figure 2. Planned Flight Lines

Table 2. LiDAR System Specifications

		Riegl VQ1560i (QL2)	Riegl VQ1560i (QL1)
Terrain and Aircraft Scanner	Flying Height	2300 m	1329 m
	Recommended Ground Speed	140 kts	160 kts
Scanner	Field of View	58.52°	58.52°
	Scan Rate Setting Used	320 Hz	334 Hz
Laser	Laser Pulse Rate Used	700 kHz	2000 kHz
	Multi Pulse in Air Mode	1	yes
Coverage	Full Swath Width	2577 m	1489 m
	Line Spacing	2062 m	1191 m
Point Spacing and Density	Average Point Spacing	0.63 m	0.31 m
	Average Point Density	2.52 pts / m ²	10.88 pts / m ²

Figure 3. Riegl VQ1560i LiDAR Sensor



2.3. Aircraft

All flights for the project were accomplished through the use of customized planes. Plane type and tail numbers are listed below.

LiDAR Collection Planes

- 2015 TEXTRON AVIATION INC 208B, Tail Number: N256DG
- Piper Navajo (twin-piston), Tail Number: N22GE

These aircraft provided an ideal, stable aerial base for LiDAR acquisition. These aerial platforms have relatively fast cruise speeds, which are beneficial for project mobilization / demobilization while maintaining relatively slow stall speeds, proving ideal for collection of high-density, consistent data posting using a state-of-the-art Riegl VQ1560i LiDAR system. Some of Quantum Spatial's operating aircraft can be seen in Figure 4 below.

Figure 4. Some of Quantum Spatial's Planes



2.4. Time Period

Project specific flights were conducted between October 26, 2019 and May 20, 2020. Ten aircraft lifts were completed. Accomplished lifts are listed below.

- 10262019A (SN3070,N256DG)
- 10272019A (SN3070,N256DG)
- 10292019A1 (SN3070,N256DG)
- 10292019A2 (SN3070,N256DG)
- 10302019A (SN3070,N256DG)
- 10302019B (SN3070,N256DG)
- 05112020B (SN4040,N22GE)
- 05122020A (SN4040,N22GE)
- 05122020B (SN4040,N22GE)
- 05202020A (SN4040,N22GE)

3. Processing Summary

3.1. Flight Logs

Flight logs were completed by LIDAR sensor technicians for each mission during acquisition. These logs depict a variety of information, including:

- Job / Project #
- Flight Date / Lift Number
- FOV (Field of View)
- Scan Rate (HZ)
- Pulse Rate Frequency (Hz)
- Ground Speed
- Altitude
- Base Station
- PDOP avoidance times
- Flight Line #
- Flight Line Start and Stop Times
- Flight Line Altitude (AMSL)
- Heading
- Speed
- Returns
- Crab

Notes: (Visibility, winds, ride, weather, temperature, dew point, pressure, etc).

3.2. LiDAR Processing

Applanix + POSPac software was used for post-processing of airborne GPS and inertial data (IMU), which is critical to the positioning and orientation of the LiDAR sensor during all flights. Applanix POSPac combines aircraft raw trajectory data with stationary GPS base station data yielding a “Smoothed Best Estimate Trajectory” (SBET) necessary for additional post processing software to develop the resulting geo-referenced point cloud from the LiDAR missions.

During the sensor trajectory processing (combining GPS & IMU datasets) certain statistical graphs and tables are generated within the Applanix POSPac processing environment which are commonly used as indicators of processing stability and accuracy. This data for analysis include: max horizontal / vertical GPS variance, separation plot, altitude plot, PDOP plot, base station baseline length, processing mode, number of satellite vehicles, and mission trajectory.

Point clouds were created using the RiPROCESS software. The generated point cloud is the mathematical three dimensional composite of all returns from all laser pulses as determined from the aerial mission. The point cloud is imported into GeoCue distributive processing software. Imported data is tiled and then calibrated using TerraMatch and proprietary software. Using TerraScan, the vertical accuracy of the surveyed ground control is tested and any bias is removed from the data. TerraScan and TerraModeler software packages are then used for automated data classification and manual cleanup. The data are manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler.

DEMs and Intensity Images are then generated using proprietary software. In the bare earth surface model, above-ground features are excluded from the data set. Global Mapper is used as a final check of the bare earth dataset.

Finally, proprietary software is used to perform statistical analysis of the LAS files.

Software	Version
Applanix + POSPac	8.4
RiPROCESS	1.8.6
GeoCue	2017.1.14.1
Global Mapper	19.1;20.1
TerraModeler	20.004
TerraScan	20.011
TerraMatch	20.004

3.3. LAS Classification Scheme

The classification classes are determined by the USGS Version 1.3 specifications and are an industry standard for the classification of LIDAR point clouds. All data starts the process as Class 1 (Unclassified), and then through automated classification routines, the classifications are determined using TerraScan macro processing.

The classes used in the dataset are as follows and have the following descriptions:

Table 3. LAS Classifications

	Classification Name	Description
1	Processed, but Unclassified	Laser returns that are not included in the ground class, or any other project classification
2	Bare earth	Laser returns that are determined to be ground using automated and manual cleaning algorithms
3	Low Vegetation	Points that fall on vegetation (0.5ft-6ft)
4	Medium Vegetation	Points that fall on vegetation (6ft-30ft)
5	High Vegetation	Points that fall on vegetation (>30ft)
6	Buildings	Points falling on buildings, structures inside of water bodies, docks, and piers.
7	Low Noise	Laser returns that are often associated with scattering from reflective surfaces, or artificial points below the ground surface
9	Water	Laser returns that are found inside of hydro features
17	Bridge Deck	Laser returns falling on bridge decks
18	High Noise	Laser returns that are often associated with birds or artificial points above the ground surface
20	Ignored Ground	Ground points that fall within the given threshold of a collected hydro feature.

3.4. Classified LAS Processing

The bare earth surface is then manually reviewed to ensure correct classification on the Class 2 (Ground) points. After the bare- earth surface is finalized; it is then used to generate all hydro-breaklines through heads-up digitization.

All ground (ASPRS Class 2) LiDAR data inside of the Lake Pond and Double Line Drain hydro

flattening breaklines were then classified to water (ASPRS Class 9) using TerraScan macro functionality. A buffer of 3 feet was also used around each hydro flattened feature to classify these ground (ASPRS Class 2) points to Ignored ground (ASPRS Class 20). All Lake Pond Island and Double Line Drain Island features were checked to ensure that the ground (ASPRS Class 2) points were reclassified to the correct classification after the automated classification was completed.

All overlap data was processed through automated functionality provided by TerraScan to classify the overlapping flight line data to approved classes by USGS. The overlap data was identified using the Overlap Flag, per LAS 1.4 specifications.

All data was manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler. Global Mapper is used as a final check of the bare earth dataset. GeoCue was then used to create the deliverable industry-standard LAS files for all point cloud data. Quantum Spatial's proprietary software was used to perform final statistical analysis of the classes in the LAS files, on a per tile level to verify final classification metrics and full LAS header information.

3.5. Hydro-Flattened Breakline Processing

Class 2 LiDAR was used to create a bare earth surface model. The surface model was then used to heads-up digitize 2D breaklines of Inland Streams and Rivers with a 100 foot nominal width and Inland Ponds and Lakes of 2 acres or greater surface area.

Elevation values were assigned to all Inland Ponds and Lakes, Inland Pond and Lake Islands, Inland Streams and Rivers and Inland Stream and River Islands using TerraModeler functionality.

Elevation values were assigned to all Inland streams and rivers using Quantum Spatial's proprietary software.

All ground (ASPRS Class 2) LiDAR data inside of the collected inland breaklines were then classified to water (ASPRS Class 9) using TerraScan macro functionality. A buffer of 3 feet was also used around each hydro flattened feature. These points were moved from ground (ASPRS Class 2) to Ignored Ground (ASPRS Class 20).

The breakline files were then translated to Esri file geodatabase format using Esri conversion tools.

Breaklines are reviewed against lidar intensity imagery to verify completeness of capture. All breaklines are then compared to TINs (triangular irregular networks) created from ground only points prior to water classification. The horizontal placement of breaklines is compared to terrain features and the breakline elevations are compared to lidar elevations to ensure all breaklines match the lidar within acceptable tolerances. Some deviation is expected between breakline and lidar elevations due to monotonicity, connectivity, and flattening rules that are enforced on the breaklines. Once completeness, horizontal placement, and vertical variance is reviewed, all breaklines are reviewed for topological consistency and data integrity using a combination of Esri Data Reviewer tools and proprietary tools.

3.6. Hydro-Flattened Raster DEM Processing

Class 2 LiDAR in conjunction with the hydro breaklines were used to create a 2-foot Raster DEM. Using automated scripting routines within proprietary software, a GeoTIFF file was created for each tile. Each surface is reviewed using Global Mapper to check for any surface anomalies or incorrect elevations found within the surface.

3.7. Intensity Image Processing

GeoCue software was used to create the deliverable intensity images. All overlap classes were ignored during this process. This helps to ensure a more aesthetically pleasing image. The GeoCue software was then used to verify full project coverage as well. GeoTIFF files with a cell size of 2-foot were then provided as the deliverable for this dataset requirement.

3.8. Raster DSM Processing

First return LiDAR points were used to create a 2 foot first-return raster DSM. Using automated scripting routines within ArcMap, GeoTIFF files were created for each tile. Each surface is reviewed using Global Mapper to check for any surface anomalies or incorrect elevations found within the surface.

WI_AshlandIronFlorence_2019_D19

Work Unit 209903 Tile Layout

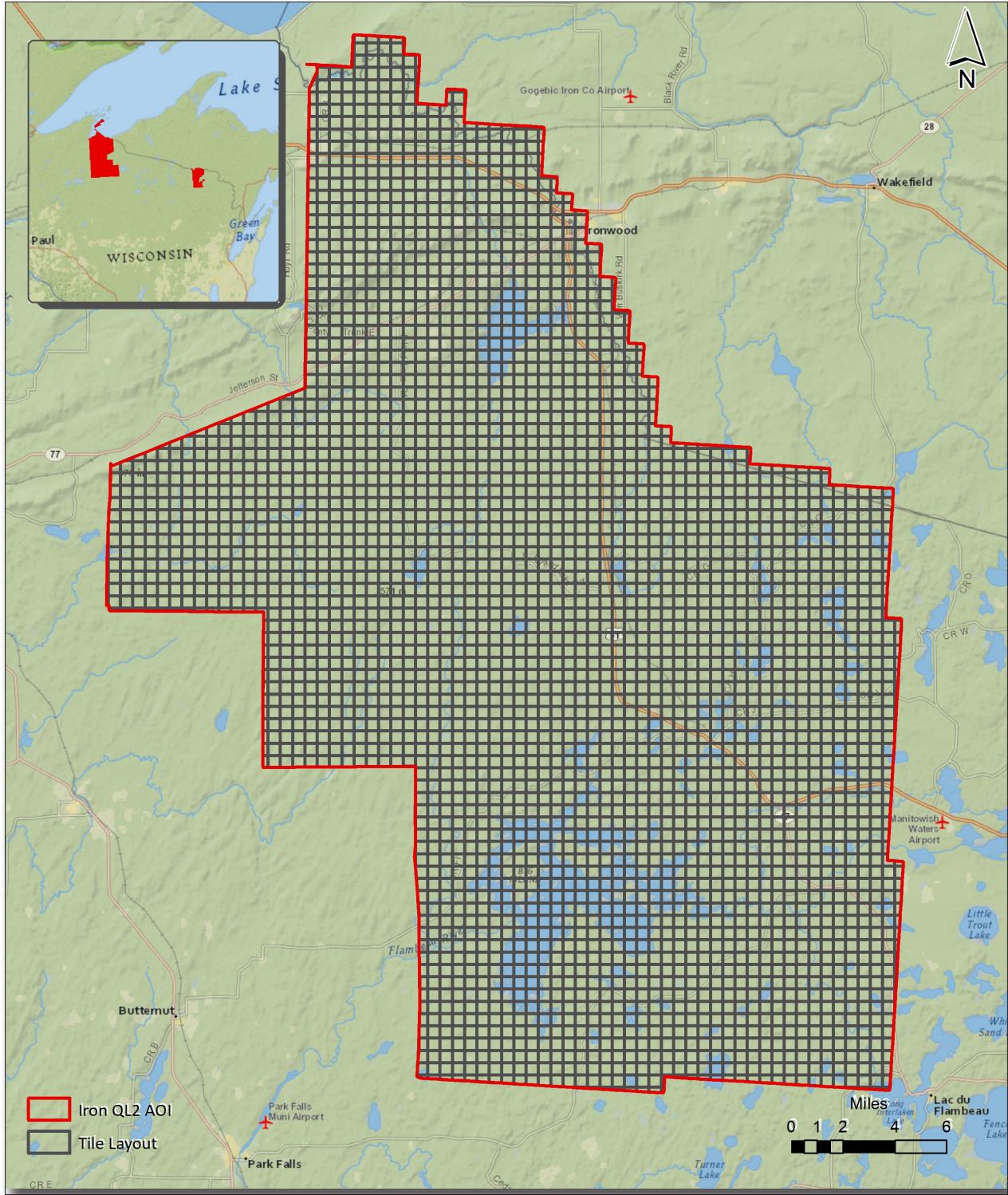


Figure 5. Lidar Tile Layout

4. Project Coverage Verification

Coverage verification was performed by comparing coverage of processed .LAS files captured during project collection to generate project shape files depicting boundaries of specified project areas. Please refer to Figure 6.

