

Project Report Appendices

The following section contains the appendices as listed in the Olga Lake, Michigan QL1 LiDAR Project Report.

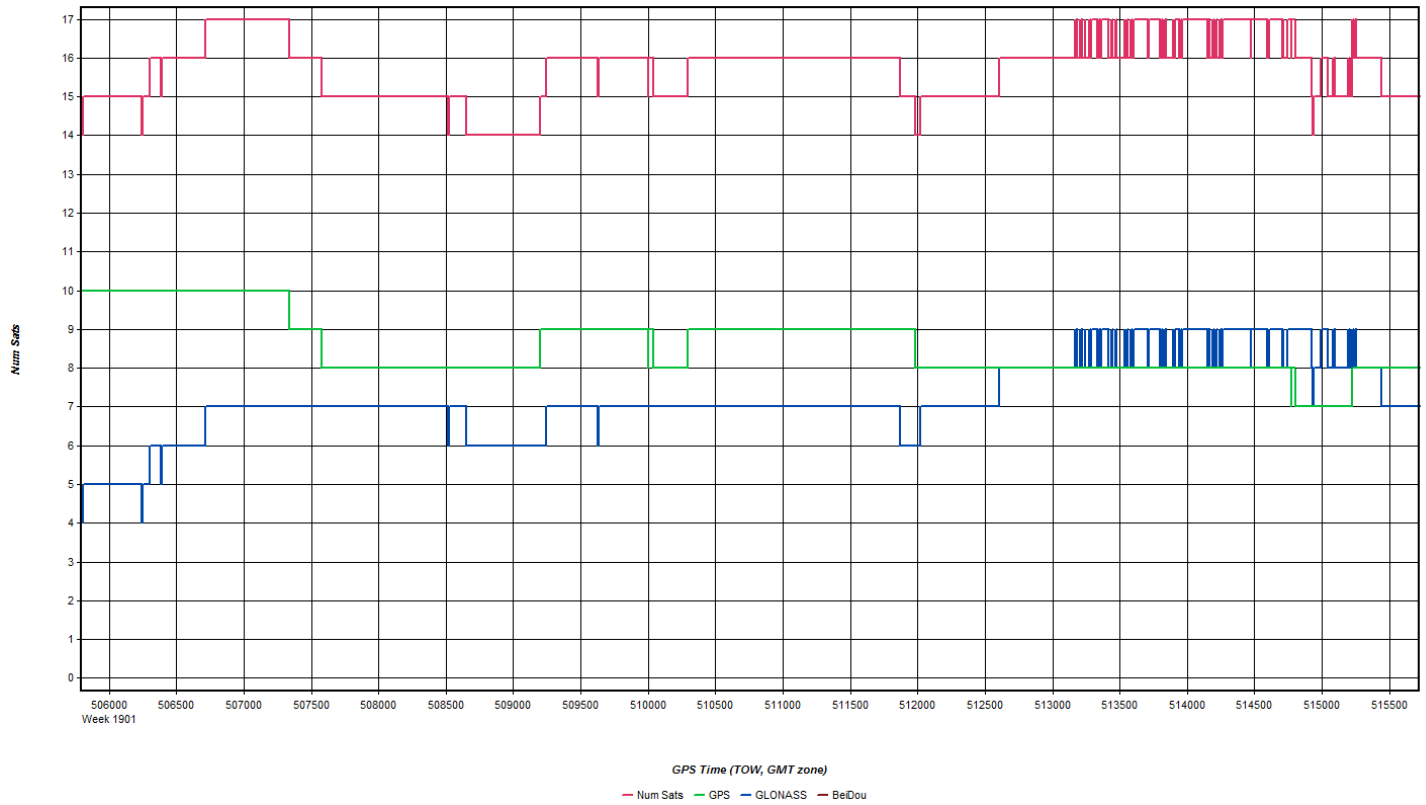
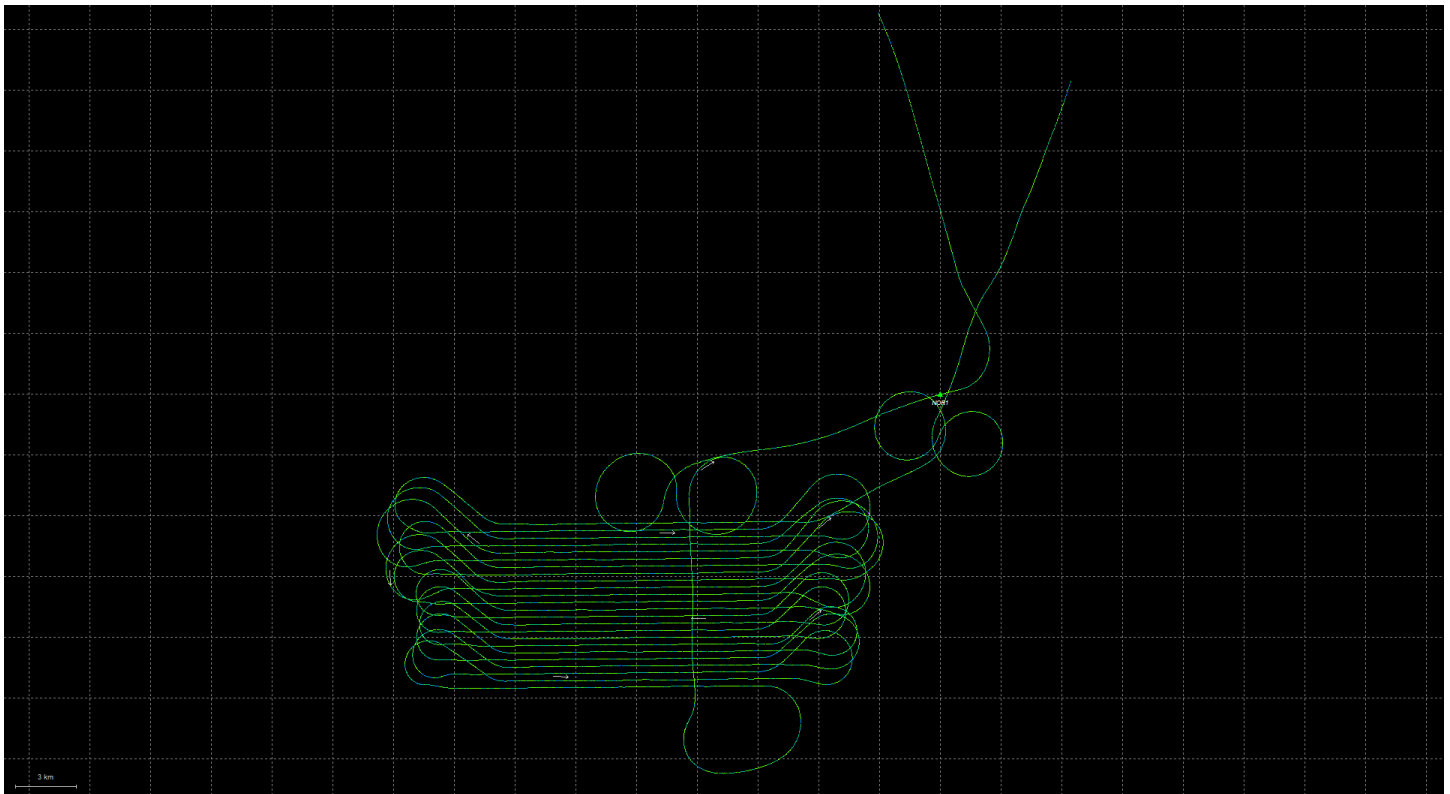
Appendix A

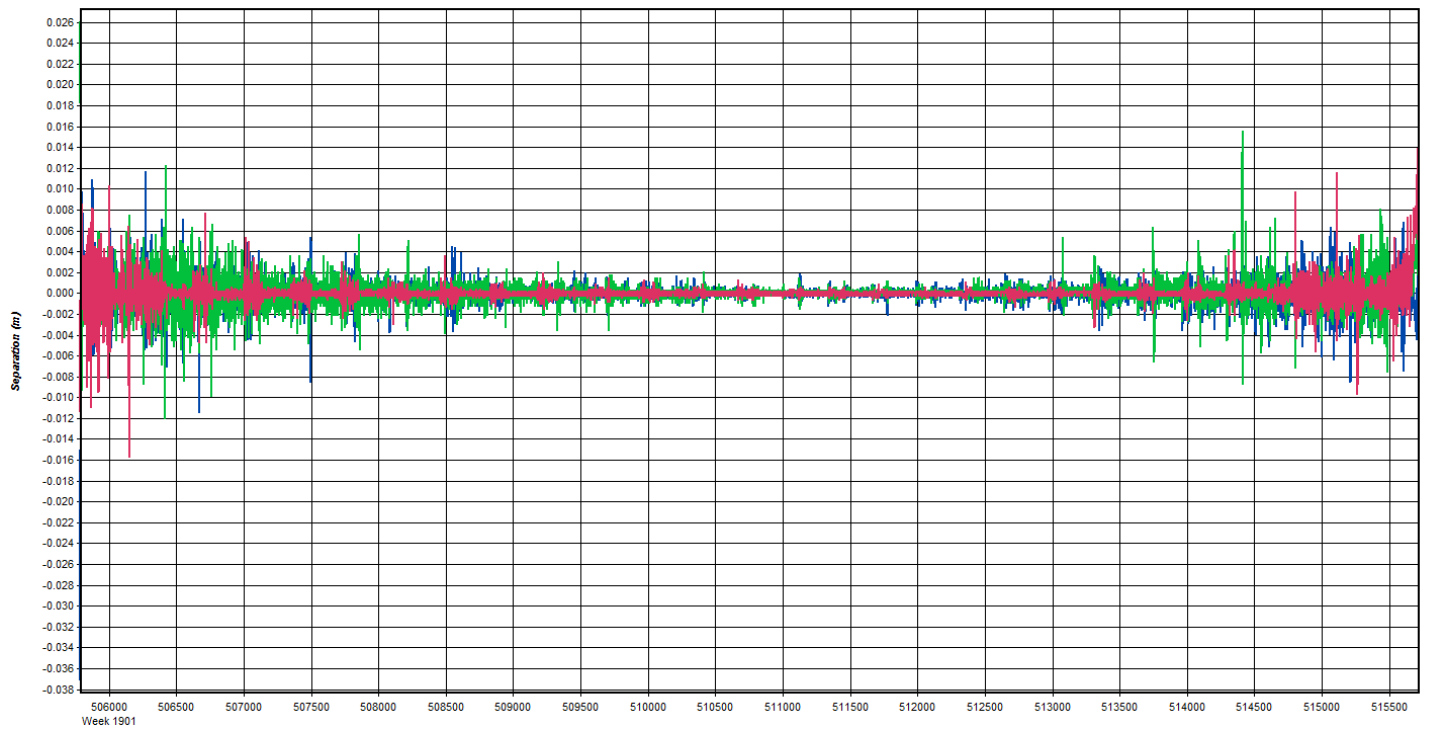
GPS/IMU Processing Statistics Flight Logs

There were one total lift. Graph reports generated from processing software and flight logs are found on the following pages.

Jun 17, 2016-B (N73TM, SN7178).....	2
Flight Log.....	9

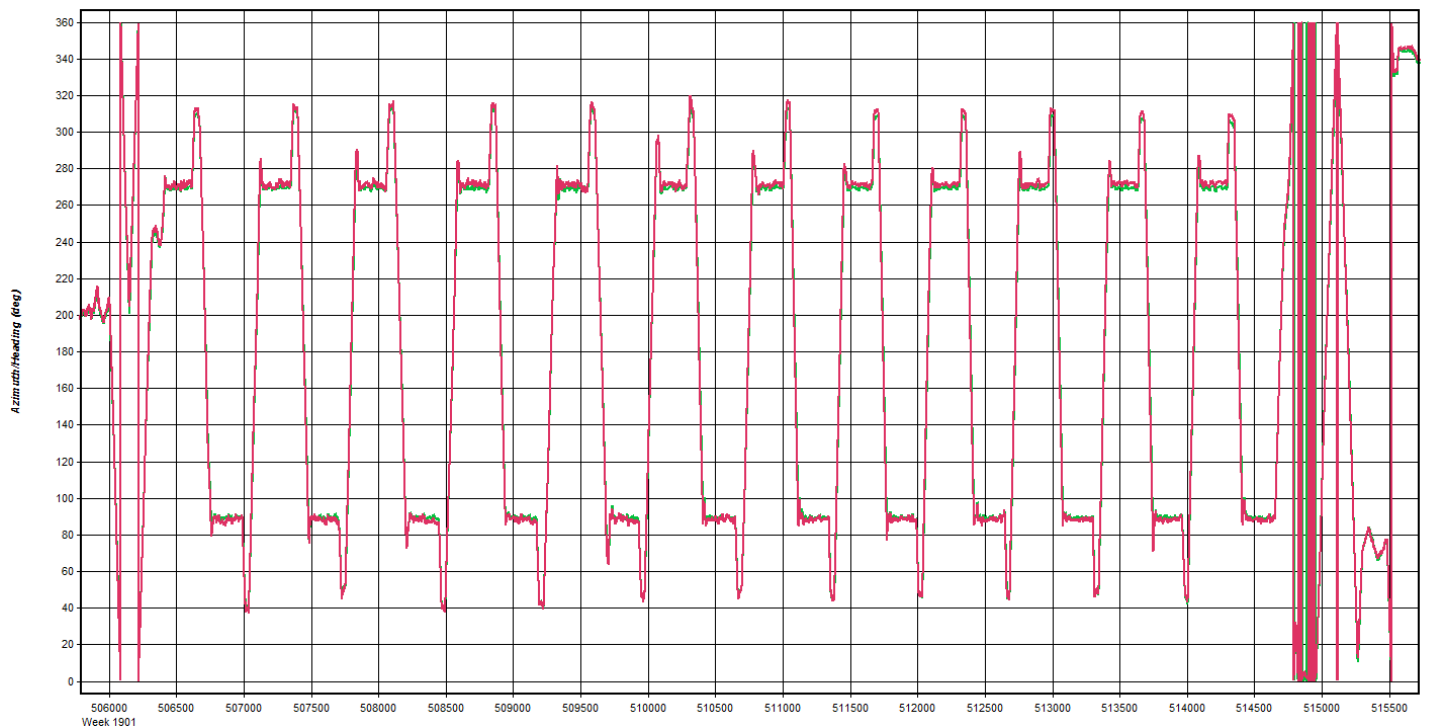
Jun 17, 2016-B (N73TM, SN7178)