WI_AshlandIronFlorence_2019_D19

Work Unit 209903 Lidar Coverage

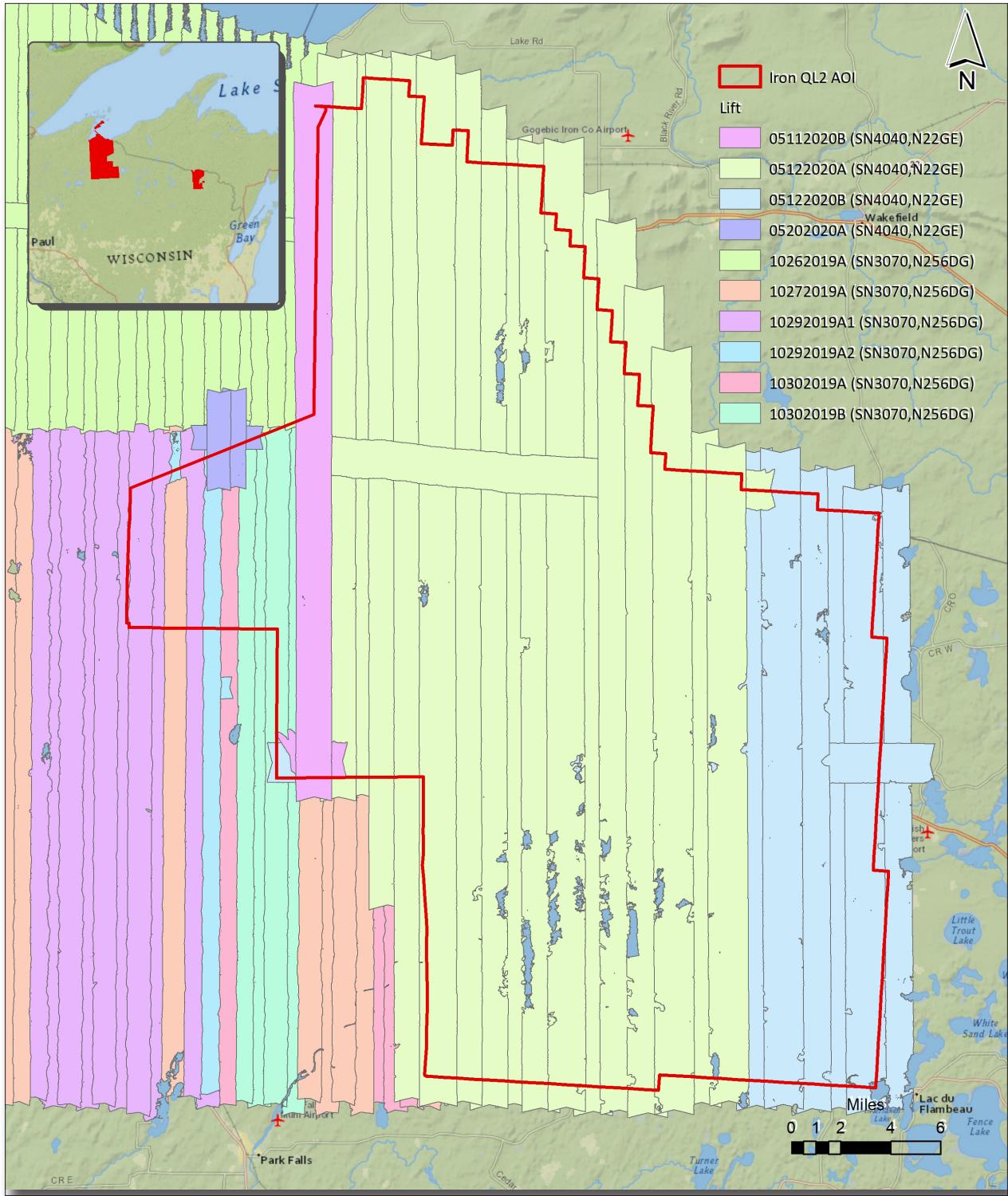


Figure 6. Lidar Coverage

5. Ground Control and Check Point Collection

Quantum Spatial completed a field survey of 20 ground control (calibration) points along with 49 blind QA points in Non-Vegetated and Vegetated land cover classifications as an independent test of the accuracy of this project.

A combination of precise GPS surveying methods, including static and RTK observations were used to establish the 3D position of ground calibration points and QA points for the point classes above. GPS was not an appropriate methodology for surveying in the forested areas during the leaf-on conditions for the actual field survey (which was accomplished after the LiDAR acquisition). Therefore the 3D positions for the forested points were acquired using a GPS-derived offset point located out in the open near the forested area, and using precise offset surveying techniques to derive the 3D position of the forested point from the open control point. The explicit goal for these surveys was to develop 3D positions that were three times greater than the accuracy requirement for the elevation surface. In this case of the blind QA points the goal was a positional accuracy of 5 cm in terms of the RMSE.

For more information, see the Survey Report in Appendix A.

The required accuracy testing was performed on the LiDAR dataset (both the LiDAR point cloud and derived DEM's) according to the USGS LiDAR Base Specification Version 1.3.

5.1. Calibration Control Point Testing

Figure 7 shows the location of each bare earth calibration point for the project area. TerraScan was used to perform a quality assurance check using the LiDAR bare earth calibration points. The results of the surface calibration are not an independent assessment of the accuracy of these project deliverables, but the statistical results do provide additional feedback as to the overall quality of the elevation surface.

5.2. Point Cloud Testing

The project specifications require that only Non-Vegetated Vertical Accuracy (NVA) be computed for raw lidar point cloud swath files. The required accuracy (ACCz) is: 19.6 cm at a 95% confidence level, derived according to NSSDA, i.e., based on RMSE of 10 cm in the “bare earth” and “urban” land cover classes. The NVA was tested with 27 checkpoints located in bare earth and urban (non-vegetated) areas. These check points were not used in the calibration or post processing of the lidar point cloud data. The checkpoints were distributed throughout the project area and were surveyed using GPS techniques. See survey report for additional survey methodologies.

Elevations from the unclassified lidar surface were measured for the x,y location of each check point. Elevations interpolated from the lidar surface were then compared to the elevation values of the surveyed control points. AccuracyZ has been tested to meet 19.6 cm or better Non-Vegetated Vertical Accuracy at 95% confidence level using $RMSE(z) \times 1.9600$ as defined by the

National Standards for Spatial Data Accuracy (NSSDA); assessed and reported using National Digital Elevation Program (NDEP)/ASPRS Guidelines.

5.3. Digital Elevation Model (DEM) Testing

The project specifications require the accuracy (ACCz) of the derived DEM be calculated and reported in two ways:

1. The required NVA is: 19.6 cm at a 95% confidence level, derived according to NSSDA, i.e., based on RMSE of 10 cm in the “bare earth” and “urban” land cover classes. This is a required accuracy. The NVA was tested with 27 checkpoints located in bare earth and urban (non-vegetated) areas. See Figure 8.
2. Vegetated Vertical Accuracy (VVA): VVA shall be reported for “brushlands/low trees” and “tall weeds/crops” land cover classes. The target VVA is: 29.4 cm at the 95th percentile, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for Lidar Data, i.e., based on the 95th percentile error in all vegetated land cover classes combined. This is a target accuracy. The VVA was tested with 22 checkpoints located in tall weeds/ crops and brushlands/low trees (vegetated) areas. The checkpoints were distributed throughout the project area and were surveyed using GPS techniques. See Figure 9.

AccuracyZ has been tested to meet 19.6 cm or better Non-Vegetated Vertical Accuracy at 95% confidence level using $RMSE(z) \times 1.9600$ as defined by the National Standards for Spatial Data Accuracy (NSSDA); assessed and reported using National Digital Elevation Program (NDEP)/ASPRS Guidelines.

A brief summary of results are listed below.

	Target	Measured	Point Count
Raw NVA	0.196 m	0.0505 m	27
NVA	0.196 m	0.0485 m	27
VVA	0.294 m	0.1221 m	22

WI_AshlandIronFlorence_2019_D19

Calibration Points

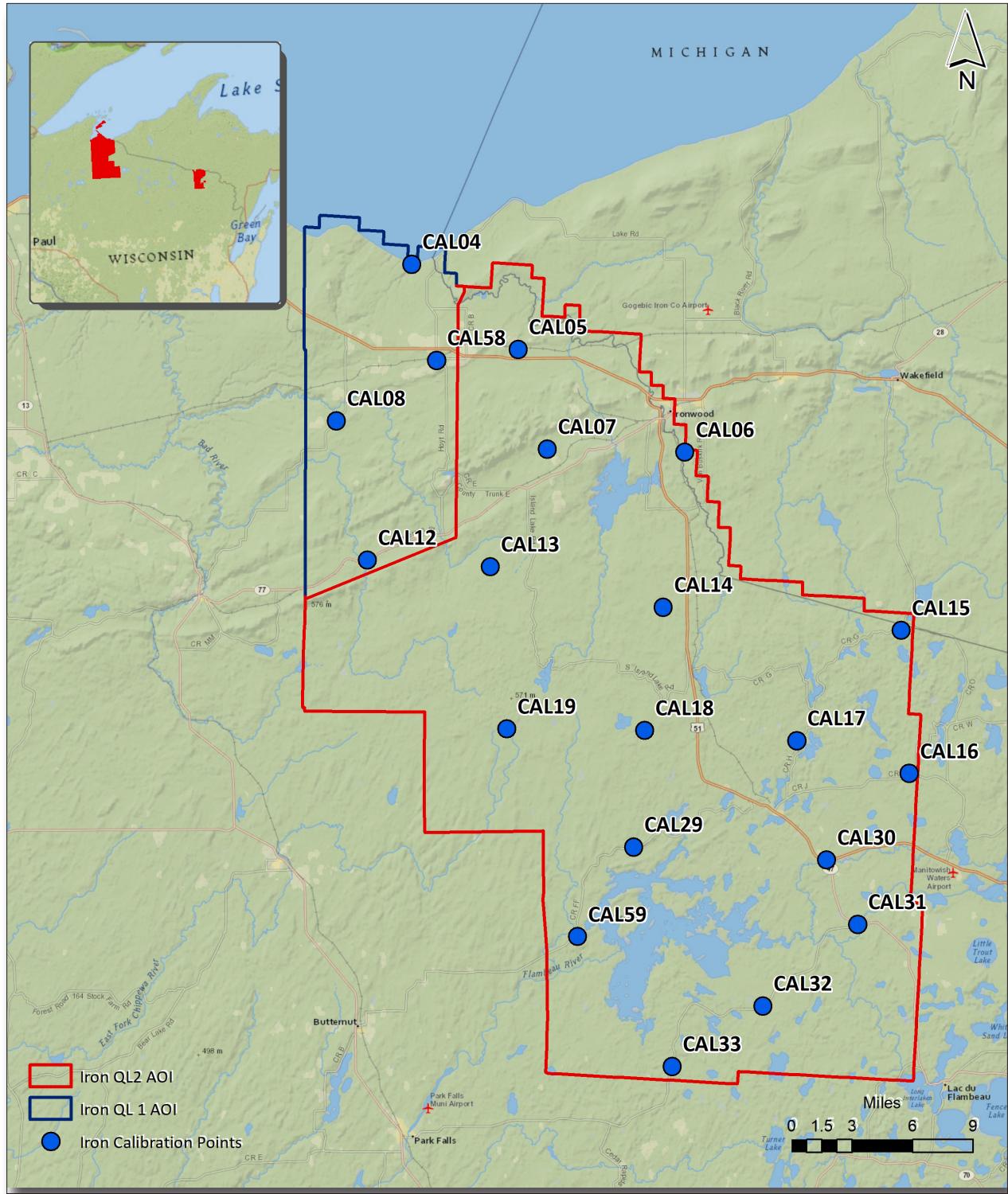
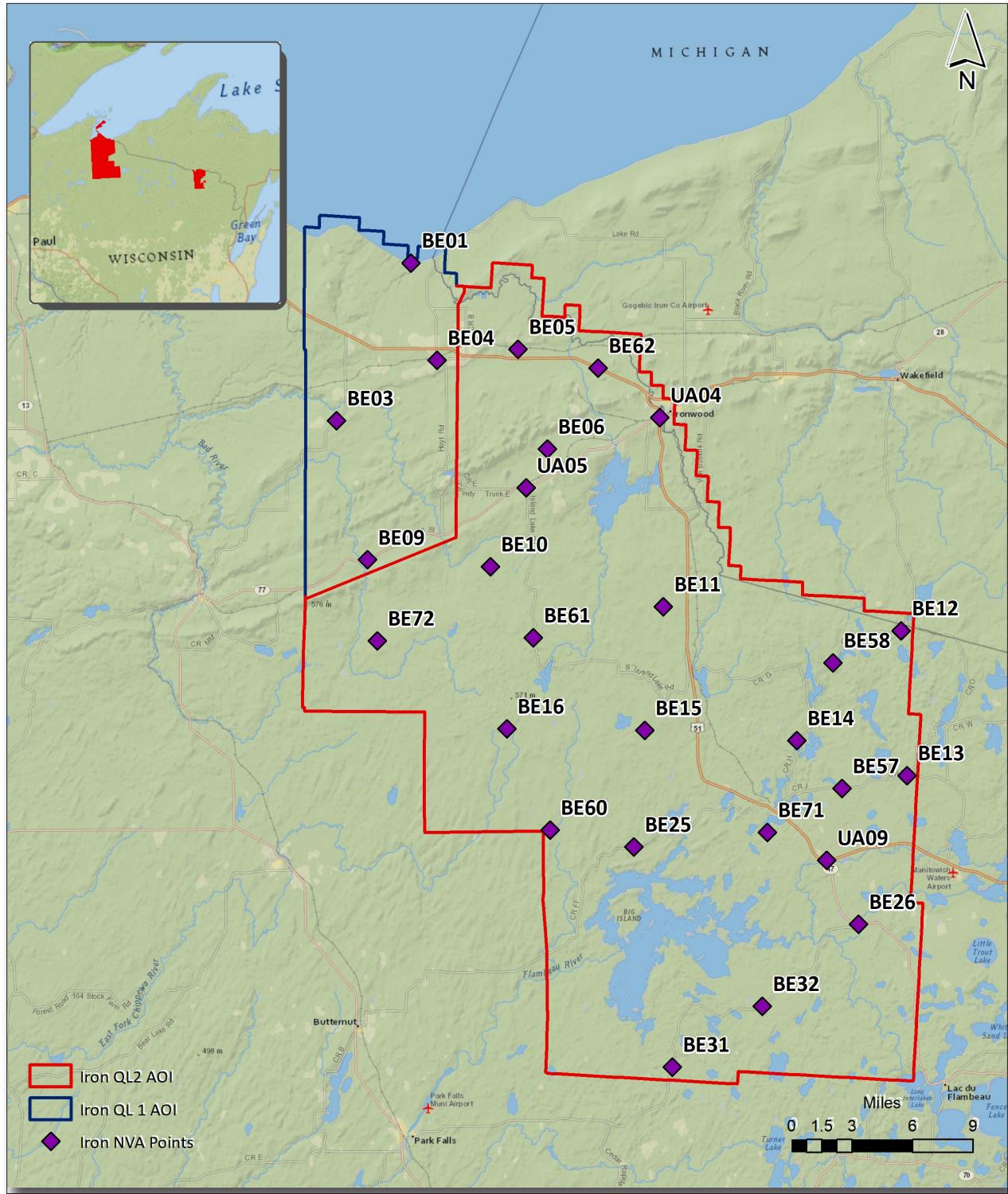


Figure 7. Calibration Control Point Locations

WI_AshlandIronFlorence_2019_D19

NVA Points



WI_AshlandIronFlorence_2019_D19

VVA Points

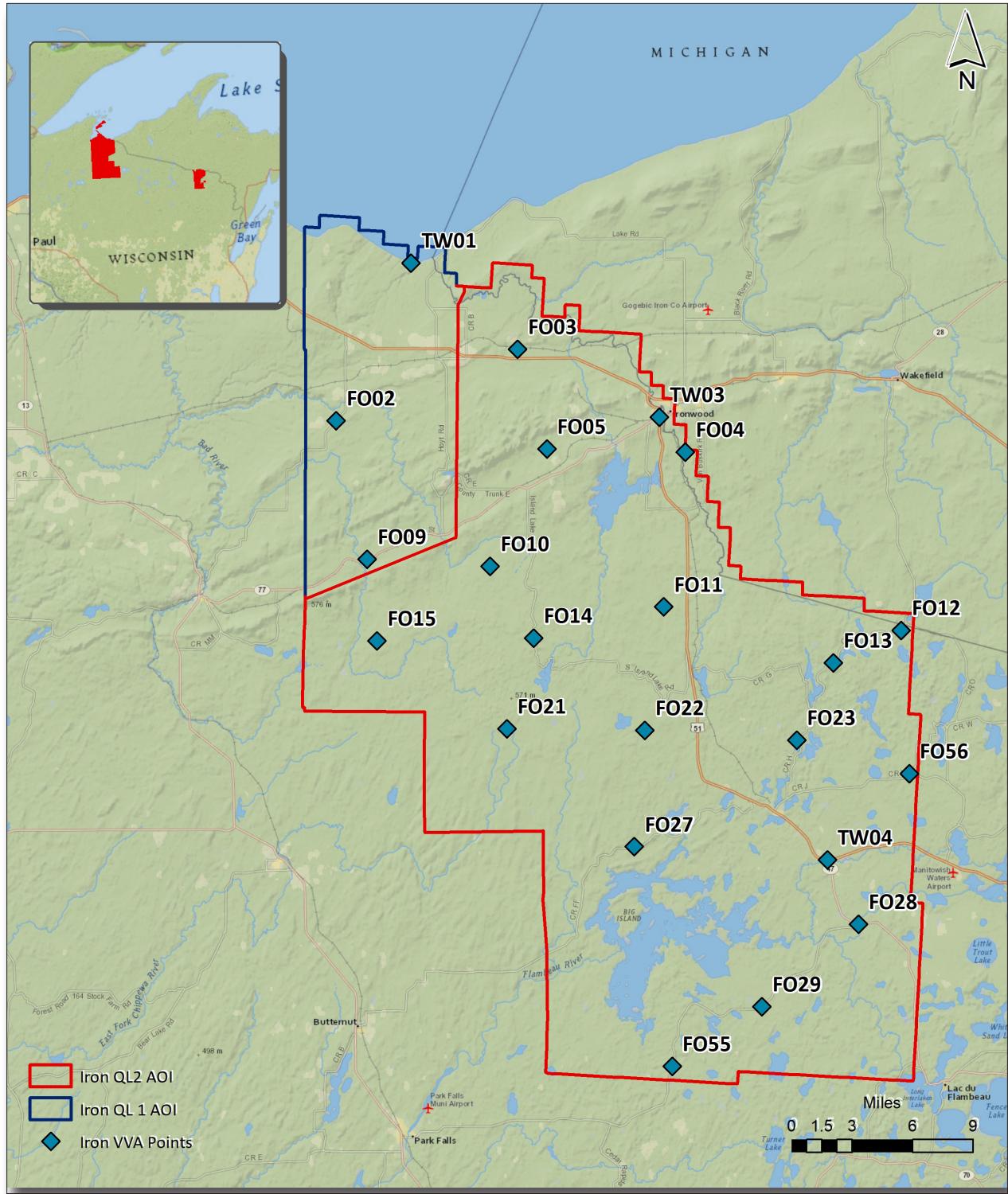


Figure 9. QC Checkpoint Locations - VVA

Project Report Appendices

The following section contains the appendices as listed in
the WI_AshlandIronFlorence_2019_D19
LiDAR Project Report.

Appendix A

Survey Report

Survey Report
QSI FEMA GCP Iron Co
Ayres Project No. 72-0227.15

Client:	Quantum Spatial
Type of Survey:	LIDAR Control Survey (USGS Specs)
Project Manager:	Zach Nienow
Survey Project Manager:	Jerry Ripley
RLS of Record:	Jerry Ripley
Crew Chief:	John Gilbertson
Additional Field Crew:	Ken Clark
Project Start Date:	10/21/2019
Report Date:	11/4/2019

Control Summary

Horizontal Datum:	NAD83 (2011)
Vertical Datum:	NAVD88, GEOID12B
Rectangular Coordinate System:	Wisconsin Coordinate Reference System, Iron Zone – WisCRS – Iron
Used NGS Control?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
List any NGS control points used:	DO5993 DO6189 DO6190 DO6200 DO6224 DP2786 DQ9279 RL1125 RM0484
Summary of control checks and calibration (if applicable):	(See Field Notes for control checks on NGS monuments – No calibration was needed)
Survey Methods Used:	WISCORS Network through VRS connection was the origination of control where cell service allowed. OPUS was used in areas with no cell service. VRS RTK methods, OPUS, and robotic total station methods were used.
Equipment Used:	GPS Trimble R8-3 GNSS S/N 5239496998– (Ayres #72.22) Total station Trimble S6 S/N 93410071 – (Ayres #74.11) Data Collector Trimble TSC3 S/N RS17C22036 (Ayres #75.38)

Utilities

Diggers Hotline Ticket #:	N/A
Locator Contact Info:	N/A
General Notes:	

Crew Chief Notes

Recorded appropriate: NVA (Bare Earth & Urban) and VVA (Forested, Tall Weed/Crop). Took 5 pictures of each point – one from each cardinal direction, and one of the rod tip.

Survey Methods (continued)

All work was performed in and referenced to NAD83 (2011), NAVD 88(2012), WisCRS Iron Zone.

Established horizontal and vertical coordinate values on the points by a minimum of two – 180 epoch observations with separate initializations using RTK GPS and the WISCORS network. The resultant coordinates and elevations provided in the deliverables are an average of the two observations. OPUS observations of a 45 minute minimum were taken on control points where necessary.

Check shots were taken on numerous NGS control points (see field notes) to verify that the values obtained are consistent with the datum/adjustment as described herein and meet the ±3 centimeter vertical accuracy requirement at the 95% confidence level.

Points not able to be directly occupied by GPS means were measured using Total Station methods from control point pairs set utilizing GPS methods outlined above.

Traffic Observations

N/A

Summary of RLS Decisions (Right of Way, Property Lines)

N/A

Survey Data Not Collected

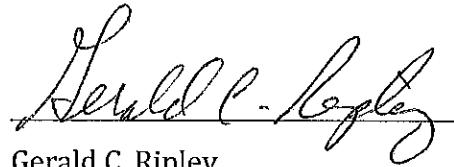
None

Surveyor's Certificate

Surveyor's Certificate

I, Gerald C. Ripley, being a Licensed Professional Land Surveyor in the State of Wisconsin, hereby certify to the best of my professional knowledge and belief that the survey methodologies and results shown on the attached report for the WI Ashland, Iron, Florence 2019 USGS Lidar project survey deliverables submitted to QSI on November 14, 2019, were performed and obtained utilizing commonly acceptable survey standards, practices and procedures. The survey portion of this project for Iron County was accomplished on October 21, 22, 23, 24, 25, 28 and 29, 2019.

I have reviewed the accuracy statements as part of my oversight and found them to meet the National Standards for Spatial Accuracy (NSSDA) required by this project.



Gerald C. Ripley

Professional Land Surveyor 2371

December 21, 2020

Expires: January 31, 2022

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_04
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
-------	----	--------	------	---------	-----

OPERATOR	K. Clark	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	411431.003			ELEV.
EASTING	678713.397			605.916

RECEIVER MODEL	Trimble R8-3	OBS. A	OBS. B	OBS. A	OBS. B	
SESSIONS	DATE	10/29/2019	-	START TIME	-	U.T.C.
	DAY OF YEAR	302	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET		ABOVE GROUND
	MEASURED	FIXED HGT.	METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	2.00 M		PUB. BENCH MARK	X NEW CONTROL
	MEASURED	X FIXED HGT	PUB. CONTROL	BASE STATION

Type: CAL

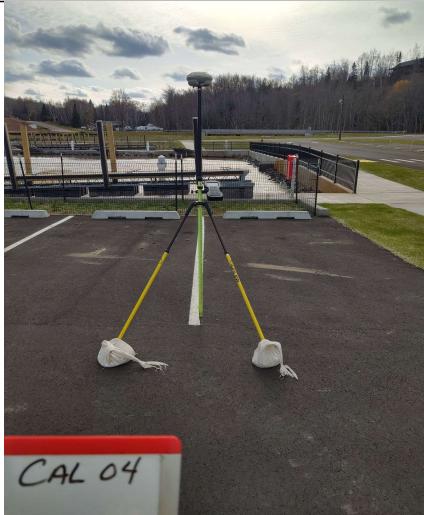
PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_04
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_05
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
--------------	----	---------------	------	----------------	-----

OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	388954.463			ELEV.
EASTING	706497.244			1137.114

RECEIVER MODEL			OBS. A	OBS. B		
SESSIONS	DATE	10/24/2019	-	START TIME	-	U.T.C.
	DAY OF YEAR	297	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND
ANTENNA HEIGHT (VERTICAL)						
MTRS/FT 5.00 ft						
X	MEASURED		FIXED HGT.	AERIAL TARGET		PHOTO I.D.
				PUB. BENCH MARK		X NEW CONTROL
				PUB. CONTROL		BASE STATION

Type: CAL	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_05
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_06
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON
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PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
NORTHING	361882.584		ELEV.
EASTING	750010.161		1502.172

RECEIVER MODEL			OBS. A	OBS. B
RECEIVER S/N				
SESSIONS	DATE	10/24/2019	-	
	DAY OF YEAR	297	-	

START TIME	OBS. A	OBS. B	U.T.C.
END TIME		-	X LOCAL

ANTENNA HEIGHT (SLANT)			
MTRS/FT			
	MEASURED		FIXED HGT.

TOP OF MONUMENT IS:		FLUSH
METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	5.00 ft		
X	MEASURED		FIXED HGT.