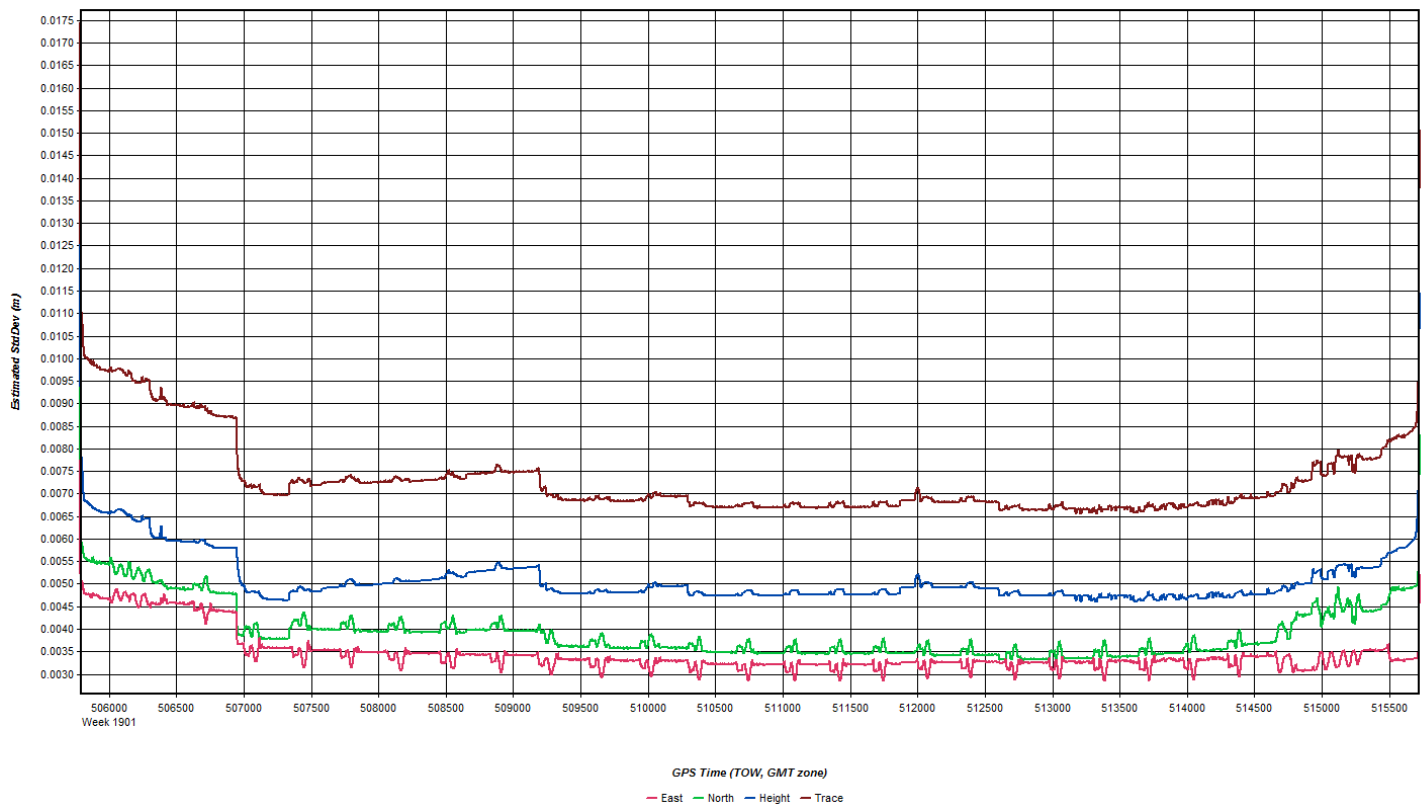
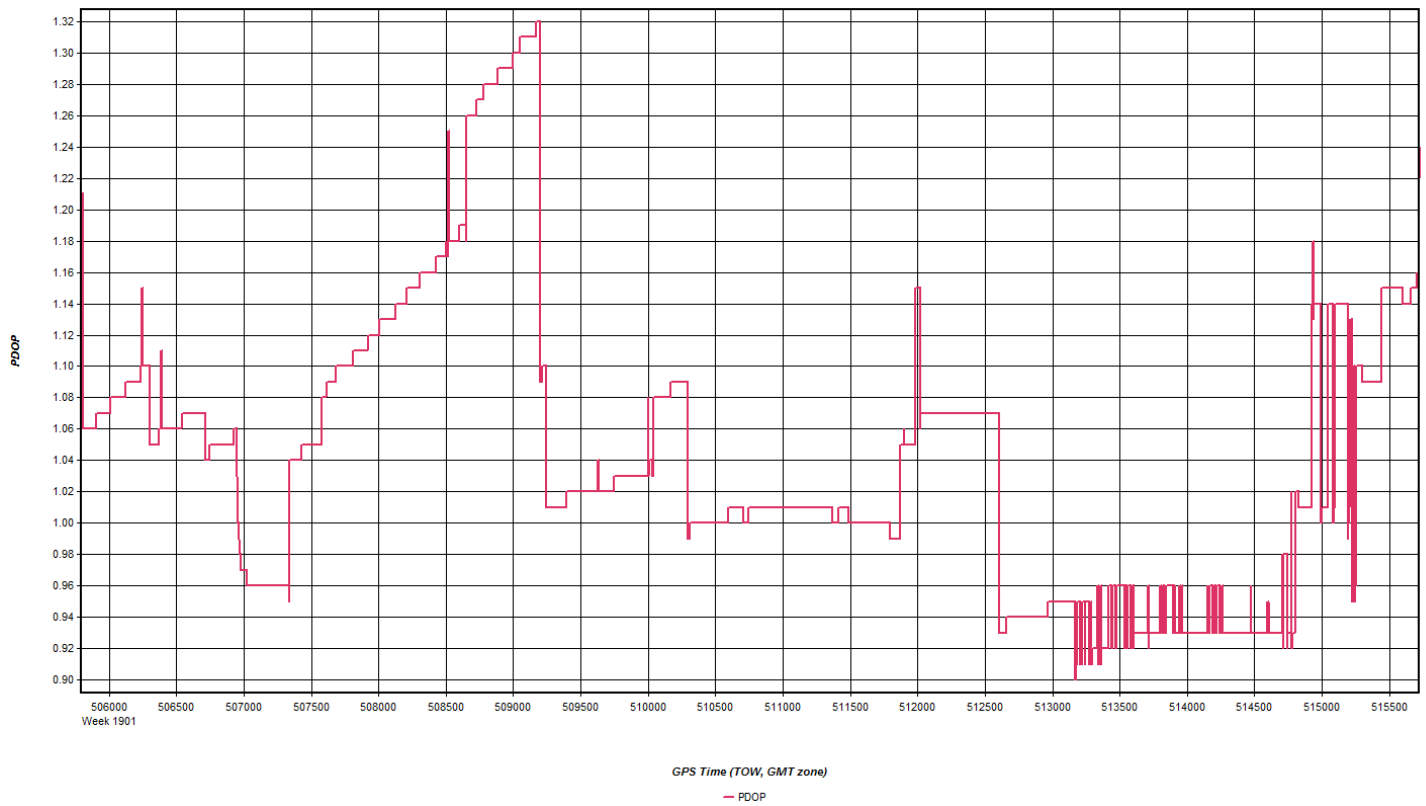
GPS Time (TOW, GMT zone)

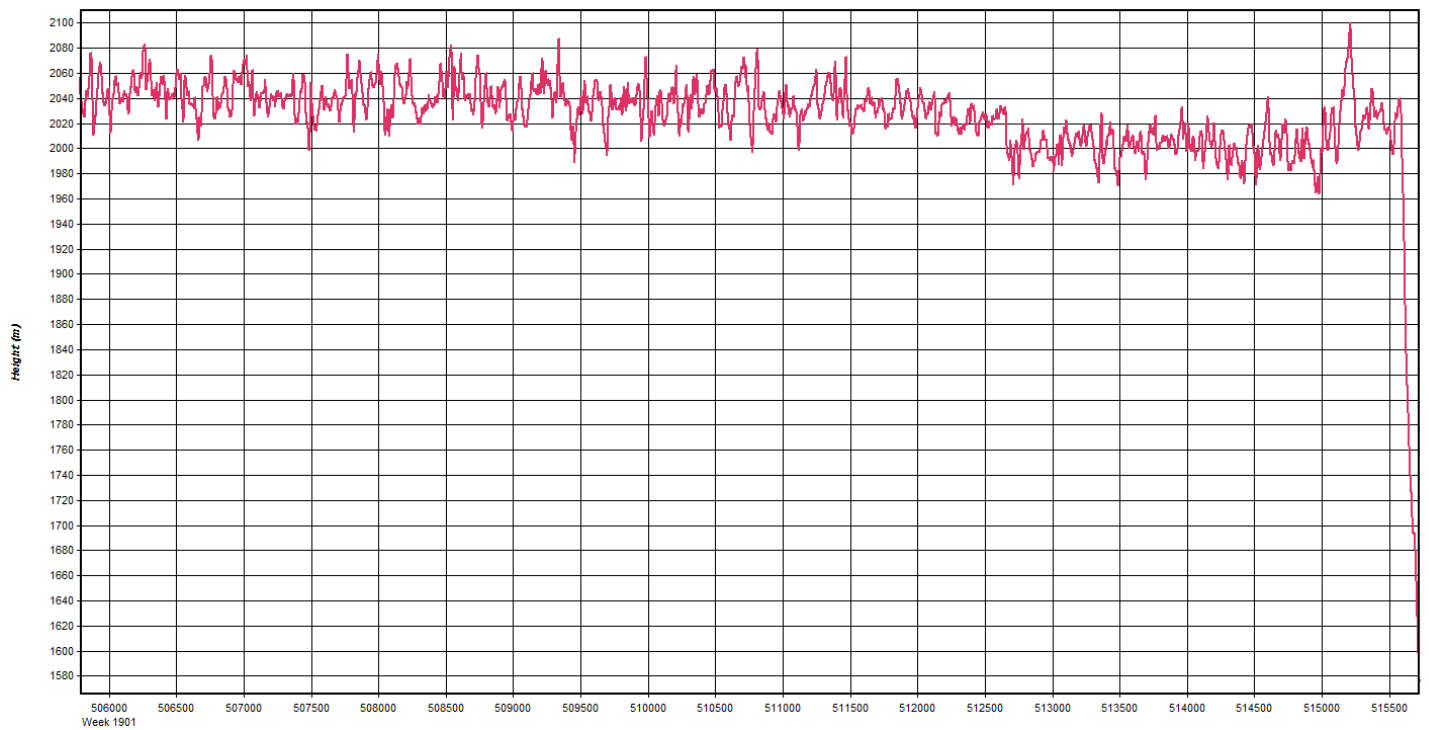
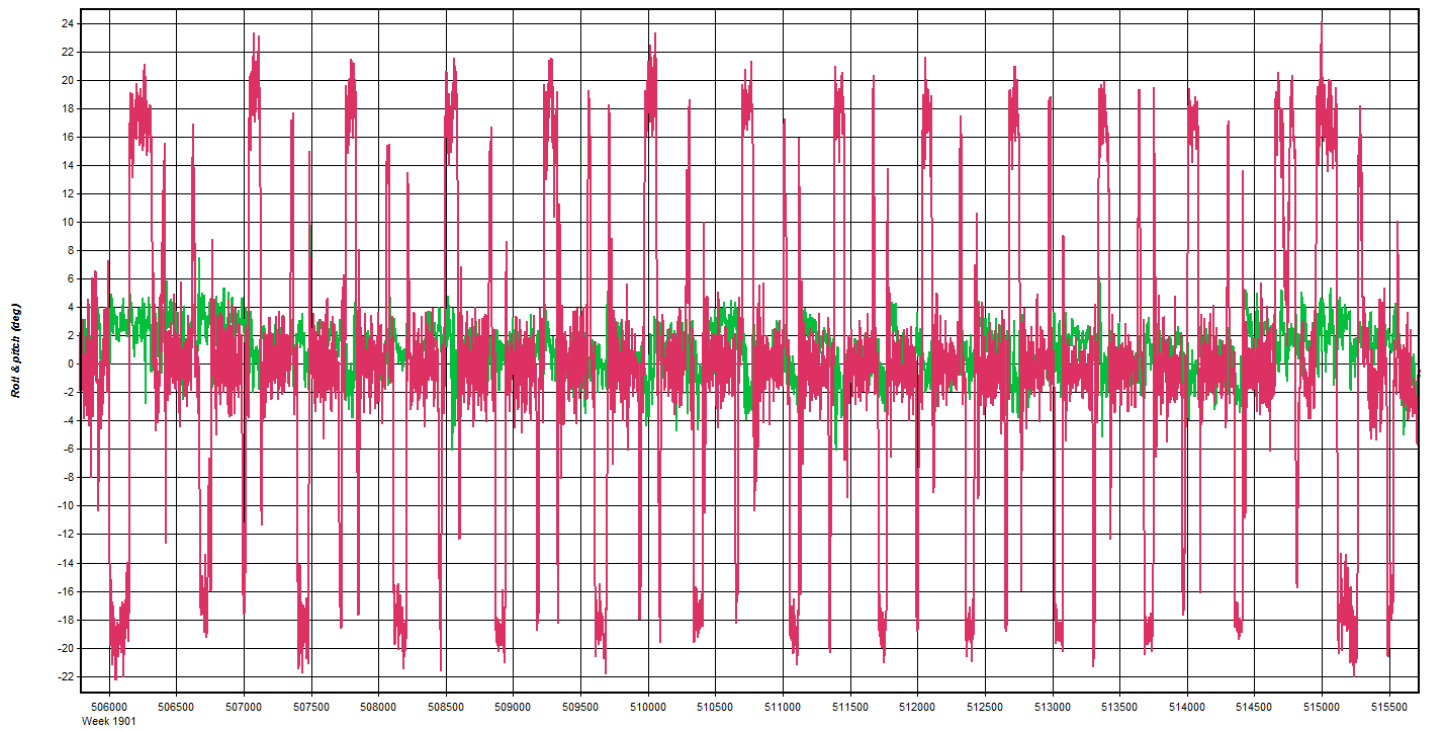
— East — North — Up

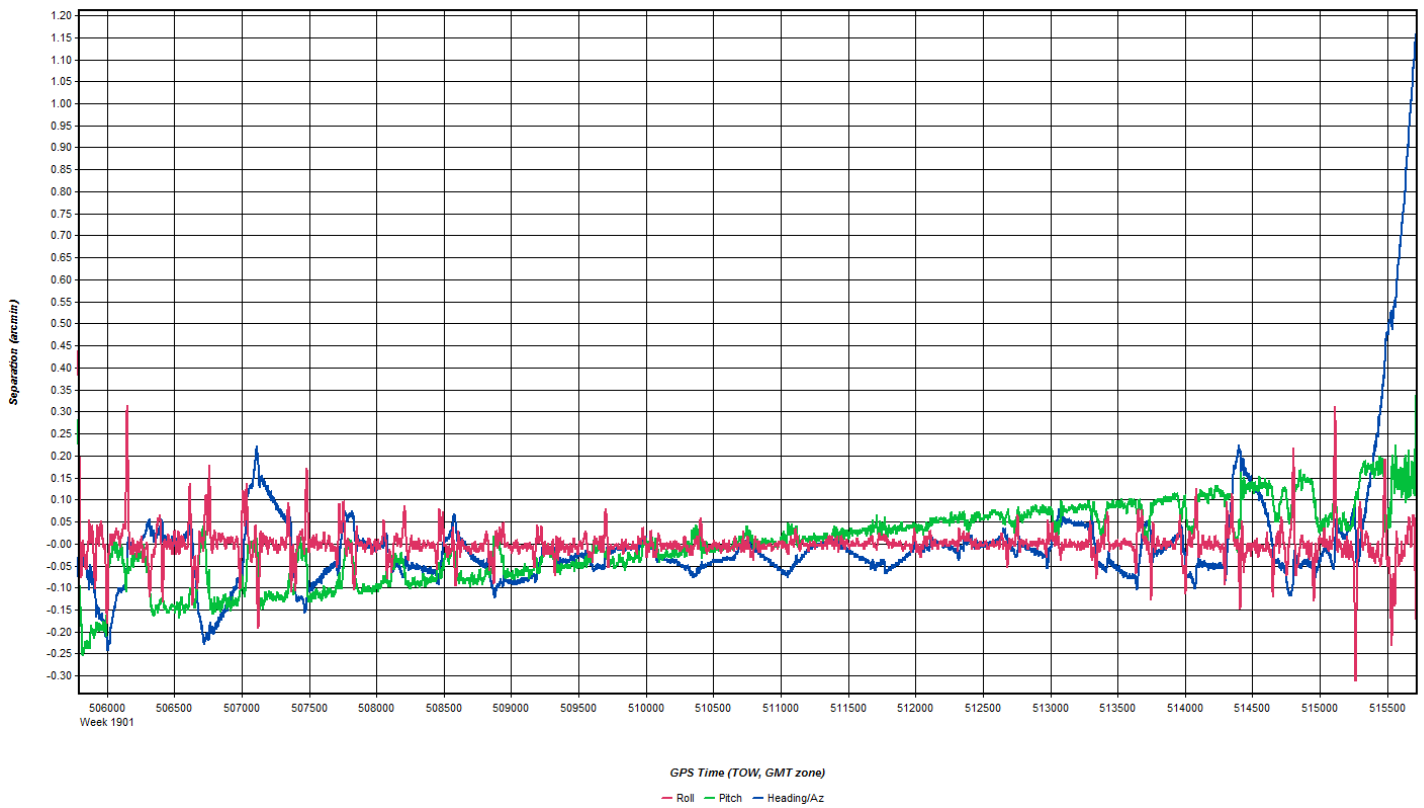
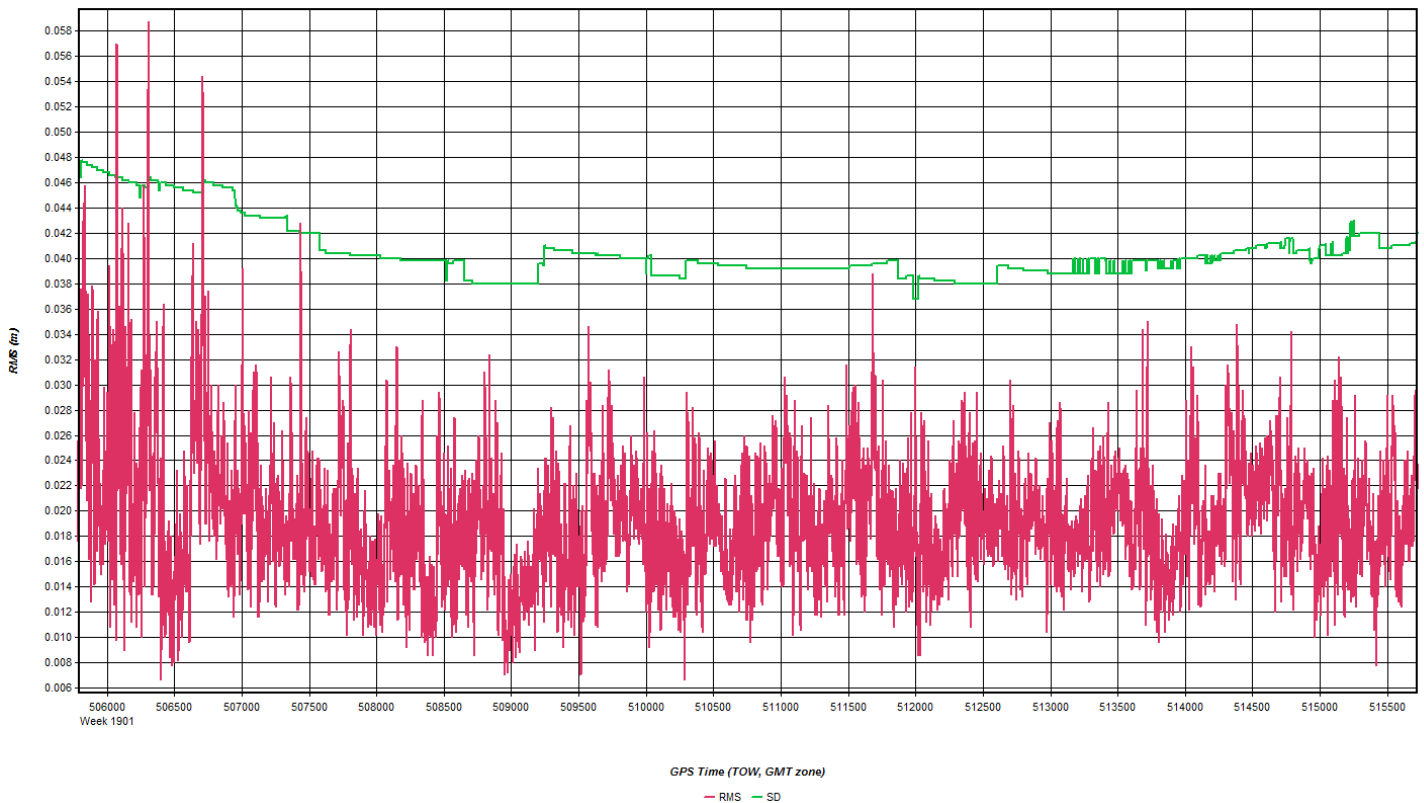


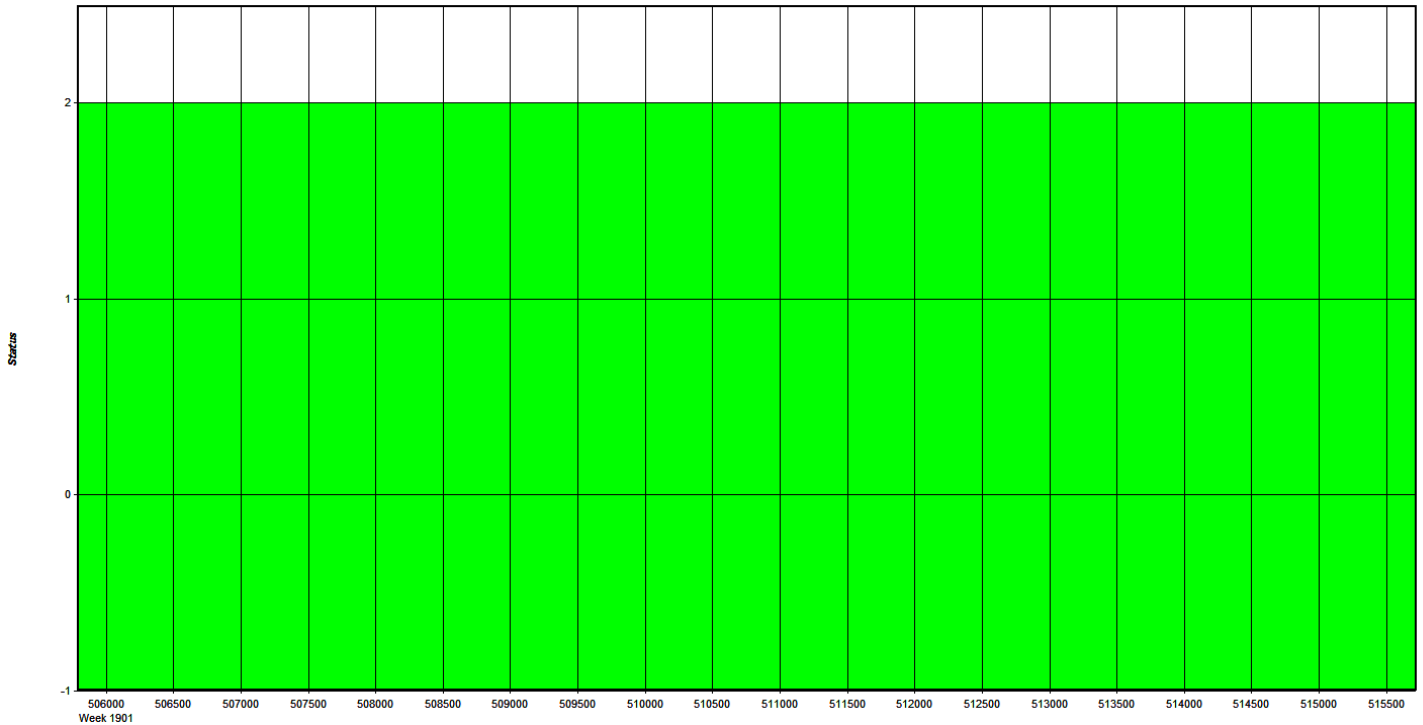
GPS Time (TOW, GMT zone)

— Heading/Azimuth — GPS-COG









GPS Time (TOW, GMT zone)
 - Float - Forward Fixed - Reverse Fixed - Fixed (2 or more)

Coordinate/Antenna Settings

Master Remote

Base Station
 1: NOR1 Name: NOR1 Disabled
 File: E:\Proc\27135_Huron_Manistee_28203_Pellston\CKDT\27135_1

Coordinates
 Latitude: North 44 15 20.94223 Compute from PPP
 Longitude: West 85 26 13.74570 Enter Grid Values
 Ellipsoidal height: 365.107 m Enter MSL Height
 Datum: WGS84 Datum Options
 Select From Favorites Add To Favorites Use Average Position

Antenna Height
 From station file: LEIAT504GG, LEIS View STA File
 Antenna profile: LEIAT504GG, LEIS Info
 Measured height: 0.000 m Measured to
 ARP to L1 offset: 0.087 m ARP
 Applied height: 0.087 m L1 Phase Centre
 Compute From Slant

OK Cancel

Flight Log

Quantum Spatial

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

(email: Log daily to flight_log_distribution_lists@quantumspatial.com)

Project: HURON / MANISTEE Proj #: 27135 Flight Mgmt File: 20160617-192615

Aircraft: N73TM Begin Hobbs: 63487 End Hobbs: 63542 Total: 5.5 Pilot: WAGNER Co-Pilot: NELSON