	AERIAL TARGET	PHOTO I.D.
	PUB. BENCH MARK	X NEW CONTROL
	PUB. CONTROL	BASE STATION

Type: CAL	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_06
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_07
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	362886.329	ELEV.
RECEIVER S/N		EASTING	713956.740	1465.156

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/24/2019	-	-	-	
	DAY OF YEAR	297	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 ft		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT.	PUB. CONTROL	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_07
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_08
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. CLARK	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	370532.257	ELEV.
RECEIVER S/N		EASTING	658878.171	1114.467

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 ft		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT.	PUB. CONTROL	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_08
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_12
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. CLARK	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	333967.607	ELEV.
RECEIVER S/N		EASTING	666805.945	1436.537

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/29/2019	-	START TIME	-	X	
	DAY OF YEAR	302	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
				PUB. CONTROL	BASE STATION

Type: CAL

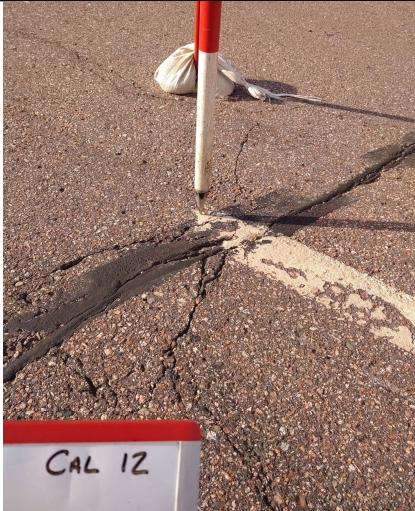
PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_12
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_13
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. CLARK	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	332119.776	ELEV.
RECEIVER S/N		EASTING	698932.985	1615.712

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 ft		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT.	PUB. CONTROL	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_13
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_14
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	321330.562	ELEV.
RECEIVER S/N		EASTING	744172.180	1647.753

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/24/2019	-	-	-	
	DAY OF YEAR	297	-		X	LOCAL

ANTENNA HEIGHT (SLANT)		TOP OF MONUMENT IS:		FLUSH
MTRS/FT		METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	

ANTENNA HEIGHT (VERTICAL)		AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 ft	PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	PUB. CONTROL	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_14
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_15
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	314908.656	ELEV.
RECEIVER S/N		EASTING	806356.746	1717.803

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/23/2019	-	START TIME	-	X	
	DAY OF YEAR	296	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
<input type="checkbox"/> MEASURED <input type="checkbox"/> FIXED HGT.				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	<input type="checkbox"/> NEW CONTROL
<input checked="" type="checkbox"/> MEASURED <input type="checkbox"/> FIXED HGT.				PUB. CONTROL	<input type="checkbox"/> BASE STATION

Type: CAL

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_15
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_16
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	277465.973	ELEV.
RECEIVER S/N		EASTING	808301.624	1651.618

SESSIONS	DATE	OBS. A	OBS. B	START TIME	OBS. A	OBS. B	U.T.C.
	DAY OF YEAR	296	-	END TIME		-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
MEASURED				METERS/FEET		B BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
X MEASURED				PUB. CONTROL	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_16
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_17
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	286185.038	ELEV.
RECEIVER S/N		EASTING	778862.084	1616.779

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)		TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND

ANTENNA HEIGHT (VERTICAL)		AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 ft	PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_17
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_18
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON
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PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
NORTHING	289079.104		ELEV.
EASTING	739176.931		1681.758

RECEIVER MODEL			OBS. A	OBS. B
SESSIONS	DATE	10/25/2019	-	
	DAY OF YEAR	298	-	

START TIME	OBS. A	OBS. B		
END TIME			-	X LOCAL

ANTENNA HEIGHT (SLANT)			
MTRS/FT			
	MEASURED		FIXED HGT.

TOP OF MONUMENT IS:		FLUSH
METERS/FEET		ABOVE GROUND
METERS/FEET		B BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	5.00 ft		
X	MEASURED		FIXED HGT.

AERIAL TARGET		PHOTO I.D.
PUB. BENCH MARK		X NEW CONTROL
PUB. CONTROL		BASE STATION

Type: CAL

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_18
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_19
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	289618.670	ELEV.
RECEIVER S/N		EASTING	703037.468	1736.254

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 ft		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: CAL

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_19
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_29
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON
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PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
NORTHING	258522.747		ELEV.
EASTING	736156.778		1606.583

RECEIVER MODEL			
RECEIVER S/N			
SESSIONS	DATE	10/22/2019	-
	DAY OF YEAR	295	-

SESSIONS	DATE	10/22/2019	-	U.T.C.
	DAY OF YEAR	295	-	X LOCAL

ANTENNA HEIGHT (SLANT)			
MTRS/FT			
	MEASURED	FIXED HGT.	

TOP OF MONUMENT IS:		FLUSH
METERS/FEET		ABOVE GROUND
METERS/FEET		B BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	5.00 ft		
X	MEASURED	FIXED HGT.	

AERIAL TARGET	PHOTO I.D.
PUB. BENCH MARK	X NEW CONTROL
PUB. CONTROL	BASE STATION

Type: CAL

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_29
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_30
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON
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PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
NORTHING	254906.021		ELEV.
EASTING	786572.796		1592.617

RECEIVER MODEL	Trimble R8-3						
RECEIVER S/N	523946998						
SESSIONS	<table border="1"> <tr> <td>OBS. A</td> <td>OBS. B</td> </tr> <tr> <td>DATE</td> <td>10/28/2019</td> </tr> <tr> <td>DAY OF YEAR</td> <td>301</td> </tr> </table>	OBS. A	OBS. B	DATE	10/28/2019	DAY OF YEAR	301
OBS. A	OBS. B						
DATE	10/28/2019						
DAY OF YEAR	301						
	-						

START TIME		-		U.T.C.
END TIME		-	X	LOCAL

ANTENNA HEIGHT (SLANT)			
MTRS/FT			
	MEASURED		FIXED HGT.

TOP OF MONUMENT IS:		FLUSH
METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	2.00 M		
	MEASURED	X	FIXED HGT.

AERIAL TARGET		PHOTO I.D.
PUB. BENCH MARK		X NEW CONTROL
PUB. CONTROL		BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_30
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_31
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL	Trimble R8-3	NORTHING	238039.552	ELEV.
RECEIVER S/N	523946998	EASTING	794641.023	1589.001

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		START TIME	-	-	X	
	DAY OF YEAR	301	-	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
				PUB. CONTROL	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_31
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_32
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	216748.746	ELEV.
RECEIVER S/N		EASTING	769702.487	1607.739

SESSIONS	DATE	OBS. A	OBS. B	START TIME	OBS. A	OBS. B	U.T.C.
	DAY OF YEAR	301	-	END TIME		-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
<input type="checkbox"/> MEASURED <input type="checkbox"/> FIXED HGT.				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	<input type="checkbox"/> NEW CONTROL
<input checked="" type="checkbox"/> MEASURED <input type="checkbox"/> FIXED HGT.				PUB. CONTROL	<input type="checkbox"/> BASE STATION

Type: CAL

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_32
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_33
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	200989.359	ELEV.
RECEIVER S/N		EASTING	745939.205	1590.53

SESSIONS	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
	DATE	10/21/2019	-	-	
	DAY OF YEAR	294	-	-	LOCAL

ANTENNA HEIGHT (SLANT)		TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND

ANTENNA HEIGHT (VERTICAL)		AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK
X	MEASURED	FIXED HGT.	PUB. CONTROL

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_33
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_59
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL	Trimble R8-3	NORTHING	235107.570	ELEV.
RECEIVER S/N	523946998	EASTING	721315.550	1595.476

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		START TIME	END TIME	-	-	
	DAY OF YEAR	295	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	2.00 M		PUB. BENCH MARK	X NEW CONTROL
	MEASURED	X FIXED HGT	PUB. CONTROL	BASE STATION

Type: CAL

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_59
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_58
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON
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PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
NORTHING	386188.631		ELEV.
EASTING	685104.763		1140.874

RECEIVER MODEL	Trimble R8-3						
RECEIVER S/N	523946998						
SESSIONS	<table border="1"> <tr> <td>OBS. A</td> <td>OBS. B</td> </tr> <tr> <td>DATE</td> <td>10/24/2019</td> </tr> <tr> <td>DAY OF YEAR</td> <td>297</td> </tr> </table>	OBS. A	OBS. B	DATE	10/24/2019	DAY OF YEAR	297
OBS. A	OBS. B						
DATE	10/24/2019						
DAY OF YEAR	297						
	-						

START TIME	OBS. A	OBS. B	U.T.C.
END TIME	-	-	X LOCAL

ANTENNA HEIGHT (SLANT)			
MTRS/FT			
	MEASURED	FIXED HGT.	

TOP OF MONUMENT IS:	FLUSH
METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	2.00 M		
	MEASURED	X	FIXED HGT.

AERIAL TARGET	PHOTO I.D.
PUB. BENCH MARK	X NEW CONTROL
PUB. CONTROL	BASE STATION

Type: CAL

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	CAL_58
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_01
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. Clark	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
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RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	411721.966	ELEV.
RECEIVER S/N	5239497193	EASTING	678529.436	613.208

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	END TIME	-	X	
RTK	DAY OF YEAR	302	-				

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	2.000 Meters		PUB. BENCH MARK	X NEW CONTROL
	MEASURED	X FIXED HGT	PUB. CONTROL	BASE STATION

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_01
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

GPS CONTROL FIELD DATA SHEET

PAGE:
1

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_03
Project No.	72-0227.15		

STATE	WI
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COUNTY	Iron
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Country	USA
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OPERATOR	K. Clark
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**PROJECT COORDINATE/ELEVATION SYSTEM
NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT**

NORTHING	370542.142	ELEV.
EASTING	658826.812	1114.107

RECEIVER MODEL

	OBS. A	OBS. B		
START TIME		-		U.T.C.
END TIME		-	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT			
	MEASURED		FIXED HGT.

TOP OF MONUMENT IS:

METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)

MTRS/FT	5.00 FT		
X	MEASURED		FIXED HGT

	AERIAL TARGET
	PUB. BENCH MARK
	PUB. CONTROL

Type: Bare Earth

PHOTO:North



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_03
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_04
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	386205.307	ELEV.
RECEIVER S/N	523946998	EASTING	685230.971	1140.335

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	END TIME	-	X	
RTK	DAY OF YEAR	297	-				

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH		
MTRS/FT				METERS/FEET		ABOVE GROUND		
				METERS/FEET		BELOW GROUND		
ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET			PHOTO I.D.		
MTRS/FT			PUB. BENCH MARK			X NEW CONTROL		
			PUB. CONTROL			BASE STATION		

Type: Bare Earth	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_04
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_05
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	389003.982			ELEV.
EASTING	706454.626			1134.662

RECEIVER MODEL			OBS. A	OBS. B		
SESSIONS	DATE	10/24/2019	-	START TIME	-	U.T.C.
	DAY OF YEAR	297	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND
ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.	
MTRS/FT	5.00 FT			PUB. BENCH MARK	X NEW CONTROL	
X	MEASURED		FIXED HGT.	PUB. CONTROL		BASE STATION

Type: Bare Earth	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_05
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_06
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	362835.726	ELEV.
RECEIVER S/N		EASTING	713965.708	1463.646

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/24/2019	-	-	-	
	DAY OF YEAR	297	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.0 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT.	PUB. CONTROL	BASE STATION

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_06
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_09
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. Clark	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	334030.817			ELEV.
EASTING	666764.061			1436.368

RECEIVER MODEL			OBS. A	OBS. B		
SESSIONS	DATE	10/29/2019	-	START TIME	-	U.T.C.
	DAY OF YEAR	302	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND
ANTENNA HEIGHT (VERTICAL)						
MTRS/FT 5.00 FT						
X	MEASURED		FIXED HGT	AERIAL TARGET		PHOTO I.D.
				PUB. BENCH MARK		X NEW CONTROL
				PUB. CONTROL		BASE STATION

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_09
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

GPS CONTROL FIELD DATA SHEET

PAGE:
1

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_10
Project No.	72-0227.15		

STATE	WI
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COUNTY	Iron
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Country	USA
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W1

Iron

USA

WI COUNTY Iron Country USA

OPERATOR K. Clark

**PROJECT COORDINATE/ELEVATION SYSTEM
NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT**

NORTHING	332123.325	ELEV.
EASTING	698933.117	1615.629

RECEIVER MODEL	Trimble R8-3 Integrated Antenna
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RECEIVER S/N 5239497193

SESSIONS

SESSIONS DATE 10/29/2019

RTK DAY OF YEAR 302

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	OBS. A	OBS. B		
START TIME		-		U.T.C.
END TIME		-	X	LOCAL

ANTENNA HEIGHT (SLANT)

TOP OF MONUMENT IS:			FLUSH
METERS/FEET		ABOVE GROUND	
METERS/FEET		BELOW GROUND	

MTRS/FT		MEASURED		FIXED HGT.

	AERIAL TARGET			PHOTO I.D.
	PUB. BENCH MARK		X	NEW CONTROL
	PUB. CONTROL			BASE STATION

Type: Bare Earth

PHOTO:North



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_10
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_11
Project No.	72-0227.15		

STATE WI

COUNTY Iron

Country USA

OPERATOR J. Gilbertson

PROJECT COORDINATE/ELEVATION SYSTEM
NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT

NORTHING	321354.229	ELEV.
EASTING	744170.530	1647.714

RECEIVER MODEL	OBS. A	OBS. B	
SESSIONS	DATE	10/24/2019	-
	DAY OF YEAR	297	-

START TIME	OBS. A	OBS. B	U.T.C.
END TIME		-	X LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	MEASURED		
	MEASURED		FIXED HGT.

TOP OF MONUMENT IS:

METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

ANTENNA HEIGHT (VERTICAL)

MTRS/FT	5.00 FT		
X	MEASURED		FIXED HGT.

AERIAL TARGET

PUB. BENCH MARK
PUB. CONTROL

PHOTO I.D.