Dep Apt: KPLN Dep Time (lcl): 14:40 (z): 18:40 Arr Apt: 20:10 (z): 1:10 Tot Time Aloft: 5.5

CORS: (Y)N Sta 1: NOR1 Sta 2: 23:10 (Sta2)

GPS Unit: Y(N) Sta 1: (N) Sta 2: (N) Flyovers: (Y)N If Y, times: Sta1 20:33 (Sta2)

Flyovers: Y/N If Y, times: Sta1 23:10 (Sta2)

Date: 6/17/16 Pg 1 of 1

Lift: (A) (B) (C) (D) (E)

Tech: NELSON

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	POOP/s/s		GPS Altitude	Crab	Turb (0...4)	Alt AGL	Alt AMSL	°C	End: °C	°C	Alt Ht	Avg Terr Ht	Max Gspd	Avg Pt Spacing	Pulse Rate	Power	PPSM	Beg GB	End GB	Tot GB	Storage Name/#
					In Air	Pulses																			
1	270	20:40	20:43	140	1.1	1.8	6700	1				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
2	90	20:46	20:49	135	1.1	1.8	6700	1				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
3	270	20:52	20:55	145	1.1	1.8	6700	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
4	90	20:58	21:01	145	1.1	1.8	6650	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
5	270	21:04	21:07	140	1.1	1.8	6675	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
6	90	21:11	21:14	140	1.2	1.7	6720	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
7	270	21:17	21:20	140	1.1	1.8	6700	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
8	90	21:23	21:26	140	1.3	1.8	6650	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
9	270	21:29	21:32	145	1.1	1.8	6700	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
10	90	21:35	21:38	135	1.1	1.8	6680	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
11	270	21:42	21:44	140	1.1	1.8	6700	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
12	90	21:47	21:50	130	1.2	1.8	6730	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
13	270	21:53	21:56	140	1.1	1.7	6630	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
14	90	21:59	22:02	130	1.3	1.6	6650	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
15	270	22:04	22:07	145	1.3	1.6	6680	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
16	90	22:10	22:12	140	1.3	1.7	6680	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
17	270	22:15	22:18	140	1.2	1.8	6620	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3
18	90	22:21	22:23	135	1.2	1.8	6670	0				30.0	30.0	30.0	1300	140	100	5				234	264	50	3

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

LT CHOP

Total Proj Lines: <u>24</u>	Lines Flown: <u>24</u>	Lines Remain: <u>0</u>	Online Time: <u>2.4</u>	Mob Time: <u>1.1</u>	Notes: <u>SC1 7500</u>
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Airborne LiDAR Data Collection Log Sheet :: Quantum Spatial, Inc

Date: 6/17/16 Uft: A B C D E Pg 2 of 2

Project: HURON/MANISTEE Proj #: 21135 Flight Mgmt File: 20160617_182615

Aircraft: N73TM Begin Hobbs: 6348.7 End Hobbs: 6354.2 Total: 5.5 Pilot: WAGNER Co-Pilot: TECH NELSON

Dep Apt: KPLN Dep Time (Lcl): 14:40 Arr Apt: KSBM Arr Time (Local): 20:10 (Z): 1:10 Tot Time Aloft: 5:5

CORS: Y/N Sta 1: NOR1 Sta 2: Flyovers: Y/N If Y, times: Sta1 20:33 23:10 (Sta2)

GPS Unit: Y/N Sta 1: Sta 2: Flyovers: Y/N If Y, times: Sta1 Sta2)

Gd Temp beg: 29 °C End: 30 °C OAT beg: °C End: °C Altimeter begin: 3007 end: 3008

Type	Serial #	Scan Freq	Alt AGL	Alt AMSL	Pulses In Air	Pulse Rate	Max Gdspd	Power	Avg Pt Spacing	PPSM	Storage Name/ #		
											Beg GB	End GB	Tot GB
LIDAR	ALS70	30	7170	5400	6700	1300	140	140	140	140	234	264	3
				MPIA	N	2	321K	160					

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	FOOP#/sts	GPS Altitude	Crab	Turb (0..+)	FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc	
19		22:26	22:29	140	1.18	6600	0			
20		22:32	22:34	140	1.37	6560	0			
21		22:37	22:40	140	1.37	6630	0			
22		22:43	22:45	140	1.37	6600	0			
23		22:48	22:51	145	1.37	6550	0			
24		22:54	22:57	130	1.27	6580	0			
X-FLY	0	23:00	23:02	140	1.17	6600	0			CROSSFLIGHT
										-D → KTVC 63535
										-D → KSBM 635412

Total Proj Lines: 24 Lines Flown: 24 Lines Remain: 0

Online Time: 2.4 Mob Time: 1.1 Notes: 507 7500

Appendix B

Survey Report



June 28, 2016

Survey Report of
LiDAR Calibration & Quality Control Points

USGS Contract: G16PC00016
USGS Task Order: G16PD00340

MI - Olga Lake Lidar 2016 - D16

Presented to:



Presented By:





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- VVA - Tall Weed Points.....75
- VVA - Forest Points.....78

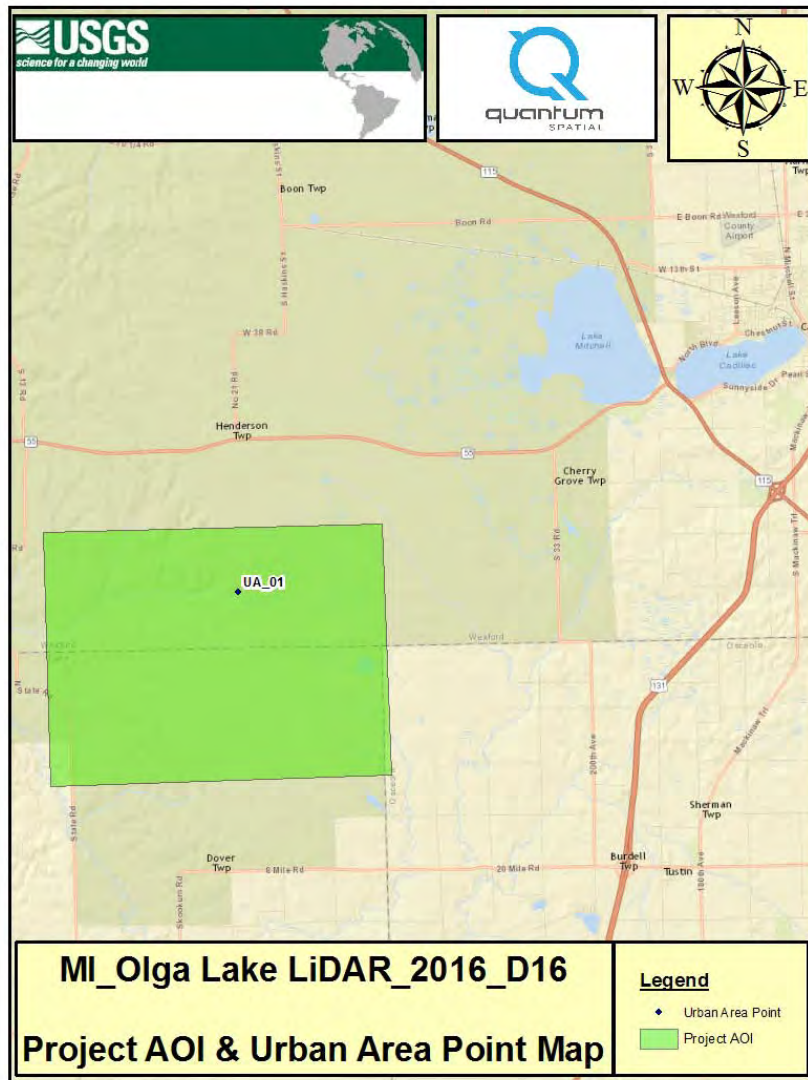


Introduction

Quantum Spatial, Inc. was contracted by USGS under task order G16PD00340 to Survey LiDAR calibration and quality control points in support of MI_HMNFOL_2016_D16 – QL1 LiDAR. This is the report of the technical approach used and detail of each point surveyed.

Project Area

The Project Area, shown in the figure below, consists of approximately 31 square miles.





Technical Approach to Land Cover Validation Point Selection

Referencing ASPRS Positional Accuracy Standards for Digital Geospatial Data (Edition 1, Version 1.0, - November, 2014) table C.1 Recommended Number of Checkpoints based on Area, Quantum Spatial calculated that 20 Non-Vegetated Vertical Assessment (NVA) and 5 Vegetated Vertical Assessment (VVA) points are required for this project area.

To ensure that checkpoints were distributed generally proportionate among the various vegetated land cover types, Quantum Spatial used existing USGS Land Cover data to divide both the NVA and VVA categories among the various types, calculating the approximate number of required points in each representative type proportionate to the total project area. The resulting point classes are detailed below:

<u>NVA Class</u>	<u># of Points</u>	<u>VVA Class</u>	<u># of Points</u>
Bare Earth	19	Forested	4
Urban Area	1	Tall Weeds	1

Quantum Spatial has adopted the philosophy that each vegetative class must be well distributed throughout the project area. While points in varying classes may be near to one another, points of a single vegetative class may not. Proposed point locations are selected with this distribution methodology in mind.

Survey Accuracy Requirements

Given that the survey accuracy of calibration and quality control check points should be 3 times more accurate than the required accuracy of the data set, Quantum Spatial requires that calibration and NVA points be better than 3 centimeters, both horizontally and vertically, and that VVA points be better than 5 centimeters, both horizontally and vertically. The surveyed accuracy of each point must be determined through redundant measurements and/or network adjustment using procedures and methodologies that reliably and consistently result in the aforementioned accuracies.

Due to variances in reference control accuracy and adjustment, Quantum Spatial requires that the survey methodology used be explained, so that it can be repeated if necessary.



Field Survey Methodology

Date Range: June 16, 2016 – June 22, 2016

Equipment Used:

The field crew used a Leica GS15 dual frequency GNSS receiver as a rover and the Michigan MSRN network as base stations. A Leica 1103 Total Station was used to survey the forest points.

GNSS Methodology:

A RTN GPS survey was performed using a Leica GS15 GNSS receiver connected to the Michigan MSRN network. Each quality control point was set on a flat surface at least five meters away from any significant elevation change. Each point determined by RTN was observed at least twice. When RTN signals were unobtainable, points were observed with rapid static. For forested points, a pair of quality control points was occupied with a total station and doubled angle/distance measurements were made to the forested point. Data sheet information for each point was gathered including point type, general location, occupation time, equipment used, and photographs. Final coordinate values were filled in later in the office.

Overall Project Accuracy Statement

All point coordinates have been reported in the North American Datum of 1983 (NAD83 2011), UTM Zone 16 in meters. Elevations are relative to the North American Vertical Datum of 1988 (NAVD 88) which were derived using the Geoid 12B model and are reported in meters.

Calibration Points

Average Horizontal RMSE is 0.013 meter.

Average Elevation RMSE is 0.022 meter.

Average 3 dimensional RMSE is 0.026 meter.

NVA Points

Average Horizontal RMSE is 0.011 meter.

Average Elevation RMSE is 0.021 meter.

Average 3 dimensional RMSE is 0.024 meter.



VVA Points

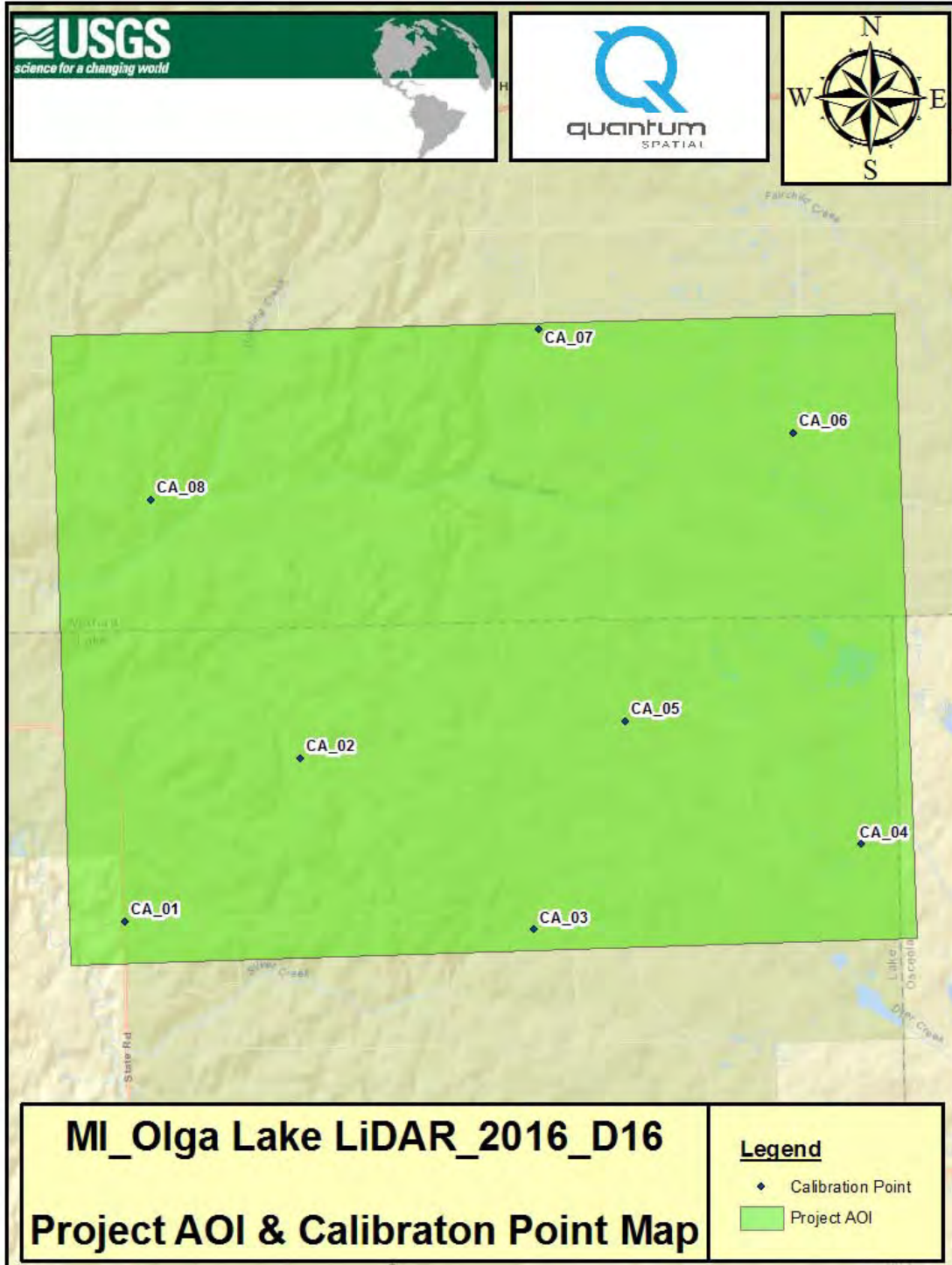
Average Horizontal RMSE is 0.020 meter.

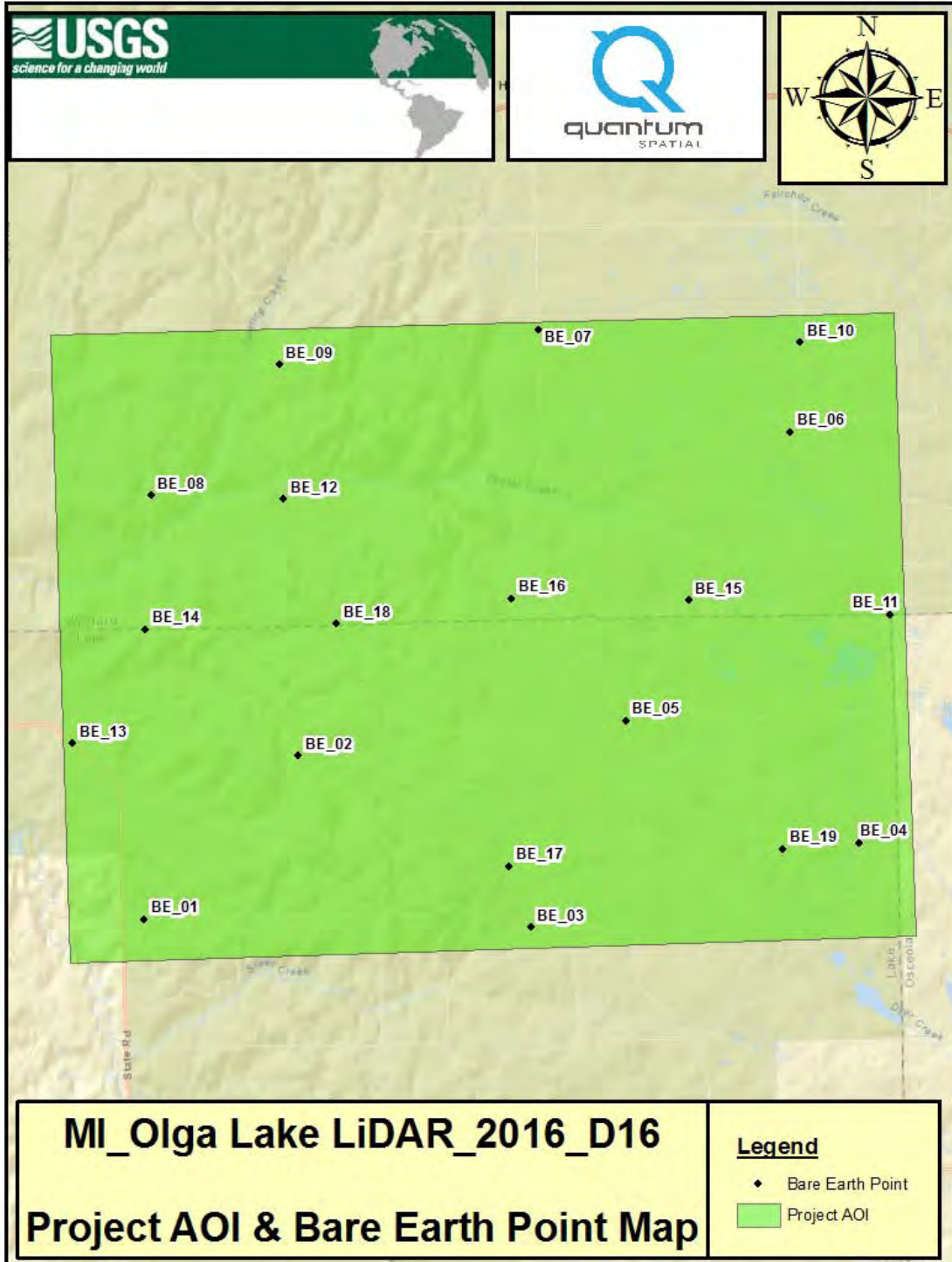
Average Elevation RMSE is 0.025 meter.

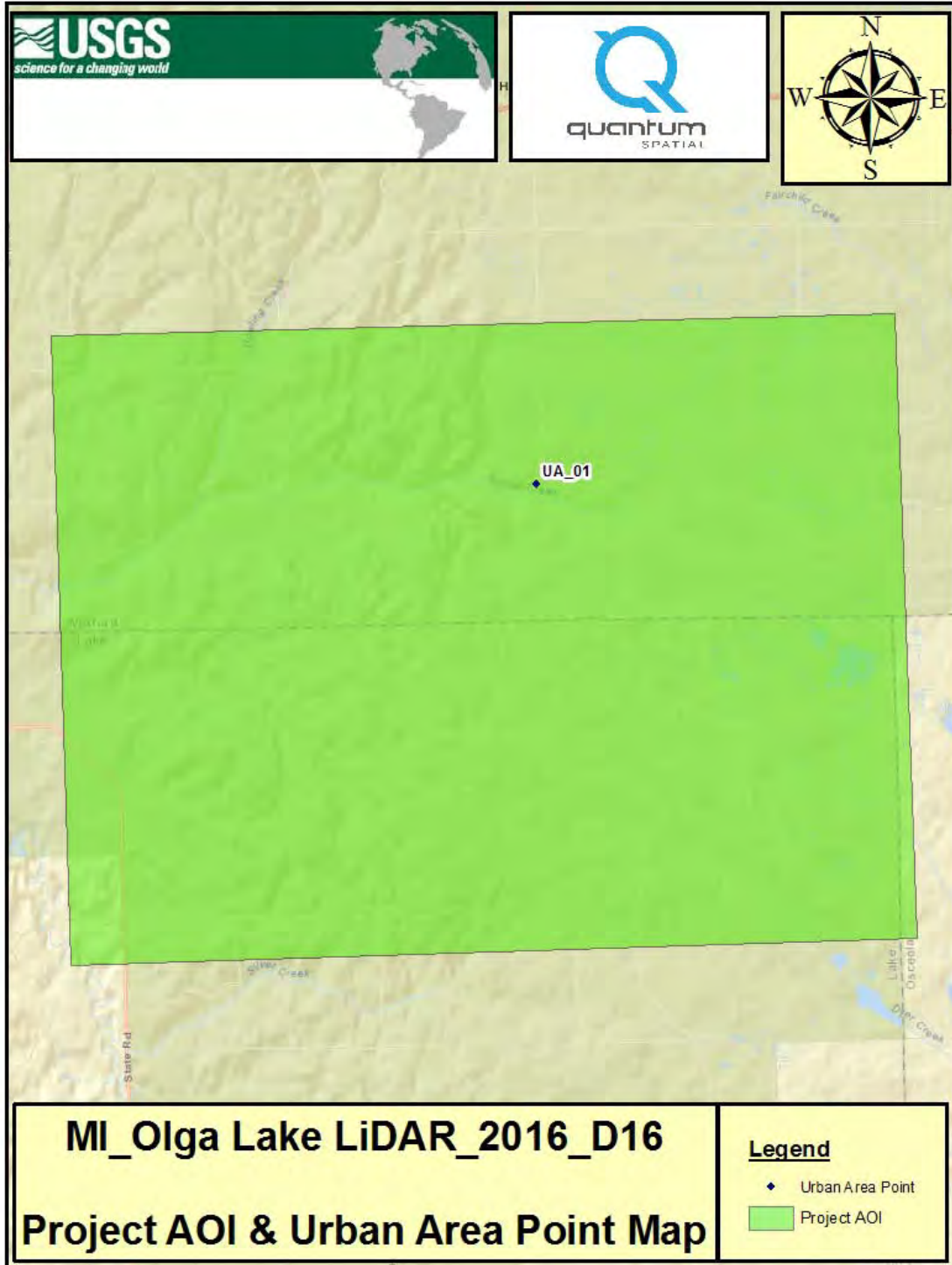
Average 3 dimensional RMSE is 0.032 meter.