X NEW CONTROL
BASE STATION

Type: Bare Earth

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_11
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_12
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_13
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	276911.438	ELEV.
RECEIVER S/N		EASTING	807707.964	1634.904

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/23/2019	-	-	-	
	DAY OF YEAR	296	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: Bare Earth

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_13
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_14
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	286204.160	ELEV.
RECEIVER S/N		EASTING	778881.454	1616.734

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/29/2019	-	START TIME	-	X	
	DAY OF YEAR	302	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
<input type="checkbox"/> MEASURED <input type="checkbox"/> FIXED HGT.				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	<input type="checkbox"/> NEW CONTROL
<input checked="" type="checkbox"/> MEASURED <input type="checkbox"/> FIXED HGT.				PUB. CONTROL	<input type="checkbox"/> BASE STATION

Type: Bare Earth

PHOTO:North PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_14
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_15
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	289072.806	ELEV.
RECEIVER S/N		EASTING	739139.381	1682.352

SESSIONS	DATE	OBS. A	OBS. B	START TIME	OBS. A	OBS. B	U.T.C.
		DAY OF YEAR	298		-	-	

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_15
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_16
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	289657.040	ELEV.
RECEIVER S/N		EASTING	703066.600	1738.412

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_16
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_25
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	258568.143	ELEV.
RECEIVER S/N		EASTING	736164.712	1608.481

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/22/2019	-	-	-	
	DAY OF YEAR	295	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT.	PUB. CONTROL	BASE STATION

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_25
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_26
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	238047.549	ELEV.
RECEIVER S/N	523946998	EASTING	794777.575	1587.655

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	-	X	LOCAL	
RTK	DAY OF YEAR	301	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH		
MTRS/FT				METERS/FEET		ABOVE GROUND		
MEASURED				METERS/FEET		BELOW GROUND		
ANTENNA HEIGHT (VERTICAL)								
MTRS/FT			2.000 Meters					
MEASURED								
X								
FIXED HGT								
				AERIAL TARGET		PHOTO I.D.		
				PUB. BENCH MARK		X NEW CONTROL		
				PUB. CONTROL		BASE STATION		

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_26
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_31
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	200810.359	ELEV.
RECEIVER S/N		EASTING	745929.253	1593.537

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/21/2019	-	-	-	
	DAY OF YEAR	294	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_31
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_32
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	216607.164	ELEV.
RECEIVER S/N		EASTING	769535.414	1600.623

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/28/2019	-	-	-	
	DAY OF YEAR	301	-		X	LOCAL

ANTENNA HEIGHT (SLANT)		TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND

ANTENNA HEIGHT (VERTICAL)		AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK
X	MEASURED	FIXED HGT.	PUB. CONTROL

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_32
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_57
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	273564.991	ELEV.
RECEIVER S/N	523946998	EASTING	790658.151	1622.046

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	-	X	LOCAL	
RTK	DAY OF YEAR	296	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH		
MTRS/FT				METERS/FEET		ABOVE GROUND		
				METERS/FEET		BELOW GROUND		
ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET			PHOTO I.D.		
MTRS/FT			PUB. BENCH MARK			X NEW CONTROL		
			PUB. CONTROL			BASE STATION		

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_57
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_58
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	306485.026	ELEV.
RECEIVER S/N		EASTING	788427.507	1643.781

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/23/2019	-	-	-	
	DAY OF YEAR	296	-		X	LOCAL

ANTENNA HEIGHT (SLANT)		TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND

ANTENNA HEIGHT (VERTICAL)		AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK
X	MEASURED	FIXED HGT.	PUB. CONTROL

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_58
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_60
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	263037.270	ELEV.
RECEIVER S/N	523946998	EASTING	714259.393	1637.103

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	-	X	LOCAL	
RTK	DAY OF YEAR	296	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH		
MTRS/FT				METERS/FEET		ABOVE GROUND		
				METERS/FEET		BELOW GROUND		
ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET			PHOTO I.D.		
MTRS/FT			PUB. BENCH MARK			X NEW CONTROL		
			PUB. CONTROL			BASE STATION		

Type: Bare Earth	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_60
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_61
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	313413.658	ELEV.
RECEIVER S/N		EASTING	710058.616	1734.449

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/29/2019	-	START TIME	-	X	
	DAY OF YEAR	302	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
				PUB. CONTROL	BASE STATION

Type: Bare Earth	
PHOTO:North	PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_61
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_62
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	383923.690	ELEV.
RECEIVER S/N	523946998	EASTING	727303.642	1296.503

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		RTK	DAY OF YEAR	297	-	START TIME	
						END TIME	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH		
MTRS/FT				METERS/FEET		ABOVE GROUND		
				METERS/FEET		B BELOW GROUND		
ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET			PHOTO I.D.		
MTRS/FT			PUB. BENCH MARK			X NEW CONTROL		
			PUB. CONTROL			BASE STATION		

Type: Bare Earth	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_62
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_71
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	262123.128	ELEV.
RECEIVER S/N	523946998	EASTING	771039.780	1611.315

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	END TIME	-	X	
RTK	DAY OF YEAR	295	-				

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH		
MTRS/FT				METERS/FEET		ABOVE GROUND		
				METERS/FEET		B BELOW GROUND		
ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET			PHOTO I.D.		
MTRS/FT			PUB. BENCH MARK			X NEW CONTROL		
			PUB. CONTROL			BASE STATION		

Type: Bare Earth	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_71
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_72
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. Clark	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	312776.650	ELEV.
RECEIVER S/N	5239497193	EASTING	669241.530	1573.883

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	END TIME	-	X	
RTK	DAY OF YEAR	302	-				

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	2.000 Meters		PUB. BENCH MARK	X NEW CONTROL
	MEASURED	X FIXED HGT	PUB. CONTROL	BASE STATION

Type: Bare Earth

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	BE_72
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	UA_04
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL	Trimble R8-3	NORTHING	370923.197	ELEV.
RECEIVER S/N	523946998	EASTING	743422.580	1504.938

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	END TIME	-	-	X	
RTK	DAY OF YEAR	297	-				LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	2.00 M		PUB. BENCH MARK	X NEW CONTROL
	MEASURED	X FIXED HGT	PUB. CONTROL	BASE STATION

Type: Urban Area

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	UA_04
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	UA_05
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL	Trimble R8-3	NORTHING	352744.046	ELEV.
RECEIVER S/N	523946998	EASTING	708431.578	1574.237

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/24/2019	-	START TIME	-	X	
RTK	DAY OF YEAR	297	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
MEASURED				METERS/FEET		B BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
MEASURED				PUB. CONTROL	BASE STATION

Type: Urban Area

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	UA_05
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	UA_09
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	254830.958			ELEV.
EASTING	786566.530			1591.568

RECEIVER MODEL	Trimble R8-3	OBS. A	OBS. B
RECEIVER S/N	523946998		
SESSIONS	DATE	10/28/2019	-
RTK	DAY OF YEAR	301	-

START TIME	OBS. A	OBS. B	U.T.C.
END TIME		-	X LOCAL

ANTENNA HEIGHT (SLANT)			
MTRS/FT			
	MEASURED		FIXED HGT.

METERS/FEET	TOP OF MONUMENT IS:	FLUSH
METERS/FEET		ABOVE GROUND
METERS/FEET		B BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	2.00 M		
	MEASURED	X	FIXED HGT.

	AERIAL TARGET	PHOTO I.D.
	PUB. BENCH MARK	X NEW CONTROL
	PUB. CONTROL	BASE STATION

Type: Urban Area

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	UA_09
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	TW_01
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. CLARK	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	411773.932			ELEV.
EASTING	678567.937			611.269

RECEIVER MODEL	Trimble R8-3	OBS. A	OBS. B	OBS. A	OBS. B	
SESSIONS	DATE	10/29/2019	-	START TIME	-	U.T.C.
RTK	DAY OF YEAR	302	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED	X	FIXED HGT.	METERS/FEET		BELOW GROUND
ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.	
MTRS/FT	2.00 M			PUB. BENCH MARK	X NEW CONTROL	
	MEASURED	X	FIXED HGT.	PUB. CONTROL	BASE STATION	

Type: Tall Weeds	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	TW_01
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	TW_03
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL	Trimble R8-3	NORTHING	371050.030	ELEV.
RECEIVER S/N	523946998	EASTING	743328.793	1502.235

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/24/2019	-	START TIME	-	X	
RTK	DAY OF YEAR	297	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
MEASURED				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
2.00 M				PUB. CONTROL	BASE STATION

Type: Tall Weeds

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	TW_03
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	TW_04
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. GILBERTSON
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PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
NORTHING	254858.888		ELEV.
EASTING	786755.509		1590.994

RECEIVER MODEL	Trimble R8-3	OBS. A	OBS. B
RECEIVER S/N	523946998		
SESSIONS	DATE	10/28/2019	-
RTK	DAY OF YEAR	301	-

START TIME	OBS. A	OBS. B		U.T.C.
END TIME			-	X LOCAL

ANTENNA HEIGHT (SLANT)			
MTRS/FT			
	MEASURED		FIXED HGT.

TOP OF MONUMENT IS:		FLUSH
METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	2.00 M		
	MEASURED	X	FIXED HGT.

AERIAL TARGET	PHOTO I.D.
PUB. BENCH MARK	X NEW CONTROL
PUB. CONTROL	BASE STATION

Type: Tall Weeds

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	TW_04
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

GPS CONTROL FIELD DATA SHEET

PAGE:
1

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_02
Project No.	72-0227.15		

STATE WI **COUNTY** Iron **Country** USA

PROJECT COORDINATE/ELEVATION SYSTEM
NAD83(CONUS) WisCRS Iron Co. USFT : NAVD88, GEOID12B, USFT

RECEIVER MODEL			
	EASTING	658734.242	1114.453

RECEIVER S/N	OBS. A	OBS. B	OBS. A	OBS. B

SESSIONS	DATE	10/29/2019	-	START TIME		-		U.T.C.
	DAY OF YEAR	302	-	END TIME		-	X	LOCAL

	ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND	
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	5.00 FT		
X	MEASURED		FIXED HGT

	AERIAL TARGET
	PUB. BENCH MARK
	PUB. CONTROL

	PHOTO I.D.
X	NEW CONTROL
	BASE STATION

Type: Forest

PHOTO:North



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_02
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_03
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	388978.781	ELEV.
RECEIVER S/N		EASTING	706325.730	1133.946

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/24/2019	-	START TIME	-	X	
	DAY OF YEAR	297	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
MEASURED				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
X MEASURED				PUB. CONTROL	BASE STATION

Type: Forest	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_03
Project No.	72-0227.15		

PHOTO: South



PHOTO: West



PHOTO: Tip



PHOTO:

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_04
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	361838.405			ELEV.
EASTING	750084.205			1499.587

RECEIVER MODEL			OBS. A	OBS. B		
SESSIONS	DATE	10/24/2019	-	START TIME	-	U.T.C.
	DAY OF YEAR	297	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND
ANTENNA HEIGHT (VERTICAL)						
MTRS/FT	5.00 FT			AERIAL TARGET	PHOTO I.D.	
X	MEASURED		FIXED HGT.	PUB. BENCH MARK	X NEW CONTROL	BASE STATION
				PUB. CONTROL		

Type: Forest	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_04
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_05
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	362883.677			ELEV.
EASTING	713857.764			1466.832

RECEIVER MODEL			OBS. A	OBS. B		
SESSIONS	DATE	10/24/2019	-	START TIME	-	U.T.C.
	DAY OF YEAR	297	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND
ANTENNA HEIGHT (VERTICAL)						
MTRS/FT	6.10 FT			AERIAL TARGET	PHOTO I.D.	
X	MEASURED		FIXED HGT.	PUB. BENCH MARK	NEW CONTROL	
				PUB. CONTROL	BASE STATION	

Type: Forest	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_05
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_09
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. Clark	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	334144.983	ELEV.
RECEIVER S/N		EASTING	666713.498	1434.127

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

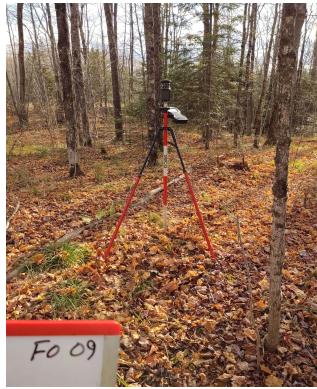
Type: Forest

PHOTO: North



PHOTO: East

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_09
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

GPS CONTROL FIELD DATA SHEET

PAGE:
1

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_10
Project No.	72-0227.15		

STATE	WI
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COUNTY	Iron
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Country USA

OPERATOR	K. Clark
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PROJECT COORDINATE/ELEVATION SYSTEM
NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT

NORTHING	332162.369	ELEV.
EASTING	698894.068	1614.417

RECEIVER MODEL

RECEIVER S/N

	OBS. A	OBS. B
DATE	10/29/2019	-
DAY OF YEAR	302	-

	OBS. A	OBS. B		
START TIME		-		U.T.C.
END TIME		-	X	LOCAL

ANTENNA HEIGHT (SLANT)

TOP OF MONUMENT IS:		FLUSH
METERS/FEET	ABOVE GROUND	
METERS/FEET	BELOW GROUND	

MTRS/FT		MEASURED		FIXED HGT.

	AERIAL TARGET
	PUB. BENCH MARK
	PUB. CONTROL

ANTENNA HEIGHT (VERTICAL)				
MTRS/FT	5.00 FT			
	X	MEASURED		FIXED HGT

	AERIAL TARGET		PHOTO I.D.
	PUB. BENCH MARK	X	NEW CONTROL
	PUB. CONTROL		BASE STATION

Type: Forest

PHOTO·North



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_10
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_11
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	321336.492	ELEV.
RECEIVER S/N		EASTING	744247.275	1647.022

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.	
		10/24/2019	-	-	-		
	DAY OF YEAR	297	-			X	LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
MEASURED				METERS/FEET		B BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
X MEASURED				PUB. CONTROL	BASE STATION

Type: Forest

PHOTO: North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_11
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_12
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	314921.702	ELEV.
RECEIVER S/N		EASTING	806413.361	1720.264

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/23/2019	-	-	-	
	DAY OF YEAR	296	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: Forest

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_12
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_13
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	306529.554	ELEV.
RECEIVER S/N		EASTING	788529.140	1644.533

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/23/2019	-	-	-	
	DAY OF YEAR	296	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: Forest

PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_13
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_14
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	313359.638	ELEV.
RECEIVER S/N		EASTING	710131.596	1720.542

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)		TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND

ANTENNA HEIGHT (VERTICAL)		AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK
X	MEASURED	FIXED HGT.	PUB. CONTROL

Type: Forest	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_14
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_15
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	K. Clark	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	312812.576	ELEV.
RECEIVER S/N	5239497193	EASTING	669189.967	1574.185

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.	
		START TIME	-	-	END TIME	-		
RTK	DAY OF YEAR	302	-				X	LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH		
MTRS/FT				METERS/FEET		ABOVE GROUND		
				METERS/FEET		B BELOW GROUND		
ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET			PHOTO I.D.		
MTRS/FT			PUB. BENCH MARK			X NEW CONTROL		
			PUB. CONTROL			BASE STATION		

Type: Forest	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_15
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_21
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	289585.428	ELEV.
RECEIVER S/N		EASTING	703088.726	1738.913

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/29/2019	-	-	-	
	DAY OF YEAR	302	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT	PUB. CONTROL	BASE STATION

Type: Forest	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_21
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

GPS CONTROL FIELD DATA SHEET

PAGE:
1

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_22
Project No.	72-0227.15		

STATE WI **COUNTY** Iron **Country** USA

OPERATOR J. Gilbertson **PROJECT COORDINATE/ELEVATION SYSTEM**
NAD83(CONUS_WGS84) USFT : NAVD88, GEOID12B, USFT

RECEIVER MODEL		EASTING	739182.298	1680.66
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RECEIVER S/N	OBS. A	OBS. B	OBS. A	OBS. B

SESSIONS	DATE	10/25/2019	-	START TIME		-		U.T.C.
	DAY OF YEAR	298	-	END TIME		-	X	LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)			
MTRS/FT	5.00 FT		
X	MEASURED		FIXED HGT

	AERIAL TARGET
	PUB. BENCH MARK
	PUB. CONTROL

	PHOTO I.D.
X	NEW CONTROL
	BASE STATION

Type: Forest

PHOTO:North



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_22
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**



GPS CONTROL FIELD DATA SHEET

PAGE:
1

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_23
Project No.	72-0227.15		

STATE	WI
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COUNTY	Iron
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Country	USA
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OPERATOR	J. Gilbertson
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PROJECT COORDINATE/ELEVATION SYSTEM
NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT

NORTHING	286272.819		ELEV.
EASTING	778897.294		1613.694

RECEIVER MODEL

	OBS. A	OBS. B		
START TIME		-		U.T.C.
END TIME		-	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	MEASURED		FIXED HGT.

TOP OF MONUMENT IS:

METERS/FEET		ABOVE GROUND
METERS/FEET		BELLOW GROUND

ANTENNA HEIGHT (VERTICAL)

MTRS/FT	5.60 FT		
	X	MEASURED	FIXED HGT
	X	MEASURED	FIXED HGT

	AERIAL TARGET
	PUB. BENCH MARK
	PUB. CONTROL

Type: Forest

PHOTO:North



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_23
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_27
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	258575.970	ELEV.
RECEIVER S/N		EASTING	736227.682	1597.294

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/22/2019	-	-	-	
	DAY OF YEAR	295	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	6.60 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT.	PUB. CONTROL	BASE STATION

Type: Forest

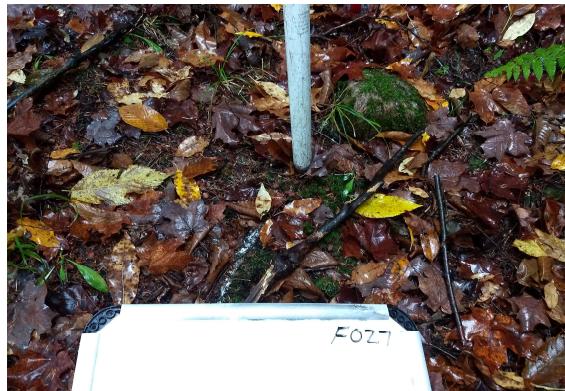
PHOTO:North



PHOTO: East



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_27
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_28
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT			
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RECEIVER MODEL	Trimble R8-3 Integrated Antenna	NORTHING	237984.552	ELEV.
RECEIVER S/N	5239496998	EASTING	794784.638	1585.117

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		START TIME	-	END TIME	-	X	
RTK	DAY OF YEAR	301	-				

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH	
MTRS/FT	MEASURED				METERS/FEET		ABOVE GROUND
	FIXED HGT.				METERS/FEET		B BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT	2.000 Meters				PUB. BENCH MARK
	MEASURED				PUB. CONTROL

Type: Forest	AERIAL TARGET	PHOTO I.D.
PHOTO:North	PUB. BENCH MARK	NEW CONTROL
	PUB. CONTROL	BASE STATION



JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_28
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_29
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	216583.025	ELEV.
RECEIVER S/N		EASTING	769459.796	1594.1

SESSIONS	DATE	OBS. A	OBS. B	OBS. A		OBS. B	U.T.C.
		10/28/2019	-	START TIME	-	X	
	DAY OF YEAR	301	-	END TIME	-	LOCAL	

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
				METERS/FEET		BELOW GROUND

ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.
MTRS/FT				PUB. BENCH MARK	X NEW CONTROL
X MEASURED				PUB. CONTROL	BASE STATION

Type: Forest	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_29
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_55
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
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RECEIVER MODEL		NORTHING	201047.256	ELEV.
RECEIVER S/N		EASTING	745898.654	1589.81

SESSIONS	DATE	OBS. A	OBS. B	OBS. A	OBS. B	U.T.C.
		10/22/2019	-	-	-	
	DAY OF YEAR	295	-		X	LOCAL

ANTENNA HEIGHT (SLANT)			TOP OF MONUMENT IS:		FLUSH
MTRS/FT			METERS/FEET	ABOVE GROUND	
	MEASURED	FIXED HGT.	METERS/FEET	BELOW GROUND	

ANTENNA HEIGHT (VERTICAL)			AERIAL TARGET	PHOTO I.D.
MTRS/FT	5.00 FT		PUB. BENCH MARK	X NEW CONTROL
X	MEASURED	FIXED HGT.	PUB. CONTROL	BASE STATION

Type: Forest	PHOTO:North	PHOTO: East
		

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_55
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_56
Project No.	72-0227.15		

STATE	WI	COUNTY	Iron	Country	USA
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OPERATOR	J. Gilbertson	PROJECT COORDINATE/ELEVATION SYSTEM NAD83(CONUS),WisCRS Iron Co, USFT ; NAVD88, GEOID12B, USFT		
NORTHING	277369.525			ELEV.
EASTING	808355.325			1648.262

RECEIVER MODEL			OBS. A	OBS. B		
SESSIONS	DATE	10/23/2019	-	START TIME	-	U.T.C.
	DAY OF YEAR	296	-	END TIME	-	X LOCAL

ANTENNA HEIGHT (SLANT)				TOP OF MONUMENT IS:		FLUSH
MTRS/FT				METERS/FEET		ABOVE GROUND
	MEASURED		FIXED HGT.	METERS/FEET		BELOW GROUND
ANTENNA HEIGHT (VERTICAL)				AERIAL TARGET	PHOTO I.D.	
MTRS/FT	5.00 FT			PUB. BENCH MARK	X NEW CONTROL	
X	MEASURED		FIXED HGT.	PUB. CONTROL		BASE STATION

Type: Forest	
PHOTO:North	PHOTO: East
	

JOB REFERENCE	35275_WI_AshlandIronFlorence_2019_D19	Point ID	FO_56
Project No.	72-0227.15		

PHOTO: South**PHOTO: West****PHOTO: Tip****PHOTO:**

Appendix B

Flight Logs



Airborne LiDAR Data Collection Log Sheet :: Quantum Spatial, Inc

(email log daily to flight_log_distribution_list@quantumspatial.com)

Date: 5/10/20

Lift: A B C D E Pg. 1 of _____

Project:	Proj #: 36464		Flight Mgmt File: 20200510_36464_156011									
Aircraft:	2265E	Begin Hobbs: 10496.1	End Hobbs: 10498.4	Total: 2.3	Pilot: Unassigned	Co-Pilot:	Tech: Smith					
Dep Apt:	QH	Dep Time (Loc): 0839 (Z)	Arr Apt: 610Z	Arr Time (Local): 0852 (Z)	Tot Time Aloft:							
CORS:	Y/N	Sta 1:	Sta 2:	Flyovers: Y/N	If Y, times: Sta1	Sta2]						
GPS Unit:	Y/N	Sta 1:	Sta 2:	Flyovers: Y/N	If Y, times: Sta1	Sta2]						
Gd Temp beg:	°c	End:	°c	OAT beg:	°c	End:	°c	Altimeter begin:	end:	Beg GB	Storage Name/e	
LiDAR	Type	Serial #		Alt AGL	Alt AMSL	Avg Terr Ht	Max Gdsdpd	160	Avg Pt Spacing			
	FOV	Scan Freq	500	MpiA Y/N	Pulses In Air	Pulse Rate	Power	10W	PPSM			
Line #	Hdg	Start (UTC):	End (UTC):	Gd Spd	PDOP/eSats	GPS Altitude	Crab	Turb (0,-+)	S TURN	FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc.		
20	358	1457	1501	159	8/33	5702	0		Retflight 0-7 m FSE			
X7m	091	1503	1504	171	8/32	5700	0		S TURN			
Total Proj Lines:		Lines Flown:		0	Lines Remain:		0	Online Time:	0.1	Mod Time:	2.2	Notes:



Airborne LiDAR Data Collection Log Sheet :: Quantum Spatial, Inc

(email log daily to flight_log_distribution_list@quantumspatial.com)

Date: 25/11/20

Lift: A (B C D E)

Pg 2 of -

Project:	HibTAC			Proj #:	36931	Flight Mgmt File:	20200511-35275-156011				
Aircraft:	226E	Begin Hobbs:	10498.4	End Hobbs:	Total:	Pilot:	Unassigned	Co-Pilot:	Tech: Surb		
Dep Apt:	G-PZ	Dep Time (Loc):	1140	(Z):	Arr Apt:	Arr Time (Local):	(Z):	Tot Time Aloft:			
CORS:	Y / N	Sta 1:		Sta 2:		Flyovers:	Y / N	If Y, times: Sta1)	Sta2)		
GPS Unit:	Y / N	Sta 1:		Sta 2:		Flyovers:	Y / N	If Y, times: Sta1)	Sta2)		
Gd Temp beg:	°c	End:	°c	OAT beg:	°c	End:	°c	Altimeter begin:	end:	Storage Name/e	
LIDAR	Type	Serial #	4040	Alt	AGL	2300m	Alt	Avg Terr Ht	Max Gdpd 145		
	FOV	Scan Freq	500	MpIA	Y / N	Pulses in Air	Pulse Rate	Power %	PPSM		
										Beg GB	
										End GB	
										Tot GB	
FLIGHT LINE NOTES – visibility, clouds, smoke, partial, etc.											
Line #	Hdg	Start(UTC):	End (UTC):	Gd Spd	PDOP/e/Sats	GPS Altitude	Crab	Turb (0, -, +)			
1	90	1655	1659	140	1.9/27	8373	0	S-Turn			
2	271	1702	1706	137	1.0/27	8373	0				
3	90	1709	1712	143	1.9/28	8373	0				
4	271	1715	1719	135	1.9/28	8373	0				
5	91	1721	1725	143	1.9/27	8373	0				
6	271	1728	1732	135	1.9/26	8376	0				
7	91	1734	1737	143	1.9/26	8371	0				
8	271	1740	1743	136	1.8/28	8484	0				
9	91	1746	1749	137	1.9/27	8573	0				
10	271	1752	1755	136	1.8/28	8560	0				
11	91	1757	1800	146	1.8/28	8547	0				
12	271	1802	1804	132	1.8/27	8543	0				
13	91	1807	1809	136	1.8/26	8534	0				
14	271	1812	1814	135	1.9/25	8524	0				
15	91	1817	1819	141	1.8/26	8520	0				
16	271	1822	1823	129	1.8/26	8517	0				
17	181	1827	1831	140	1.8/27	8376	0				
S-Turn – Mol Tou Ash											
Total Proj Lines:	17	Lines Flown:		Lines Remain:		Online Time:	1.5	Mob Time:	0.3	Notes:	



Airborne LiDAR Data Collection Log Sheet :: Quantum Spatial, Inc

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Date: 5/12/20

Lift A B C D E

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Airborne LiDAR Data Collection Log Sheet :: Quantum Spatial, Inc

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Date: 5/12/20

Lif: A B C D E Pg 1 of 1

Project:	Ristland		Proj #:	35275		Flight Mgmt File:	20200512_35275-156011					
Aircraft:	226E	Begin Hobbe:	10501.7	End Hobbe:	10506.8	Total:	5.1	Pilot: Uranga T	Co-Pilot:	Tech: SMITH		
Dep Apt:	DH	Dep Time (Lcl):	8:34 (Z: 13:34)	Arr Apt:	IW0	Arr Time (Local):	14:1 (Z: 18:41)	Tot Time Aloft:				
CORS:	Y / N	Sta 1:	Sta 2:	Flyovers:	Y / N	If Y, times:	Sta1)	Sta2)				
GPS Unit:	Y / N	Sta 1:	Sta 2:	Flyovers:	Y / N	If Y, times:	Sta1)	Sta2)				
Gd Temp beg:	°c	End:	°c	OAT beg:	°c	End:	°c	Altimeter begin:	end: 30.22	Beg GB	Storage Name/e	
LiDAR	Type	Serial #	Alt AGL	Alt AMSL	Avg Terr Ht	Max Gdspd	Avg Pt Speed			End GB		
	FOV	Scan Freq	MpiA Y / N	Pulses In Air	Pulse Rate	Power	PPSM			Tot GB		
Line #	Hdg	Start (UTC):	End (UTC):	Gd Spd	PDOP/Secs	GPS Altitude	Crab	Turb (0,+,+)	FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc.			
2002	182	1406	1417	136	9/31	8235	0		S-TURN			
2003	002	1420	1431	140	8/32	8294	0					
2004	182	1434	1447	132	9/21	8425	0					
2005	002	1452	1508	140	9/30	8458	0					
2006	182	1511	1526	130	9/30	8471	0					
2007	002	1529	1545	132	8/29	8494	0					
2008	182	1548	1603	126	8/31	8560	0					
2009	002	1606	1620	143	8/31	8602	0					
2010	182	1623	1638	136	8/31	8602	0					
2011	002	1640	1654	139	8/29	8632	0					
2012	182	1657	1711	133	8/28	8773	0					
2013	002	1714	1727	142	8/28	8924	0					
2014	183	1720	1743	131	8/30	8944	0					
2015	002	1745	1757	137	8/25	8950	1					
2016	183	1759	1809	131	9/26	8973	1					
2017	002	1811	1822	128	9/25	8973	1					
X-TL	274	1824	1831	134	8/25	8900	0	X-TL: Unplanned S-TURN				
Total Lines:		Lines Flown:	16	Lines Remain:	7	Online Time:	4.4	Mob Time:	0.7	Notes:		



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Date: 5/12/20

Lift: A B C D E

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Project:	Aish Lm 2		Proj #:	35275	Flight Mgmt File:	20200512-35275-1560118			
Aircraft:	Z26-E		Begin Hobbs:	10504.8	End Hobbs:	10509.4	Total: 2.06		
Dep Apt:	(WPA)		Dep Time (Lcl):	2:52	(Z):	1952	Arr Apt: DLH Arr Time (Local): 527 (Z): 2227 Tot Time Aloft:		
CORS:	Y / (N)	Sta 1:	Sta 2:	Flyovers: Y / (N) If Y, times: Sta1) Sta2)					
GPS Unit:	Y / (N)	Sta 1:	Sta 2:	Flyovers: Y / (N) If Y, times: Sta1) Sta2)					
Gd Temp beg:	8 °c	End:	°c	OAT beg:	°c	End:	°c Altimeter begin: 3022 end: 3014		
LiDAR	Type	Serial #	Alt AGL	Alt AMSL	Avg Terr Ht	Max Gdepd	Beg GB		
	156011	4310	2300m		140		End GB		
FOV	Scan Freq	50	MpIA Y / N	Pulses In Air	Pulse Rate	PPSM	Tot GB		
FLIGHT LINE NOTES – visibility, clouds, smoke, partial, etc.									
Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	PDOP/#Sats	GPS Altitude	Crab		
2043	273	2008	2018	137	.9/27	9013	.3 X-Tie S-Turn		
2018	183	2029	2039	127	.9/27	8999	3		
2019	003	2041	2052	141	.9/28	9006	4		
2020	183	2054	2105	136	1.0/36	9009	3		
2021	003	2107	2117	137	.9/27	9009	2		
2022	183	2119	2129	127	.9/27	9013	2		
2023	003	2131	2141	137	.9/32	9013	4 S-Turn		
Total Proj Lines:	Lines Flown:	7	Lines Remain:	0	Online Time:	1.5	Mob Time:	1.1	Notes:

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Date: 5/12/20

Lif: A B C D E Pg 1 of 1

Project:	Ristland		Proj #:	35275		Flight Mgmt File:	20200512_35275-156011					
Aircraft:	226E	Begin Hobbe:	10501.7	End Hobbe:	10506.8	Total:	5.1	Pilot: Uranga T	Co-Pilot:	Tech: SMITH		
Dep Apt:	DH	Dep Time (Lcl):	8:34 (Z: 13:34)	Arr Apt:	IW0	Arr Time (Local):	14:1 (Z: 18:41)	Tot Time Aloft:				
CORS:	Y / N	Sta 1:	Sta 2:	Flyovers:	Y / N	If Y, times:	Sta1)	Sta2)				
GPS Unit:	Y / N	Sta 1:	Sta 2:	Flyovers:	Y / N	If Y, times:	Sta1)	Sta2)				
Gd Temp beg:	°c	End:	°c	OAT beg:	°c	End:	°c	Altimeter begin:	end: 30.22	Beg GB	Storage Name/e	
LiDAR	Type	Serial #	Alt AGL	Alt AMSL	Avg Terr Ht	Max Gdspd	Avg Pt Speed			End GB		
	FOV	Scan Freq	MpiA Y / N	Pulses In Air	Pulse Rate	Power	PPSM			Tot GB		
Line #	Hdg	Start (UTC):	End (UTC):	Gd Spd	PDOP/Secs	GPS Altitude	Crab	Turb (0,+,+)	FLIGHT LINE NOTES – visibility, clouds, smoke, partial, etc.			
2002	182	1406	1417	136	9/31	8235	0		S-TURN			
2003	002	1420	1431	140	8/32	8294	0					
2004	182	1434	1447	132	9/21	8425	0					
2005	002	1452	1508	140	9/30	8458	0					
2006	182	1511	1526	130	9/30	8471	0					
2007	002	1529	1545	132	8/29	8494	0					
2008	182	1548	1603	126	8/31	8560	0					
2009	002	1606	1620	143	8/31	8602	0					
2010	182	1623	1638	136	8/31	8602	0					
2011	002	1640	1654	139	8/29	8632	0					
2012	182	1657	1711	133	8/28	8773	0					
2013	002	1714	1727	142	8/28	8924	0					
2014	183	1720	1743	131	8/30	8944	0					
2015	002	1745	1757	137	8/25	8950	1					
2016	183	1759	1809	131	9/26	8973	1					
2017	002	1811	1822	128	9/25	8973	1					
X-TL	274	1824	1831	134	8/25	8900	0	X-TL: Unplanned S-TURN				
Total Lines:		Lines Flown:	16	Lines Remain:	7	Online Time:	4.4	Mob Time:	0.7	Notes:		



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Date: 5/12/20

Lift: A B C D E

Pg 2 of 1

Project:	Aish Lm 2		Proj #:	35275	Flight Mgmt File:	20200512-35275-1560118			
Aircraft:	Z26-E		Begin Hobbs:	10504.8	End Hobbs:	10509.4	Total: 2.06		
Dep Apt:	(WPA)		Dep Time (Lcl):	2:52	(Z):	1952	Arr Apt: DLH Arr Time (Local): 527 (Z): 2227 Tot Time Aloft:		
CORS:	Y / (N)	Sta 1:	Sta 2:	Flyovers: Y / (N) If Y, times: Sta1) Sta2)					
GPS Unit:	Y / (N)	Sta 1:	Sta 2:	Flyovers: Y / (N) If Y, times: Sta1) Sta2)					
Gd Temp beg:	8 °c	End:	°c	OAT beg:	°c	End:	°c Altimeter begin: 3022 end: 3014		
LiDAR	Type	Serial #	Alt AGL	Alt AMSL	Avg Terr Ht	Max Gdepd	Beg GB		
	156011	4310	2300m		140		End GB		
FOV	Scan Freq	50	MpIA Y / N	Pulses In Air	Pulse Rate	PPSM	Tot GB		
FLIGHT LINE NOTES – visibility, clouds, smoke, partial, etc.									
Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	PDOP/#Sats	GPS Altitude	Crab		
2043	273	2008	2018	137	.9/27	9013	.3 X-Tie S-Turn		
2018	183	2029	2039	127	.9/27	8999	3		
2019	003	2041	2052	141	.9/28	9006	4		
2020	183	2054	2105	136	1.0/36	9009	3		
2021	003	2107	2117	137	.9/27	9009	2		
2022	183	2119	2129	127	.9/27	9013	2		
2023	003	2131	2141	137	.9/32	9013	4 S-Turn		
Total Proj Lines:	Lines Flown:	7	Lines Remain:	0	Online Time:	1.5	Mob Time:	1.1	Notes:

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Date: 05 2020

Lift A B C D E Pg 1 of 1

Project:	ASLland -	Proj #:	35274	Flight Mgmt File:	20200520-35274-156011					
Aircraft:	226E	Begin Hobbs:	105094	End Hobbs:	105124 Total: 3					
Dep Apt:	DLH	Dep Time (Loc):	1555 [Z: 1455]	Arr Apt:	SAW					
CORS:	Y / N	Sta 1:		Arr Time (Local):	1555 [Z: 1755] Tot Time Aloft:					
GPS Unit:	Y / N	Sta 1:		Flyovers:	Y (N) If Y, times: Sta1 Sta2)					
Gd Temp beg:	°c	End:	°c	OAT beg:	°c End: °c Altimeter begin: 30.23 end:					
LIDAR	Type	156011	Serial #	4040	Alt AGL 1400	Alt AMSL	Avg Terr Ht	Max Gdspd 160	Avg Pt Spacing	Img GB
FOV	Scan Freq	1000	MplA	Y / N	Pulses In Air	Pulse Rate	Power 100	PPSM	End GB	
									Tot GB	
									Storage Name(s)	

FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc.

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	PDOP/Sets	GPS Altitude	Crab	Turb (0, +)
1	182	1529	1531	151	9/24	5941	0	S-TURN
2	002	1534	1535	167	5/29	5961	0	0.2 hrs
3	092	1540	1541	139	8/29	5987	0	X-TIE - S-TURN
								- S-TURN
1	094	1631	1632	145	9/26	8465	0	20200520-37014-156011
2	275	1635	1638	151	9/26	8442	0	500/550 kHz 100% 2195M 1458m
3	095	1641	1643	141	8/27	8419	0	
4	275	1647	1649	140	8/28	7986	0	
5	095	1653	1658	135	8/27	7727	0	
6	275	1658	1702	143	8/27	7727	0	
7	095	1705	1708	137	8/27	7727	1	
8	275	1712	1714	136	9/25	7727	1	
9	095	1718	1721	132	8/25	8232	1	
10	275	1725	1727	149	8/26	8232	1	
11	095	1730	1732	131	8/25	8232	1	
12	185	1731	1734	134	9/25	7854	2	X-TIE

S-TURN

MOU-SAW - SAW 105124. 1:58 10510.5 300 11

Total Proj Lines: Lines Flown: Lines Remain: Online Time: 1,8 Mob Time: 1,2 Notes:



Customer	QSL	Sensor Operator	Jackson Beebe
Job Name	Marengo	Pilot	Stan Zortman
AGL	4360	Imagery	No
Speed	160	GSD	N/A
Density	9 opsm		
Laser Power	100%		
PRR	2x1000 kHz		
Scan Rate	Auto		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	1	14.58	Yes	No		
10/26/2019	2	24.46	Yes	No		
10/25/2019	3	14.69	Yes	No		
10/26/2019	4	24.19	Yes	No		
10/25/2019	5	14.58	Yes	No		
10/26/2019	6	24.30	Yes	No		
10/25/2019	7	15.23	Yes	No		
10/26/2019	8	24.30	Yes	No		
10/25/2019	9	15.55	Yes	No		
10/26/2019	10	24.24	Yes	No		
10/25/2019	11	15.82	Yes	No		
10/26/2019	12	24.14	Yes	No		
10/25/2019	13	16.36	Yes	No		
10/26/2019	14	24.24	Yes	No		
10/25/2019	15	16.20	Yes	No		
10/26/2019	16	24.24	Yes	No		
10/25/2019	17	23.06	Yes	No		
10/26/2019	18	24.41	Yes	No		
10/25/2019	19	23.06	Yes	No		
10/26/2019	20	24.41	Yes	No		
10/25/2019	21	23.27	Yes	No		
10/26/2019	22	24.24	Yes	No		
10/25/2019	23	23.33	Yes	No		
10/26/2019	24	24.30	Yes	No		
10/25/2019	25	23.00	Yes	No		
10/26/2019	26	24.30	Yes	No		
10/25/2019	27	22.68	Yes	No		
10/26/2019	28	24.41	Yes	No		
10/25/2019	29	21.81	Yes	No		
10/26/2019	30	24.41	Yes	No		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	31	21.54	Yes	No		
10/26/2019	32	24.41	Yes	No		
10/25/2019	33	20.46	Yes	No		
10/26/2019	34	23.97	Yes	No		
10/26/2019	35	19.82	Yes	No		
10/26/2019	36	24.03	Yes	No		
10/26/2019	37	19.71	Yes	No		
10/26/2019	38	24.14	Yes	No		
10/26/2019	39	19.17	Yes	No		
10/26/2019	40	24.03	Yes	No		
10/26/2019	41	18.47	Yes	No		
	42	24.14				
10/26/2019	43	18.20	Yes	No		
	44	24.24				
10/26/2019	45	17.60	Yes	No		
	46	23.97				
10/26/2019	47	17.12	Yes	No		
	48	24.14				
10/26/2019	49	16.47	Yes	No		
	50	24.14				
10/26/2019	51	15.71	Yes	No		
	52	24.08				
10/26/2019	53	15.82	Yes	No		
	54	24.08				
10/26/2019	55	15.06	Yes	No		
	56	24.30				
10/26/2019	57	14.96	Yes	No		
	58	24.41				
10/26/2019	59	14.79	Yes	No		
	60	24.41				
10/26/2019	61	14.74	Yes	No		
	62	23.70				
10/26/2019	63	14.79	Yes	No		
	64	23.97				
10/26/2019	65	14.15	Yes	No		
	66	24.03				





Customer	QSI	Sensor Operator	Jackson Beebe
Job Name	Marengo	Pilot	Stan Zortman
AGL	4360	Imagery	No
Speed	160	GSD	N/A
Density	9 opsm		
Laser Power	100%		
PRR	2x1000 kHz		
Scan Rate	Auto		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	1	14.58	Yes	No		
10/26/2019	2	24.46	Yes	No		
10/25/2019	3	14.69	Yes	No		
10/26/2019	4	24.19	Yes	No		
10/25/2019	5	14.58	Yes	No		
10/26/2019	6	24.30	Yes	No		
10/25/2019	7	15.23	Yes	No		
10/26/2019	8	24.30	Yes	No		
10/25/2019	9	15.55	Yes	No		
10/26/2019	10	24.24	Yes	No		
10/25/2019	11	15.82	Yes	No		
10/26/2019	12	24.14	Yes	No		
10/25/2019	13	16.36	Yes	No		
10/26/2019	14	24.24	Yes	No		
10/25/2019	15	16.20	Yes	No		
10/26/2019	16	24.24	Yes	No		
10/25/2019	17	23.06	Yes	No		
10/26/2019	18	24.41	Yes	No		
10/25/2019	19	23.06	Yes	No		
10/26/2019	20	24.41	Yes	No		
10/25/2019	21	23.27	Yes	No		
10/26/2019	22	24.24	Yes	No		
10/25/2019	23	23.33	Yes	No		
10/26/2019	24	24.30	Yes	No		
10/25/2019	25	23.00	Yes	No		
10/26/2019	26	24.30	Yes	No		
10/25/2019	27	22.68	Yes	No		
10/26/2019	28	24.41	Yes	No		
10/25/2019	29	21.81	Yes	No		
10/26/2019	30	24.41	Yes	No		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	31	21.54	Yes	No		
10/26/2019	32	24.41	Yes	No		
10/25/2019	33	20.46	Yes	No		
10/26/2019	34	23.97	Yes	No		
10/26/2019	35	19.82	Yes	No		
10/26/2019	36	24.03	Yes	No		
10/26/2019	37	19.71	Yes	No		
10/26/2019	38	24.14	Yes	No		
10/26/2019	39	19.17	Yes	No		
10/26/2019	40	24.03	Yes	No		
10/26/2019	41	18.47	Yes	No		
10/27/2019	42	24.14	No	Yes	Clouds in northern portion. Pinned in RA	
10/26/2019	43	18.20	Yes	No		
10/27/2019	44	24.24	No	Yes	Clouds in northern portion. Pinned in RA	
10/26/2019	45	17.60	Yes	No		
	46	23.97				
10/26/2019	47	17.12	Yes	No		
	48	24.14				
10/26/2019	49	16.47	Yes	No		
	50	24.14				
10/26/2019	51	15.71	Yes	No		
	52	24.08				
10/26/2019	53	15.82	Yes	No		
	54	24.08				
10/26/2019	55	15.06	Yes	No		
	56	24.30				
10/26/2019	57	14.96	Yes	No		
	58	24.41				
10/26/2019	59	14.79	Yes	No		
	60	24.41				
10/26/2019	61	14.74	Yes	No		
10/27/2019	62	23.70	No	Yes	Clouds in northern portion. Pinned in RA	
10/26/2019	63	14.79	Yes	No		
	64	23.97				
10/26/2019	65	14.15	Yes	No		
	66	24.03				





Customer QSI Sensor Operator: Jackson Beebe
Job Name Marengo Pilot Stan Zortman (10/25 - 10/28); Brian Quindt (10/29 -)
AGL 4360 Imagery No
Speed 160 GSD N/A
Density 9 ppm
Laser Power 100%
PRR 2x1000 kHz
Scan Rate Auto

Sensor Operator: Jackson Beebe
Pilot Stan Zortman (10/25 - 10/28); Brian Quindt (10/29 -)
Imagery No
GSD N/A

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	1	14.58	Yes	No		
10/26/2019	2	24.46	Yes	No		
10/25/2019	3	14.69	Yes	No		
10/26/2019	4	24.19	Yes	No		
10/25/2019	5	14.58	Yes	No		
10/26/2019	6	24.30	Yes	No		
10/25/2019	7	15.23	Yes	No		
10/26/2019	8	24.30	Yes	No		
10/25/2019	9	15.55	Yes	No		
10/26/2019	10	24.24	Yes	No		
10/25/2019	11	15.82	Yes	No		
10/26/2019	12	24.14	Yes	No		
10/25/2019	13	16.36	Yes	No		
10/26/2019	14	24.24	Yes	No		
10/25/2019	15	16.20	Yes	No		
10/26/2019	16	24.24	Yes	No		
10/25/2019	17	23.06	Yes	No		
10/26/2019	18	24.41	Yes	No		
10/25/2019	19	23.06	Yes	No		
10/26/2019	20	24.41	Yes	No		
10/25/2019	21	23.27	Yes	No		
10/26/2019	22	24.24	Yes	No		
10/25/2019	23	23.33	Yes	No		
10/26/2019	24	24.30	Yes	No		
10/25/2019	25	23.00	Yes	No		
10/26/2019	26	24.30	Yes	No		
10/25/2019	27	22.68	Yes	No		
10/26/2019	28	24.41	Yes	No		
10/25/2019	29	21.81	Yes	No		
10/26/2019	30	24.41	Yes	No		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	31	21.54	Yes	No		
10/26/2019	32	24.41	Yes	No		
10/25/2019	33	20.46	Yes	No		
10/26/2019	34	23.97	Yes	No		
10/26/2019	35	19.82	Yes	No		
10/26/2019	36	24.03	Yes	No		
10/26/2019	37	19.71	Yes	No		
10/26/2019	38	24.14	Yes	No		
10/26/2019	39	19.17	Yes	No	Clouds in northern portion. Pinned in RA/RF on 10/29	
10/26/2019	40	24.03	Yes	No		
10/26/2019	41	18.47	Yes	No	Clouds in northern portion. Pinned in RA/RF on 10/29	
10/27/2019	42	24.14	Yes	No	Clouds in northern portion. Pinned in RA/RF on 10/29	
10/26/2019	43	18.20	Yes	No		
10/27/2019	44	24.24	Yes	No	Clouds in northern portion. Pinned in RA/RF on 10/29	
10/26/2019	45	17.60	Yes	No		
10/29/2019	46	23.97	Yes	No		
10/26/2019	47	17.12	Yes	No		
10/29/2019	48	24.14	Yes	No		
10/26/2019	49	16.47	Yes	No		
10/29/2019	50	24.14	Yes	No		
10/26/2019	51	15.71	Yes	No		
10/29/2019	52	24.08	Yes	No		
10/26/2019	53	15.82	Yes	No		
10/29/2019	54	24.08	Yes	No		
10/26/2019	55	15.06	Yes	No		
10/29/2019	56	24.30	Yes	No		
10/26/2019	57	14.96	Yes	No		
10/29/2019	58	24.41	Yes	No		
10/26/2019	59	14.79	Yes	No		
10/29/2019	60	24.41	Yes	No		
10/26/2019	61	14.74	Yes	No		
10/27/2019	62	23.70	Yes	No	Clouds in northern portion. Pinned in RA/RF on 10/29	
10/26/2019	63	14.79	Yes	No		
10/29/2019	64	23.97	Yes	No		
10/26/2019	65	14.15	Yes	No		
10/29/2019	66	24.03	Yes	No		
10/26/2019	67	14.04	Yes	No		





Customer	QSI	Sensor Operator	Jackson Beebe
Job Name	Marengo	Pilot	Stan Zortman/Brian Quintdt
AGL	4360	Imagery	No
Speed	160	GSD	N/A
Density	9 opsm		
Laser Power	100%		
PRR	2x1000 kHz		
Scan Rate	Auto		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	1	14.58	Yes	No		
10/26/2019	2	24.46	Yes	No		
10/25/2019	3	14.69	Yes	No		
10/26/2019	4	24.19	Yes	No		
10/25/2019	5	14.58	Yes	No		
10/26/2019	6	24.30	Yes	No		
10/25/2019	7	15.23	Yes	No		
10/26/2019	8	24.30	Yes	No		
10/25/2019	9	15.55	Yes	No		
10/26/2019	10	24.24	Yes	No		
10/25/2019	11	15.82	Yes	No		
10/26/2019	12	24.14	Yes	No		
10/25/2019	13	16.36	Yes	No		
10/26/2019	14	24.24	Yes	No		
10/25/2019	15	16.20	Yes	No		
10/26/2019	16	24.24	Yes	No		
10/25/2019	17	23.06	Yes	No		
10/26/2019	18	24.41	Yes	No		
10/25/2019	19	23.06	Yes	No		
10/26/2019	20	24.41	Yes	No		
10/25/2019	21	23.27	Yes	No		
10/26/2019	22	24.24	Yes	No		
10/25/2019	23	23.33	Yes	No		
10/26/2019	24	24.30	Yes	No		
10/25/2019	25	23.00	Yes	No		
10/26/2019	26	24.30	Yes	No		
10/25/2019	27	22.68	Yes	No		
10/26/2019	28	24.41	Yes	No		
10/25/2019	29	21.81	Yes	No		
10/26/2019	30	24.41	Yes	No		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/25/2019	31	21.54	Yes	No		
10/26/2019	32	24.41	Yes	No		
10/25/2019	33	20.46	Yes	No		
10/26/2019	34	23.97	Yes	No		
10/26/2019	35	19.82	Yes	No		
10/26/2019	36	24.03	Yes	No		
10/26/2019	37	19.71	Yes	No		
10/26/2019	38	24.14	Yes	No		
10/26/2019	39	19.17	Yes	No		
10/26/2019	40	24.03	Yes	No		
10/26/2019	41	18.47	Yes	No		
10/27/2019	42	24.14	Yes	No	Clouds in northern portion. Pinned in RA/ RF on 10/29	
10/26/2019	43	18.20	Yes	No		
10/27/2019	44	24.24	Yes	No	Clouds in northern portion. Pinned in RA/ RF on 10/29	
10/26/2019	45	17.60	Yes	No		
10/29/2019	46	23.97	Yes	No		
10/26/2019	47	17.12	Yes	No		
10/29/2019	48	24.14	Yes	No		
10/26/2019	49	16.47	Yes	No		
10/29/2019	50	24.14	Yes	No		
10/26/2019	51	15.71	Yes	No		
10/29/2019	52	24.08	Yes	No		
10/26/2019	53	15.82	Yes	No		
10/29/2019	54	24.08	Yes	No		
10/26/2019	55	15.06	Yes	No		
10/29/2019	56	24.30	Yes	No		
10/26/2019	57	14.96	Yes	No		
10/29/2019	58	24.41	Yes	No		
10/26/2019	59	14.79	Yes	No		
10/29/2019	60	24.41	Yes	No		
10/26/2019	61	14.74	Yes	No		
10/27/2019	62	23.70	Yes	No	Clouds in northern portion. Pinned in RA/ RF on 10/29	
10/26/2019	63	14.79	Yes	No		
10/29/2019	64	23.97	Yes	No		
10/26/2019	65	14.15	Yes	No		
10/29/2019	66	24.03	Yes	No		

Date Flown	Line Number	Distance (NM)	Density QC Ok?	Need Reflight?	Error Message? If yes, add brief description	Comments
10/26/2019	67	14.04	Yes	No		
10/30/2019	68	24.03	Yes	No		
10/26/2019	69	13.39	Yes	No		
10/30/2019	70	24.14	Yes	No		
10/26/2019	71	13.71	Yes	No		
10/30/2019	72	23.97	Yes	No		
10/26/2019	73	13.55	Yes	No		
10/30/2019	74	24.24	Yes	No		
10/26/2019	75	13.39	Yes	No		
10/30/2019	76	24.30	Yes	No		
10/26/2019	77	13.23	Yes	No		
10/27/2019	78	24.14	Yes	No		
10/27/2019	79	12.10	Yes	No		
10/27/2019	80	12.26	Yes	No		
10/27/2019	81	12.26	Yes	No		
10/30/2019	82	22.15	Yes	No		
10/30/2019	83	12.10	Yes	No		
10/30/2019	84	22.04	Yes	No		
10/27/2019	85	12.10	Yes	No		
10/25/2019 x tie					Record 027	
10/26/2019 x tie					Record 023	
10/26/2019 x tie					Record 026	
10/26/2019 x tie					Record 019	
10/29/2019 x tie					Record 016	
10/30/2019 x tie					Record 011	



Sensor Operator	Jackson Beebe
Pilot	Brian Quintd
Imagery	No
GSD	N/A
Customer	CSI
Job Name	Tippler
AGL	4.360
Speed	160
Density	9 ppmsm
Laser Power	100%
PRR	2x1000 KHz
Scan Rate	Auto