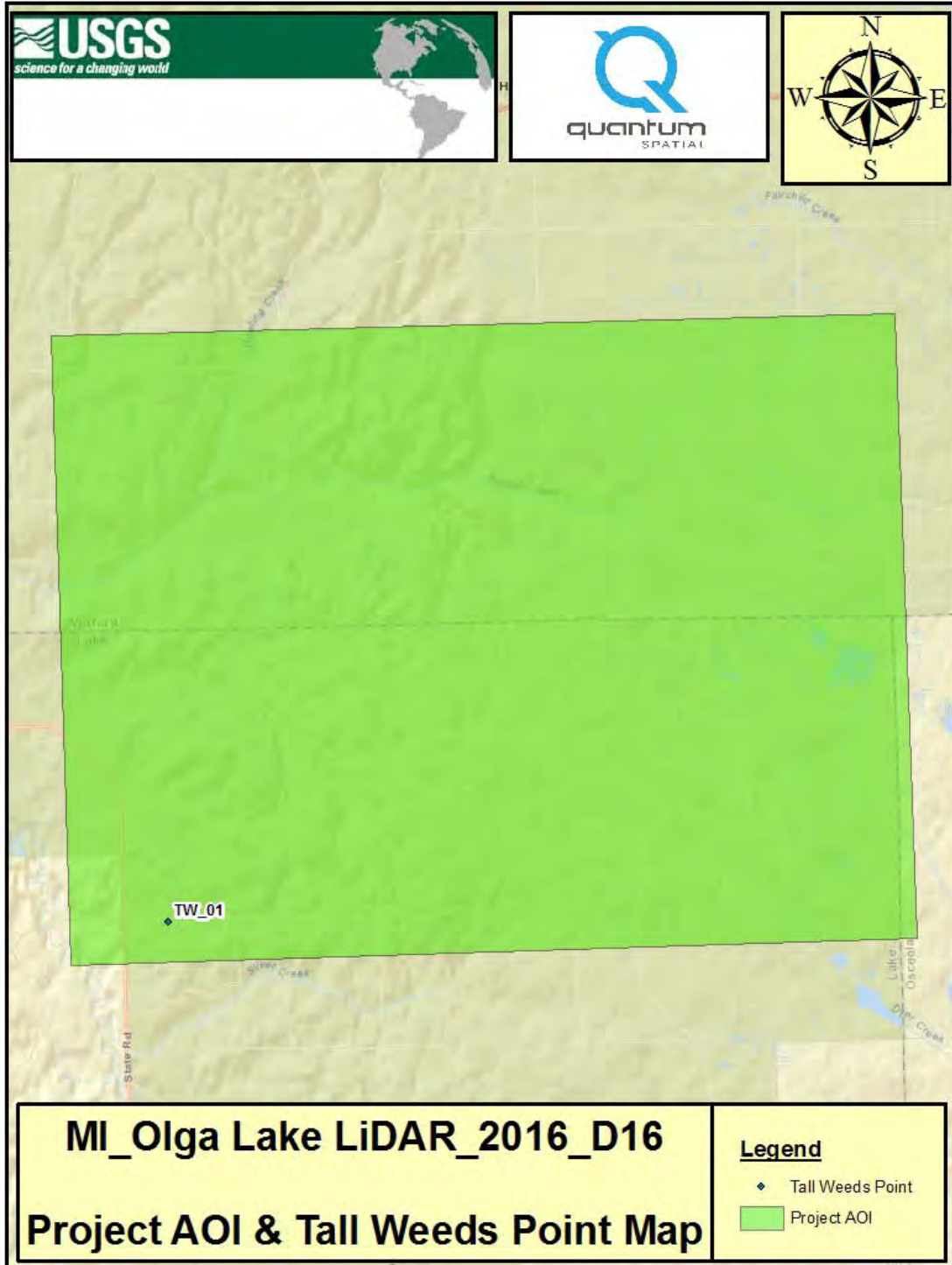


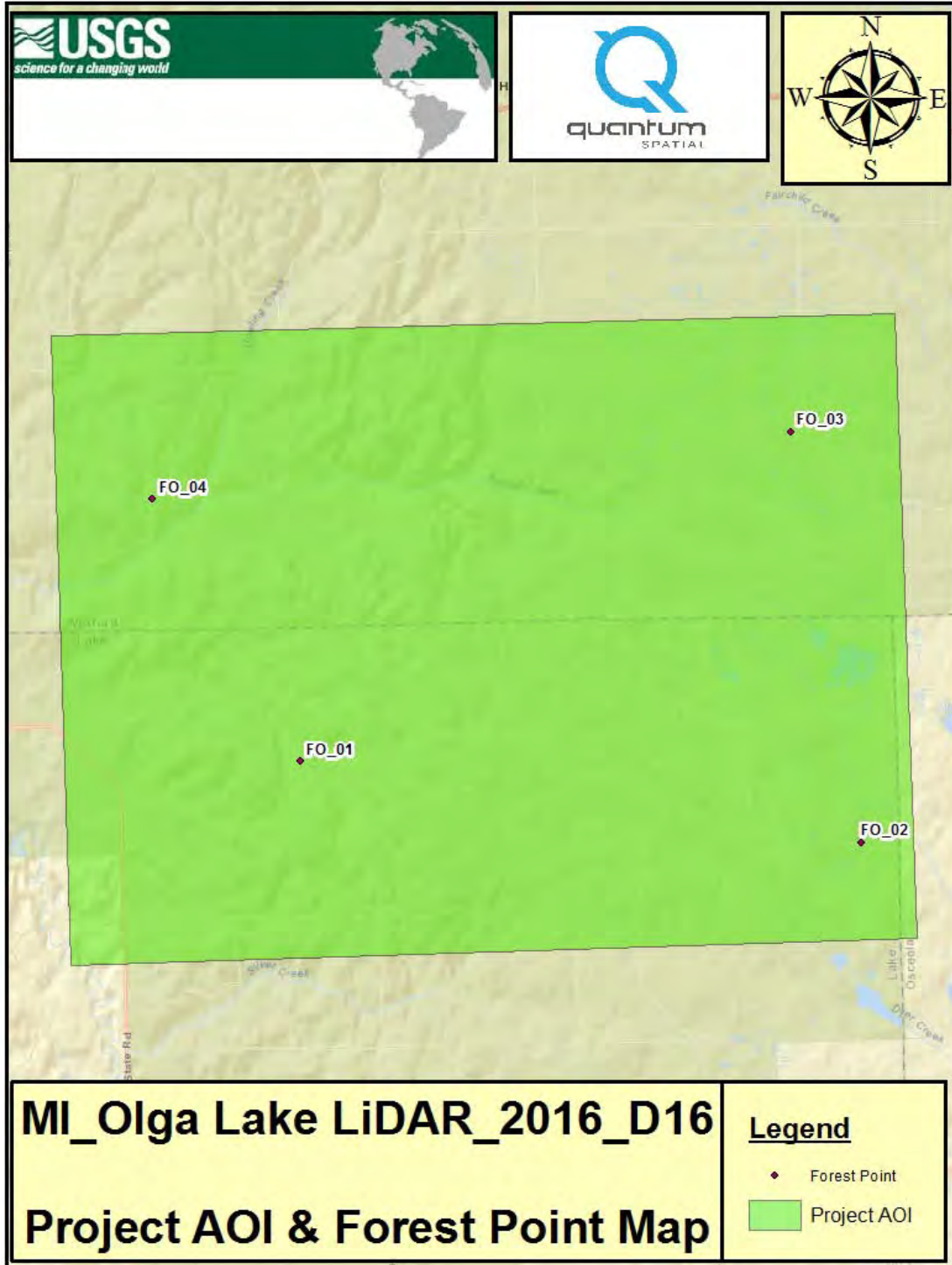
Project AOI & Point Location Maps













Final Point Coordinates



Calibration Point Coordinates

Horizontal Datum - NAD83(2011)

UTM-Zone 16N

Vertical Datum - NAVD 88

Geoid - GEOID12B

Units – Meters

Point ID	Easting(m)	Northing (m)	Elev. (m)
CA_01	605314.883	4887432.588	308.850
CA_02	607474.879	4889434.262	350.120
CA_03	610358.498	4887331.632	374.573
CA_04	614375.364	4888380.442	375.295
CA_05	611481.604	4889898.307	386.609
CA_06	613551.216	4893432.274	399.723
CA_07	610413.882	4894703.624	410.054
CA_08	605635.497	4892616.309	343.276



Bare Earth Point Coordinates

Horizontal Datum - NAD83(2011)
UTM-Zone 16N
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – Meters

Point ID	Easting(m)	Northing (m)	Elev. (m)
BE_01	605561.154	4887438.062	312.561
BE_02	607464.238	4889447.149	350.143
BE_03	610324.167	4887335.839	373.455
BE_04	614364.845	4888379.290	375.807
BE_05	611494.179	4889884.823	386.325
BE_06	613515.533	4893432.142	400.437
BE_07	610414.356	4894690.890	410.109
BE_08	605647.666	4892652.708	345.370
BE_09	607227.881	4894257.101	354.253
BE_10	613641.865	4894531.202	392.555
BE_11	614753.499	4891189.451	389.436
BE_12	607281.515	4892604.365	337.864
BE_13	604689.336	4889598.512	315.288
BE_14	605578.925	4891001.256	330.993
BE_15	612267.228	4891361.069	381.070
BE_16	610092.906	4891381.882	380.889
BE_17	610060.684	4888091.029	397.070
BE_18	607929.367	4891071.537	354.838
BE_19	613430.082	4888301.784	384.633



Urban Area Point Coordinates

Horizontal Datum - NAD83(2011)
UTM-Zone 16N
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – Meters

Point ID	Easting (m)	Northing (m)	Elev. (m)
UA_01	610380.590	4892812.839	371.576

Tall Weed Point Coordinates

Horizontal Datum - NAD83(2011)
UTM-Zone 16N
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – Meters

Point ID	Easting (m)	Northing (m)	Elev. (m)
TW_01	605848.900	4887424.473	319.690

Forest Point Coordinates

Horizontal Datum - NAD83(2011)
UTM-Zone 16N
Vertical Datum - NAVD 88
Geoid - GEOID12B
Units – Meters

Point ID	Easting (m)	Northing (m)	Elev. (m)
FO_01	607475.903	4889397.974	349.641
FO_02	614376.888	4888404.326	374.286
FO_03	613507.276	4893451.009	400.331
FO_04	605663.238	4892624.120	343.146



Point Location Log Sheets



Calibration Point Log Sheets



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake LiDAR

POINT ID: CA_01
Proj. No.: 27135

STATE MI COUNTY Lake QUAD: Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15

Northing	4887432.59	Elevation	
Easting	605314.88		308.85

RECEIVER S/N 05510893

SESSIONS	DATE:	ObsA	Obs B
VRS	06/17/16	06/17/16	06/17/16
	DAY OF YEAR	169	169

	Obs A	ObsB		U.T.C.
START TIME	15:37	15:44		
END TIME	15:40	15:47	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters		
MEASURED	X	FIXED HGT	

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

Calibration / Nail

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

PHOTO

PHOTO:





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_01
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_02
Proj. No.: 27135

STATE MI **COUNTY** Lake **QUAD:** Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4889434.26	Elevation	350.12
Easting	607474.88		

	ObsA	Obs B
SESSIONS	DATE: 06/17/16	06/17/16
VRS	DAY OF YEAR 169	169

	Obs A	ObsB		U.T.C.
START TIME	16:53	17:08		
END TIME	16:56	17:11	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
<input type="checkbox"/>	MEASURED
<input type="checkbox"/>	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
<input type="checkbox"/>	MEASURED
<input checked="" type="checkbox"/>	X
<input type="checkbox"/>	FIXED HGT

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Calibration / Nail

<input type="checkbox"/>	AERIAL TARGET	<input type="checkbox"/>	PHOTO I.D.
<input type="checkbox"/>	PUB. BENCH MARK	X	NEW CONTROL
<input type="checkbox"/>	PUB. CONTROL	<input type="checkbox"/>	BASE STATION

PHOTO





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_02
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **CA_03**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **Axin**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4887331.63	Elevation	374.57
Easting	610358.50		

RECEIVER MODEL: **Leica GS15**
RECEIVER S/N: **05510893**

	ObsA	Obs B
SESSIONS DATE:	06/17/16	06/17/16
VRS and STATIC DAY OF YEAR	169	169

	Obs A	ObsB		U.T.C.
START TIME	14:15	14:28		
END TIME	14:18	14:58	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

TOP OF MONUMENT IS: **X** **FLUSH**

METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

Calibration / Nail

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

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_03
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_04
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **AXIN**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4888380.44	Elevation	375.29
Easting	614375.36		

RECEIVER MODEL: Leica GS15
RECEIVER S/N: 05510893

SESSIONS	DATE:	ObsA	Obs B
VRS	06/16/16	06/16/16	
	DAY OF YEAR	168	168

	Obs A	ObsB		U.T.C.
START TIME	16:10	16:16		
END TIME	16:13	16:21	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters		
MEASURED	X	FIXED HGT	

TOP OF MONUMENT IS: X FLUSH

METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

Calibration / Nail

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

PHOTO: PHOTO:





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_04
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_05
Proj. No.: 27135

STATE MI **COUNTY** Lake **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4889898.31	Elevation	
Easting	611481.60		386.61

SESSIONS	DATE:	06/18/16	ObsA	Obs B
STATIC	DAY OF YEAR	170		

	Obs A	ObsB		
START TIME	14:22			U.T.C.
END TIME	14:52		X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
<input type="checkbox"/>	MEASURED
<input type="checkbox"/>	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
<input type="checkbox"/>	MEASURED
<input checked="" type="checkbox"/>	X
<input type="checkbox"/>	FIXED HGT

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Calibration / Nail

<input type="checkbox"/>	AERIAL TARGET	<input type="checkbox"/>	PHOTO I.D.
<input type="checkbox"/>	PUB. BENCH MARK	X	NEW CONTROL
<input type="checkbox"/>	PUB. CONTROL	<input type="checkbox"/>	BASE STATION

PHOTO





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_05
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_06
Proj. No.: 27135

STATE MI **COUNTY** Wexford **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4893432.27	Elevation	399.72
Easting	613551.22		

	ObsA	Obs B
SESSIONS	DATE: 06/18/16	06/18/16
VRS	DAY OF YEAR 170	170

	Obs A	ObsB		U.T.C.
START TIME	15:57	16:04		
END TIME	16:00	16:07	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
<input type="checkbox"/>	MEASURED
<input type="checkbox"/>	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
<input type="checkbox"/>	MEASURED
<input checked="" type="checkbox"/>	FIXED HGT

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Calibration / Nail

<input type="checkbox"/>	AERIAL TARGET	<input type="checkbox"/>	PHOTO I.D.
<input type="checkbox"/>	PUB. BENCH MARK	X	NEW CONTROL
<input type="checkbox"/>	PUB. CONTROL	<input type="checkbox"/>	BASE STATION

PHOTO





GPS CONTROL SURVEY
FIELD DATA SHEET

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_06
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **CA_07**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Wexford** QUAD: **Axin**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4894703.62	Elevation	410.05
Easting	610413.88		

RECEIVER MODEL: **Leica GS15**
RECEIVER S/N: **05510893**

SESSIONS	DATE:	ObsA	Obs B
VRS	06/20/16	06/20/16	
	DAY OF YEAR	172	172

	Obs A	ObsB		U.T.C.
START TIME	15:49	15:54		
END TIME	15:51	15:57	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

TOP OF MONUMENT IS: **X** **FLUSH**

METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

Calibration / Nail

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

PHOTO: PHOTO:





GPS CONTROL SURVEY
FIELD DATA SHEET

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_07
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_08
Proj. No.: 27135

STATE MI

COUNTY Wexford

QUAD: Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15

Northing	4892616.31	Elevation	
Easting	605635.50		343.28

RECEIVER S/N 05510893

	ObsA	Obs B
SESSIONS		
DATE:	06/21/16	06/21/16
VRS		
DAY OF YEAR	173	173

	Obs A	ObsB		U.T.C.
START TIME	13:52	13:58		
END TIME	13:55	14:01	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

Calibration / Nail

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

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





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: CA_08
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
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PHOTO:



PHOTO:



PHOTO:



PHOTO:





Bare Earth Point Log Sheets



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **BE_01**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **Hoxeyville**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4887438.06	Elevation	312.56
Easting	605561.15		

RECEIVER MODEL: **Leica GS15**
RECEIVER S/N: **05510893**

SESSIONS	DATE:	ObsA	Obs B
VRS	DAY OF YEAR	169	169

	Obs A	ObsB		U.T.C.
START TIME	16:07	16:13		
END TIME	16:10	16:16	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

TOP OF MONUMENT IS:

X	FLUSH
METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

Bare Earth Point / Nail

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

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_01
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_02
Proj. No.: 27135

STATE MI **COUNTY** Lake **QUAD:** Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4889447.15	Elevation	350.14
Easting	607464.24		

		ObsA	Obs B
SESSIONS	DATE:	06/17/16	
STATIC	DAY OF YEAR	169	

	Obs A	ObsB	
START TIME	17:28		U.T.C.
END TIME	18:00	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

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

Bare Earth Point / Nail

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

PHOTO





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_02
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

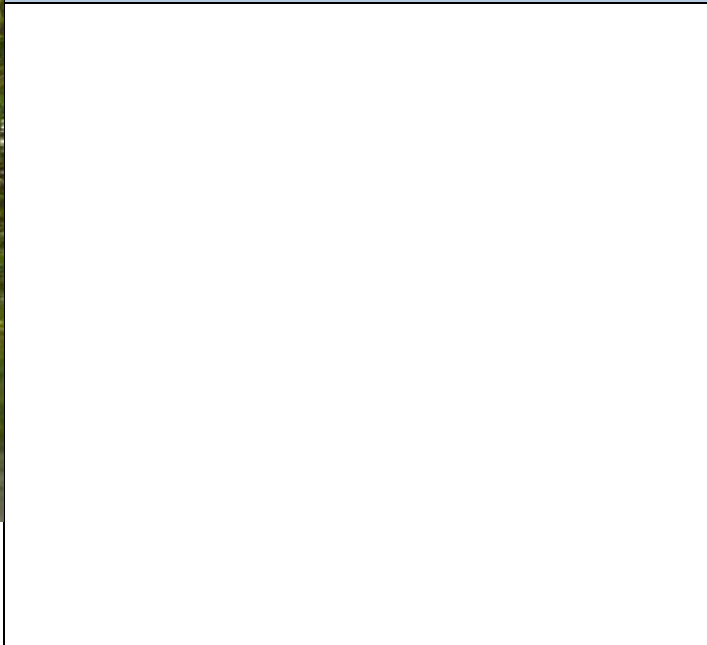
PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **BE_03**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **Axin**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4887335.84	Elevation	373.46
Easting	610324.17		

RECEIVER MODEL: **Leica GS15**
RECEIVER S/N: **05510893**

SESSIONS	DATE:	ObsA	Obs B
VRS	DAY OF YEAR	169	169

	Obs A	ObsB		U.T.C.
START TIME	15:06	15:14		
END TIME	15:09	15:17	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

TOP OF MONUMENT IS:

X	FLUSH
METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

Bare Earth Point / Nail

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

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_03
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
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PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **BE_04**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **AXIN**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4888379.29	Elevation	375.81
Easting	614364.85		

RECEIVER MODEL: **Leica GS15**
RECEIVER S/N: **05510893**

SESSIONS	DATE:	ObsA	Obs B
VRS	06/16/16	06/16/16	06/16/16
	DAY OF YEAR	168	168

	Obs A	ObsB		U.T.C.
START TIME	16:24	16:33		
END TIME	16:27	16:36	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

TOP OF MONUMENT IS: **X** **FLUSH**

METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

Bare Earth Point / Nail

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

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_04
Proj. No.: 27135

523 Wellington Way, Suite 375
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859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_05
Proj. No.: 27135

STATE MI **COUNTY** Lake **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4889884.82	Elevation	
Easting	611494.18		386.33

		ObsA	Obs B
SESSIONS	DATE:	06/18/16	
STATIC	DAY OF YEAR	170	

	Obs A	ObsB	
START TIME	14:35		U.T.C.
END TIME	15:05	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

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

Bare Earth Point / Nail

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

PHOTO





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_05
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_06
Proj. No.: 27135

STATE MI

COUNTY Wexford

QUAD: Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15

Northing	4893432.14	Elevation	400.44
Easting	613515.53		

RECEIVER S/N 05510893

SESSIONS	DATE:	ObsA	Obs B
	VRS	06/18/16	06/18/16
	DAY OF YEAR	170	170

	Obs A	ObsB		U.T.C.
	START TIME	16:09		
END TIME	16:12	16:21	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

TOP OF MONUMENT IS:

X	FLUSH
	ABOVE GROUND
	BELOW GROUND

Bare Earth Point / Nail

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

PHOTO





GPS CONTROL SURVEY
FIELD DATA SHEET

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_06
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_07
Proj. No.: 27135

STATE MI **COUNTY** Wexford **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4894690.89	Elevation	410.11
Easting	610414.36		

	ObsA	Obs B
SESSIONS	DATE: 06/20/16	06/20/16
VRS	DAY OF YEAR 172	172

	Obs A	ObsB		U.T.C.
START TIME	15:59	16:05		
END TIME	16:02	16:08	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Bare Earth Point / Nail

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

PHOTO





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_07
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_08
Proj. No.: 27135

STATE MI

COUNTY Wexford

QUAD: Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15

Northing	4892652.71	Elevation	345.37
Easting	605647.67		

RECEIVER S/N 05510893

		ObsA	Obs B
SESSIONS	DATE:	06/21/16	06/21/16
VRS	DAY OF YEAR	173	173

	Obs A	ObsB		U.T.C.
START TIME	14:04	14:10		
END TIME	14:07	14:13	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

Bare Earth Point / Nail

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

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





GPS CONTROL SURVEY
FIELD DATA SHEET

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_08
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_09
Proj. No.: 27135

STATE MI

COUNTY Wexford

QUAD: Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15

Northing	4894257.10	Elevation	
Easting	607227.88		354.25

RECEIVER S/N 05510893

		ObsA	Obs B
SESSIONS	DATE:	06/20/16	06/20/16
VRS	DAY OF YEAR	172	172

	Obs A	ObsB		
START TIME	17:25	17:32		U.T.C.
END TIME	17:28	17:35	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

Bare Earth Point / Nail

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	Leiat15	Leica Integrated Antenna	

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

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





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_09
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_10
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE MI **COUNTY** Wexford **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4894531.20	Elevation	
Easting	613641.87		392.56

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

		ObsA	Obs B
SESSIONS	DATE:	06/20/16	06/20/16
VRS	DAY OF YEAR	172	172

	Obs A	ObsB		U.T.C.
START TIME	15:15	15:21		
END TIME	15:18	15:24	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	Leiat15	Leica Integrated Antenna	

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters		
MEASURED	X	FIXED HGT	

TOP OF MONUMENT IS: X FLUSH

METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

Bare Earth Point / Nail

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

PHOTO PHOTO:





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_10
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_11
Proj. No.: 27135

STATE MI **COUNTY** Wexford **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4891189.45	Elevation	
Easting	614753.50		389.44

	ObsA	Obs B
SESSIONS	DATE: 06/18/16	06/18/16
VRS	DAY OF YEAR 170	170

	Obs A	ObsB		U.T.C.
START TIME	15:25	15:31		
END TIME	15:28	15:34	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
<input type="checkbox"/>	MEASURED
<input type="checkbox"/>	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
<input type="checkbox"/>	MEASURED
<input checked="" type="checkbox"/>	FIXED HGT

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Bare Earth Point / Nail

<input type="checkbox"/>	AERIAL TARGET	<input type="checkbox"/>	PHOTO I.D.
<input type="checkbox"/>	PUB. BENCH MARK	X	NEW CONTROL
<input type="checkbox"/>	PUB. CONTROL	<input type="checkbox"/>	BASE STATION

PHOTO





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_11
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_12
Proj. No.: 27135

STATE MI

COUNTY Wexford

QUAD: Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15

Northing 4892604.37
Easting 607281.52

Elevation
337.86

RECEIVER S/N 05510893

SESSIONS	DATE:	ObsA	Obs B
	VRS	06/20/16	06/20/16
	DAY OF YEAR	172	172

	Obs A	ObsB		U.T.C.
	START TIME	17:56		
END TIME	17:59	18:05	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters	
	MEASURED	X FIXED HGT

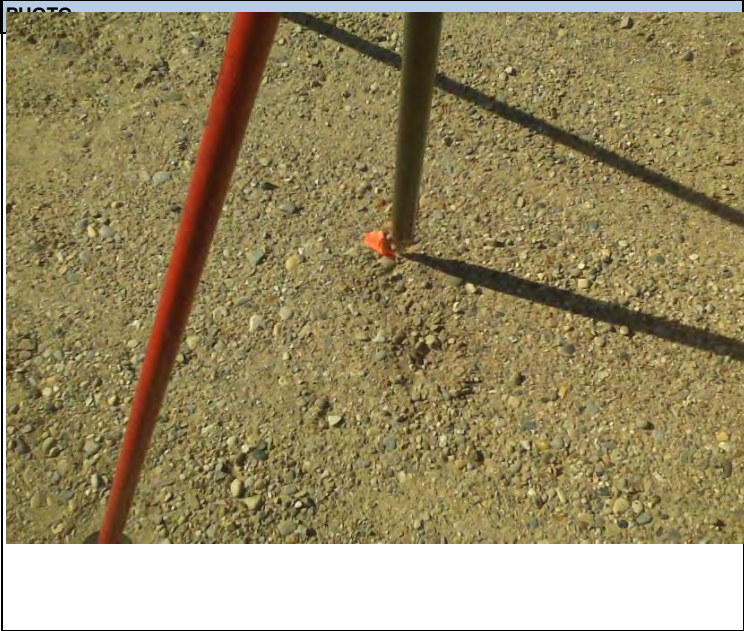
Bare Earth Point / Nail

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	Leiat15	Leica Integrated Antenna

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

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





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_12
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **BE_13**
Proj. No.: **27135**

STATE: **MI** COUNTY: **Lake** QUAD: **Hoxeyville**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4889598.51	Elevation	315.29
Easting	604689.34		

RECEIVER MODEL: **Leica GS15**
RECEIVER S/N: **05510893**

SESSIONS	DATE:	ObsA	Obs B
VRS	DAY OF YEAR	169	169

	Obs A	ObsB		U.T.C.
START TIME	16:31	16:37		
END TIME	16:34	16:40	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

TOP OF MONUMENT IS:

X	FLUSH
METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

Bare Earth Point / Nail

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

PHOTO

PHOTO:





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_13
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_14
Proj. No.: 27135

STATE MI **COUNTY** Wexford **QUAD:** Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4891001.26	Elevation	330.99
Easting	605578.93		

	ObsA	Obs B
SESSIONS	DATE: 06/21/16	06/21/16
VRS	DAY OF YEAR 173	173

	Obs A	ObsB		U.T.C.
START TIME	12:25	13:31		
END TIME	12:28	13:34	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

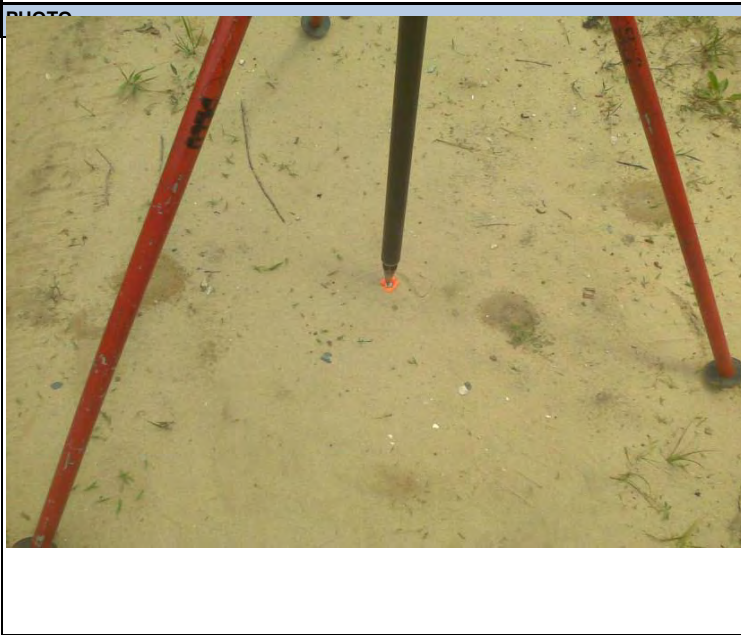
Bare Earth Point / Nail

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

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

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





GPS CONTROL SURVEY
FIELD DATA SHEET

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_14
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_15
Proj. No.: 27135

STATE: MI **COUNTY:** Wexford **QUAD:** Axin

OPERATOR: W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL: Leica GS15
RECEIVER S/N: 05510893

Northing	4891361.07	Elevation	381.07
Easting	612267.23		

	ObsA	Obs B
SESSIONS	DATE: 06/18/16	06/18/16
VRS	DAY OF YEAR 170	170

	Obs A	ObsB		U.T.C.
START TIME	16:49	16:56		
END TIME	16:52	16:59	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Bare Earth Point / Nail

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

PHOTO





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_15
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake LiDAR

POINT ID: **BE_16**
Proj. No.: **27135**

STATE **MI**

COUNTY **Wexford**

QUAD: **Axin**

OPERATOR **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL **Leica GS15**

Northing **4891381.88**

Elevation

RECEIVER S/N **05510893**

Easting **610092.91**

380.89

SESSIONS	DATE:	ObsA	Obs B
	VRS	06/18/16	06/18/16
	DAY OF YEAR	170	170

	Obs A	ObsB		U.T.C.
	START TIME	17:13		
END TIME	17:16	17:23	X	LOCAL

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

ANTENNA HEIGHT (ARP)			
MTRS/FT	1.800 Meters		
	MEASURED	X	FIXED HGT

ANTENNA			
RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Bare Earth Point / Nail

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

PHOTO





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_16
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_17
Proj. No.: 27135

STATE MI **COUNTY** Lake **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4888091.03	Elevation	
Easting	610060.68		397.07

	ObsA	Obs B
SESSIONS	DATE: 06/18/16	
STATIC	DAY OF YEAR 170	

	Obs A	ObsB	
START TIME	13:20		U.T.C.
END TIME	13:51		LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	<input checked="" type="checkbox"/> FIXED HGT

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

TOP OF MONUMENT IS:	<input checked="" type="checkbox"/> FLUSH
METERS/FEET	ABOVE GROUND
METERS/FEET	BELOW GROUND

Bare Earth Point / Nail

AERIAL TARGET		PHOTO I.D.
PUB. BENCH MARK	<input checked="" type="checkbox"/>	NEW CONTROL
PUB. CONTROL		BASE STATION

PHOTO





GPS CONTROL SURVEY
FIELD DATA SHEET

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_17
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_18
Proj. No.: 27135

STATE MI

COUNTY Wexford

QUAD: Hoxeyville

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15

Northing	4891071.54	Elevation	
Easting	607929.37		354.84

RECEIVER S/N 05510893

	ObsA	Obs B
SESSIONS	DATE: 06/21/16	
STATIC	DAY OF YEAR 173	

	Obs A	ObsB	
START TIME	12:14		U.T.C.
END TIME	12:44		LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	FIXED HGT

Bare Earth Point / Nail

ANTENNA

RADIUS (M)		
Antenna Serial #		
Antenna Type	LEIGS15	Leica Integrated Antenna

TOP OF MONUMENT IS:	<input checked="" type="checkbox"/>	FLUSH
METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

AERIAL TARGET		PHOTO I.D.
PUB. BENCH MARK	<input checked="" type="checkbox"/>	NEW CONTROL
PUB. CONTROL		BASE STATION





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_18
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_19
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE MI **COUNTY** Lake **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4888301.78	Elevation	
Easting	613430.08		384.63

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

		ObsA	Obs B
SESSIONS	DATE:	06/16/16	06/16/16
VRS and STATIC	DAY OF YEAR	168	168

	Obs A	ObsB		U.T.C.
START TIME	17:15	17:15		
END TIME	17:48	17:18	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	Leiat15	Leica Integrated Antenna	

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters		
MEASURED	X	FIXED HGT	

TOP OF MONUMENT IS: X FLUSH

METERS/FEET		ABOVE GROUND
METERS/FEET		BELOW GROUND

Bare Earth Point / Nail

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

PHOTO





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: BE_19
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:





Urban Area Point Log Sheets



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: UA_01
Proj. No.: 27135

STATE MI **COUNTY** Wexford **QUAD:** Axin

OPERATOR W. Neville

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL Leica GS15
RECEIVER S/N 05510893

Northing	4892812.84	Elevation	371.58
Easting	610380.59		

SESSIONS	DATE:	06/20/16	ObsA	Obs B
STATIC	DAY OF YEAR	172		

START TIME	16:22	ObsA	ObsB	U.T.C.
END TIME	16:53		X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT.

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Urban Area Point / Nail

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

PHOTO

PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: UA_01
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:



PHOTO:



PHOTO:



Tall Weeds Point Log Sheets



**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake LiDAR

POINT ID: **TW_01**
Proj. No.: **27135**

STATE: **MI** COUNTY: **Lake** QUAD: **Hoxeyville**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

RECEIVER MODEL: **Leica GS15**
RECEIVER S/N: **05510893**

Northing	4887424.47	Elevation	319.69
Easting	605848.90		

SESSIONS	DATE:	ObsA	Obs B
VRS	DAY OF YEAR	169	169

	Obs A	ObsB		U.T.C.
START TIME	15:53	15:59		
END TIME	15:56	16:02	X	LOCAL

ANTENNA HEIGHT (SLANT)

MTRS/FT	
MEASURED	FIXED HGT.

ANTENNA HEIGHT (ARP)

MTRS/FT	1.800 Meters
MEASURED	X FIXED HGT

ANTENNA

RADIUS (M)			
Antenna Serial #			
Antenna Type	LEIGS15	Leica Integrated Antenna	

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

Tall Weed Point / Nail

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

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
2

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: TW_01
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:



PHOTO:

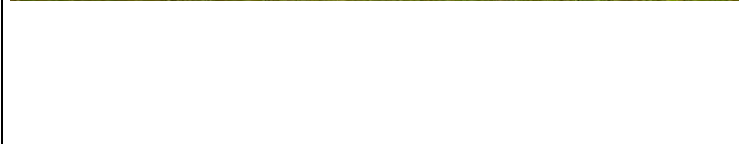
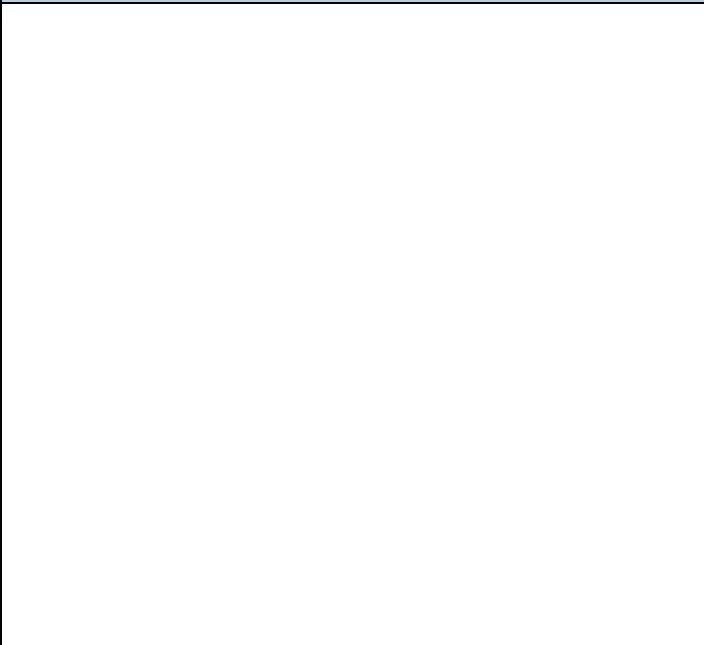


PHOTO:



PHOTO:





Forest Point Log Sheets



**GPS OFFSET CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
1

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **FO_01**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **Hoxeyville**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4889397.97	Elevation	
Easting	607475.90		349.64

INSTRUMENT: Total Station
MODEL: Leica TCR1103

SESSIONS	DATE:	ObsA	Obs B
TOPO	06/22/16	06/22/16	
	DAY OF YEAR	174	174

	Obs A	ObsB	
INSTR	CA_01	CA_01	U.T.C.
BACK SIGHT	BE_02	BE_02	LOCAL

INSTRUMENT HEIGHT

MTRS/FT	1.597
<input checked="" type="checkbox"/> MEASURED	<input type="checkbox"/> FIXED HGT.

ANTENNA

RADIUS (M)	N/A
Antenna Serial #	N/A
Antenna Type	N/A

FORE SIGHT HEIGHT

MTRS/FT	1.800 Meters
<input type="checkbox"/> MEASURED	<input checked="" type="checkbox"/> FIXED HGT

TOP OF MONUMENT IS: FLUSH

METERS/FEET	<input type="checkbox"/> ABOVE GROUND
METERS/FEET	<input type="checkbox"/> BELOW GROUND

Forest Point / Nail

<input type="checkbox"/> AERIAL TARGET	<input type="checkbox"/> PHOTO I.D.
<input type="checkbox"/> PUB. BENCH MARK	<input checked="" type="checkbox"/> NEW CONTROL
<input type="checkbox"/> PUB. CONTROL	<input type="checkbox"/> BASE STATION

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: FO_01
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO:



**GPS OFFSET CONTROL SURVEY
FIELD DATA SHEET**

PAGE:
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523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **FO_02**
Proj. No.: **27135**

STATE: **MI** COUNTY: **Lake** QUAD: **Axin**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4888404.33	Elevation	374.29
Easting	614376.89		

INSTRUMENT: Total Station
MODEL: Leica TCR1103

SESSIONS	DATE:	ObsA	Obs B
TOPO	06/22/16	06/22/16	
	DAY OF YEAR	174	174

	Obs A	ObsB	
INSTR	CA_04	CA_04	U.T.C.
BACK SIGHT	BE_04	BE_04	LOCAL

INSTRUMENT HEIGHT

MTRS/FT	1.606
<input checked="" type="checkbox"/> MEASURED	<input type="checkbox"/> FIXED HGT.

ANTENNA

RADIUS (M)	N/A
Antenna Serial #	N/A
Antenna Type	N/A

FORE SIGHT HEIGHT

MTRS/FT	1.800 Meters
<input type="checkbox"/> MEASURED	<input checked="" type="checkbox"/> FIXED HGT

TOP OF MONUMENT IS: FLUSH

METERS/FEET	<input type="checkbox"/> ABOVE GROUND
METERS/FEET	<input type="checkbox"/> BELOW GROUND

Forest Point / Nail

<input type="checkbox"/> AERIAL TARGET	<input type="checkbox"/> PHOTO I.D.
<input type="checkbox"/> PUB. BENCH MARK	<input checked="" type="checkbox"/> NEW CONTROL
<input type="checkbox"/> PUB. CONTROL	<input type="checkbox"/> BASE STATION

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: FO_02
Proj. No.: 27135

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Lexington, KY 40503
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PHOTO:



PHOTO:

PHOTO:



**GPS OFFSET CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **FO_03**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **Axin**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4893451.01	Elevation	400.33
Easting	613507.28		

INSTRUMENT: Total Station
MODEL: Leica TCR1103

SESSIONS	DATE:	ObsA	Obs B
TOPO	06/22/16	06/22/16	
	DAY OF YEAR	174	174

	Obs A	ObsB	
INSTR	BE_06	BE_06	U.T.C.
BACK SIGHT	CA_06	CA_06	LOCAL

INSTRUMENT HEIGHT

MTRS/FT	1.57
<input checked="" type="checkbox"/> MEASURED	<input type="checkbox"/> FIXED HGT.

ANTENNA

RADIUS (M)	N/A
Antenna Serial #	N/A
Antenna Type	N/A

FORE SIGHT HEIGHT

MTRS/FT	1.800 Meters
<input type="checkbox"/> MEASURED	<input checked="" type="checkbox"/> FIXED HGT

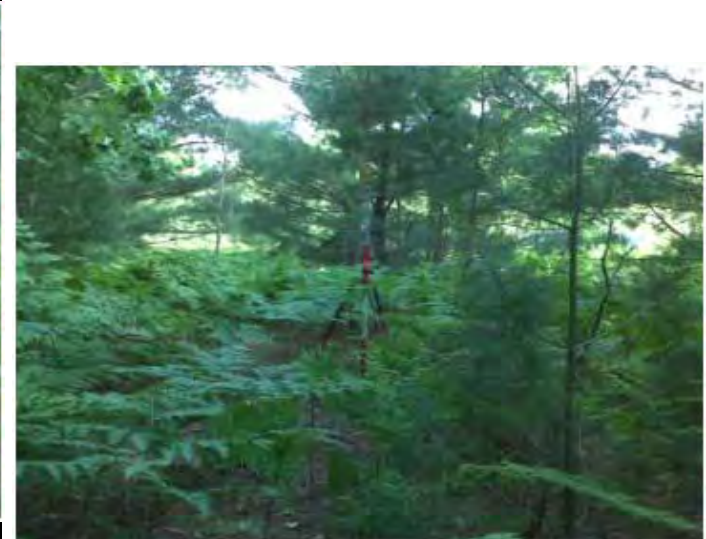
TOP OF MONUMENT IS: FLUSH

METERS/FEET	<input type="checkbox"/> ABOVE GROUND
METERS/FEET	<input type="checkbox"/> BELOW GROUND

Forest Point / Nail

<input type="checkbox"/> AERIAL TARGET	<input type="checkbox"/> PHOTO I.D.
<input type="checkbox"/> PUB. BENCH MARK	<input checked="" type="checkbox"/> NEW CONTROL
<input type="checkbox"/> PUB. CONTROL	<input type="checkbox"/> BASE STATION

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: FO_03
Proj. No.: 27135

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PHOTO:

PHOTO:



PHOTO:

PHOTO:



**GPS OFFSET CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: **FO_04**
Proj. No.: **27135**

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

STATE: **MI** COUNTY: **Lake** QUAD: **Hoxeyville**

OPERATOR: **W. Neville**

NAD83(2011) UTM 16N NAVD88 AVERAGED POSITION Meters

Northing	4892624.12	Elevation	
Easting	605663.24		343.15

INSTRUMENT: Total Station
MODEL: Leica TCR1103

SESSIONS	DATE:	ObsA	Obs B
TOPO	06/22/16	06/22/16	
	DAY OF YEAR	174	174

	Obs A	ObsB	
INSTR	CA_08	CA_08	U.T.C.
BACK SIGHT	BE_08	BE_08	LOCAL

INSTRUMENT HEIGHT

MTRS/FT	1.585
<input checked="" type="checkbox"/> MEASURED	<input type="checkbox"/> FIXED HGT.

ANTENNA

RADIUS (M)	N/A
Antenna Serial #	N/A
Antenna Type	N/A

FORE SIGHT HEIGHT

MTRS/FT	1.800 Meters
<input type="checkbox"/> MEASURED	<input checked="" type="checkbox"/> FIXED HGT.

TOP OF MONUMENT IS: FLUSH

METERS/FEET	<input type="checkbox"/> ABOVE GROUND
METERS/FEET	<input type="checkbox"/> BELOW GROUND

Forest Point / Nail

<input type="checkbox"/> AERIAL TARGET	<input type="checkbox"/> PHOTO I.D.
<input type="checkbox"/> PUB. BENCH MARK	<input checked="" type="checkbox"/> NEW CONTROL
<input type="checkbox"/> PUB. CONTROL	<input type="checkbox"/> BASE STATION

PHOTO: PHOTO:





**GPS CONTROL SURVEY
FIELD DATA SHEET**

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JOB REFERENCE
MI_Olga Lake_LiDAR

POINT ID: FO_04
Proj. No.: 27135

523 Wellington Way, Suite 375
Lexington, KY 40503
859-277-8700 voice 859-277-8901 fax

PHOTO:

PHOTO:



PHOTO:

PHOTO: