



North Carolina Department of Public Safety

Emergency Management

Roy Cooper, Governor
Erik A. Hooks, Secretary

Michael A. Sprayberry, Director

Aerial Imagery Quality Control Report – Eastern Piedmont 2017 Project

The North Carolina Geodetic Survey (NCGS) performed a horizontal quality control (QC) survey of aerial imagery collected in twenty-six (26) North Carolina counties. The purpose of the QC survey was to test the horizontal accuracy of the aerial imagery collected as part of the 2017 Eastern Piedmont Project, which is funded by the NC 911 Board.

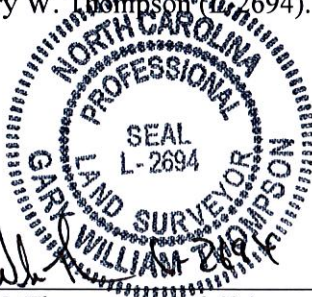
NCGS contracted private surveying firms to collect the horizontal QC test points and submit a report, which are on file at NCGS. Each of these firms provided a signed and sealed report to NCGS that included all the data they collected under the responsible charge of a North Carolina licensed Professional Surveyor.

In addition to the contractor collected QC test points, NCGS personnel, who were under the supervision of Joe H. Scott, Jr. (L-3254), collected supplemental QC test points using the following Global Navigation Satellite System (GNSS) survey parameters:

Class of survey:	Class A (horizontal) Class C (vertical)
Horizontal accuracy:	0.02 meters (0.06USft) at the 95% confidence level
Vertical accuracy:	0.04 meters (0.13USft) at the 95% confidence level
Type of field procedure used:	North Carolina Real-Time Network (NCRTN)
Dates of survey:	September 18, 2017 – December 20, 2017
Horizontal datum/epoch	North American Datum 83 (2011) epoch 2010.0
Vertical datum/epoch	North American Vertical Datum of 1988 (NAVD88)
Public fixed control used:	North Carolina Continuously Operating Reference Station Network (CORS) and North Carolina Real-Time Network (NCRTN)
Geoid model:	Geoid 12 B
Combined grid factor:	See included control spreadsheet
Units:	US Survey Feet

The attached report contains the results of the horizontal QC surveys conducted by the contractors and the supplemental QC surveys conducted by NCGS personnel. The review of the field data and generation of the final QC report were performed under the supervision of Gary W. Thompson (L-2694).


 Joe H. Scott, Jr. L-3254
 Date 12-29-2018


 Gary W. Thompson L-2694
 Date 4/12/18

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This report contains the horizontal Quality Control (QC) reports for the following counties:

- Bladen
- Chatham
- Cumberland
- Durham
- Edgecombe
- Franklin
- Granville
- Halifax
- Harnett
- Hoke
- Johnston
- Lee
- Moore
- Nash
- Northampton
- Orange
- Person
- Richmond
- Robeson
- Sampson
- Scotland
- Vance
- Wake
- Warren
- Wayne
- Wilson

2017 Orthoimagery Statistics Summary

NAD 83/2011 US Survey Feet

County	MinΔX:	MinΔY:	MaxΔX:	MaxΔY:	MeanΔX	MeanΔY	RmseX:	RmseY:	RmseH:	CE90:	CE95:	CI:	No.Obs.:	NSSDA:			
Bladen	-0.781	-0.846	1.042	0.846	-0.079	-0.007	0.379	0.397	0.549	0.831	0.947	0.097	61	0.950			
Chatham	-0.911	-0.977	1.172	0.326	0.223	-0.090	0.451	0.304	0.544	0.740	0.844	0.094	52	0.942			
Cumberland	-0.260	-0.977	1.042	0.977	0.397	-0.262	0.486	0.448	0.661	0.698	0.797	0.093	47	1.144			
Durham	-0.391	-0.716	0.781	0.716	0.229	0.121	0.385	0.338	0.512	0.680	0.775	0.102	37	0.886			
Edgecombe	-1.172	-1.107	0.911	0.846	-0.182	-0.290	0.531	0.524	0.745	1.013	1.155	0.134	48	1.290			
Franklin	-0.911	-0.977	1.302	1.237	0.207	0.188	0.540	0.485	0.726	1.026	1.170	0.131	51	1.257			
Granville	-0.911	-0.456	0.651	1.237	0.128	0.184	0.354	0.372	0.514	0.708	0.807	0.086	56	0.889			
Halifax	-1.432	-0.846	0.521	1.107	-0.288	-0.055	0.495	0.467	0.680	0.938	1.070	0.119	52	1.178			
Harnett	0.000	-0.846	0.911	0.716	0.422	-0.111	0.475	0.342	0.586	0.588	0.671	0.080	45	1.014			
Hoke	-0.521	-1.367	1.302	0.326	0.306	-0.237	0.470	0.396	0.615	0.731	0.834	0.093	51	1.064			
Johnston	-1.302	-0.586	0.651	0.716	0.002	0.061	0.345	0.283	0.446	0.672	0.767	0.079	60	0.772			
Lee	-1.302	-1.107	0.781	0.586	0.114	-0.065	0.410	0.377	0.557	0.832	0.949	0.120	40	0.965			
Moore	-0.781	-0.846	1.223	0.747	0.241	-0.100	0.432	0.429	0.609	0.841	0.959	0.107	52	1.055			
Nash	-0.651	-1.367	1.042	0.846	0.145	-0.106	0.443	0.503	0.670	0.984	1.122	0.116	60	1.159			
Northampton	-1.172	-0.586	0.651	0.977	-0.317	0.168	0.565	0.398	0.691	0.898	1.025	0.118	48	1.197			
Orange	-0.911	-0.977	1.042	0.846	-0.008	-0.125	0.486	0.393	0.625	0.932	1.062	0.123	48	1.082			
Person	-0.521	-0.716	0.911	0.846	0.227	0.166	0.403	0.387	0.559	0.742	0.846	0.105	42	0.967			
Richmond	-0.260	-0.977	0.911	0.195	0.318	-0.334	0.414	0.436	0.601	0.591	0.674	0.080	45	1.041			
Robeson	0.000	-0.977	0.911	0.195	0.438	-0.295	0.489	0.387	0.624	0.507	0.579	0.059	62	1.080			
Sampson	-0.651	-0.586	0.521	0.586	-0.015	0.074	0.309	0.289	0.423	0.636	0.726	0.074	61	0.732			
Scotland	-0.781	-0.903	0.781	0.456	0.296	-0.305	0.448	0.430	0.621	0.693	0.790	0.092	47	1.074			
Vance	-0.911	-0.586	1.302	1.866	0.214	0.520	0.505	0.743	0.898	1.071	1.221	0.141	48	1.555			
Wake	-0.521	-0.846	0.781	0.456	0.085	0.050	0.304	0.243	0.389	0.573	0.654	0.068	60	0.674			
Warren	-0.781	-1.367	0.911	1.237	-0.133	-0.065	0.431	0.623	0.758	1.117	1.274	0.152	45	1.311			
Wayne	-0.781	-0.716	0.651	0.456	0.037	-0.009	0.297	0.274	0.404	0.617	0.704	0.087	42	0.699			
Wilson	-0.651	-0.456	0.781	1.367	0.027	0.174	0.284	0.380	0.475	0.674	0.769	0.094	43	0.822			
County-Wide Average													0.428	0.410	0.892	0.102	1.031



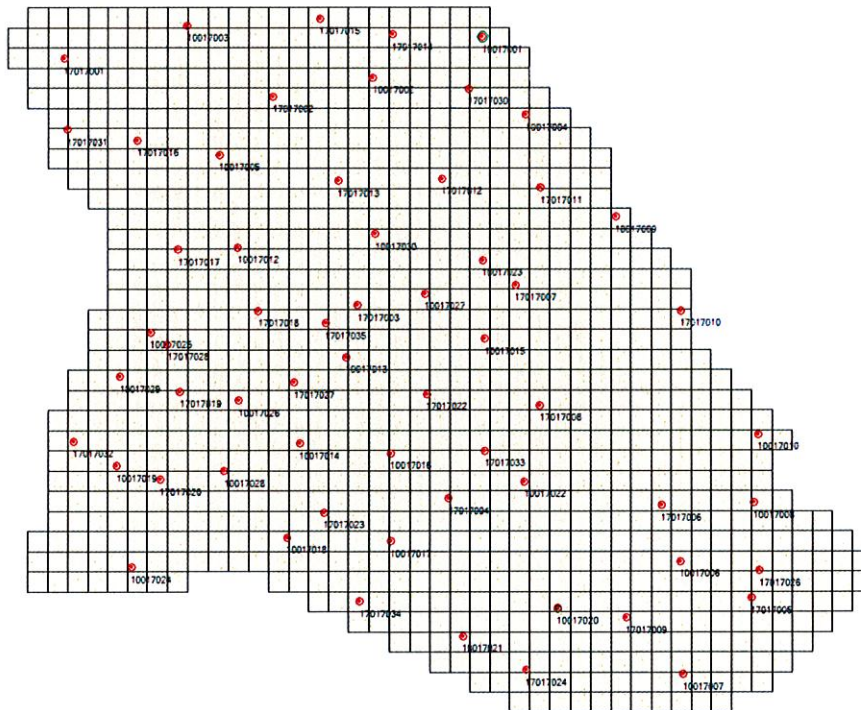
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 1/29/2018 Finish: 1/29/2018

Metadata Information

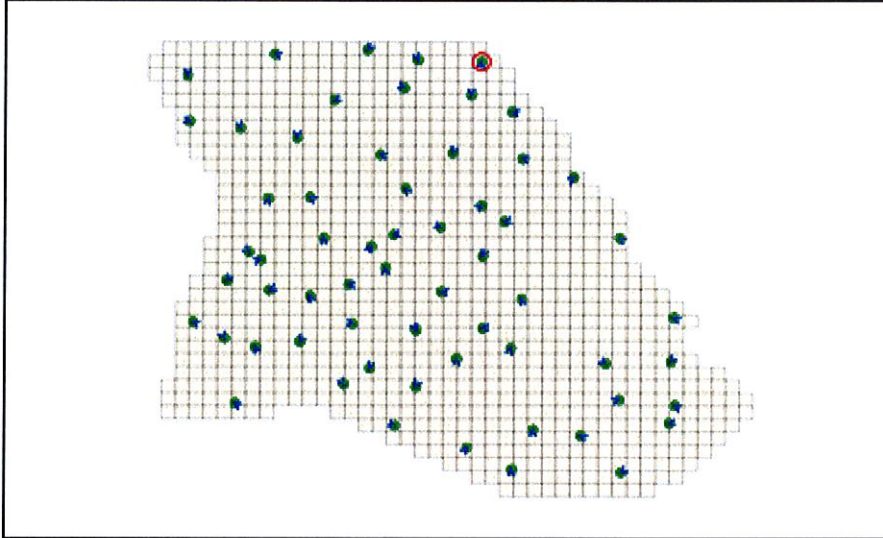
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of Matching Images: 1014
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Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



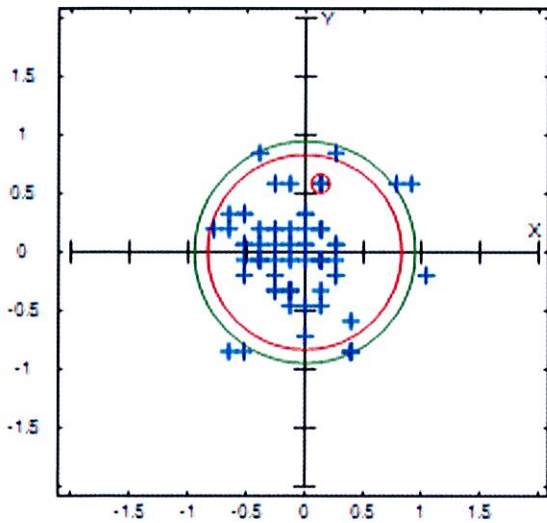


Vector Offset



Scaling Factor: 200

Circular Error

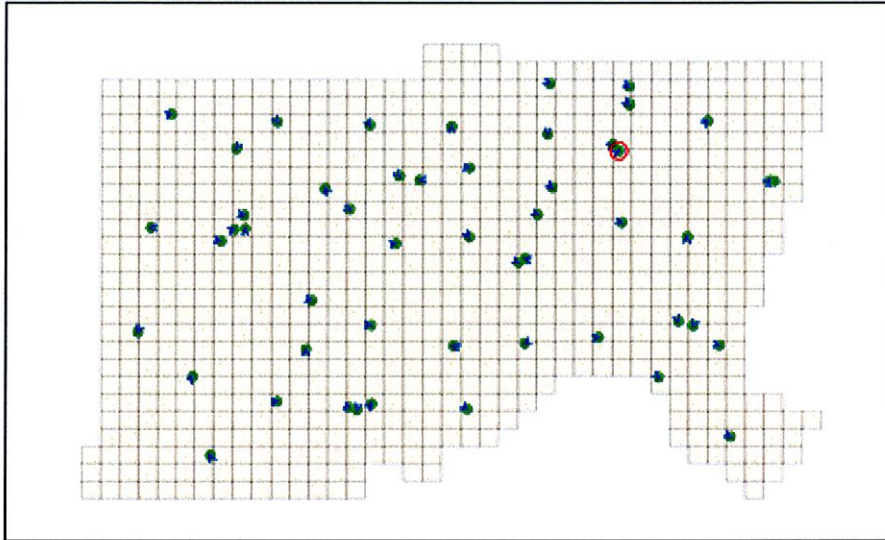


Error Statistics

Min ΔX :	-0.781
Min ΔY :	-0.846
Max ΔX :	1.042
Max ΔY :	0.846
Mean ΔX :	-0.079
Mean ΔY :	-0.007
RmseX:	0.379
RmseY:	0.397
RmseH:	0.549
NSSDA:	0.95
No. Obs.:	61
CE 90:	0.831
CE 95:	0.947
CI:	0.097

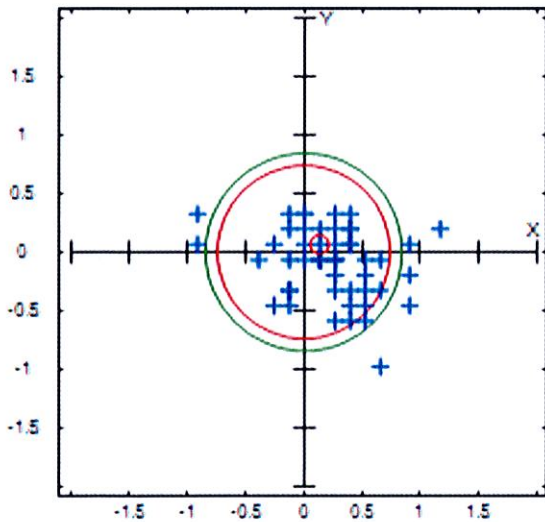


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.911
Min ΔY :	-0.977
Max ΔX :	1.172
Max ΔY :	0.326
Mean ΔX :	0.223
Mean ΔY :	-0.09
RmseX:	0.451
RmseY:	0.304
RmseH:	0.544
NSSDA:	0.942
No. Obs.:	52
CE 90:	0.74
CE 95:	0.844
CI:	0.094



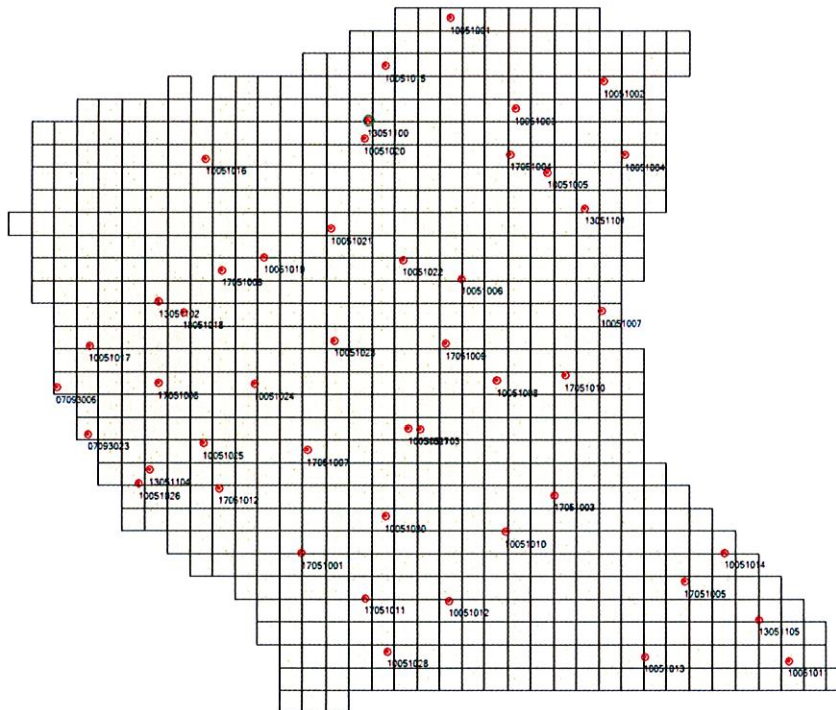
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 1/30/2018 Finish: 1/30/2018

Metadata Information

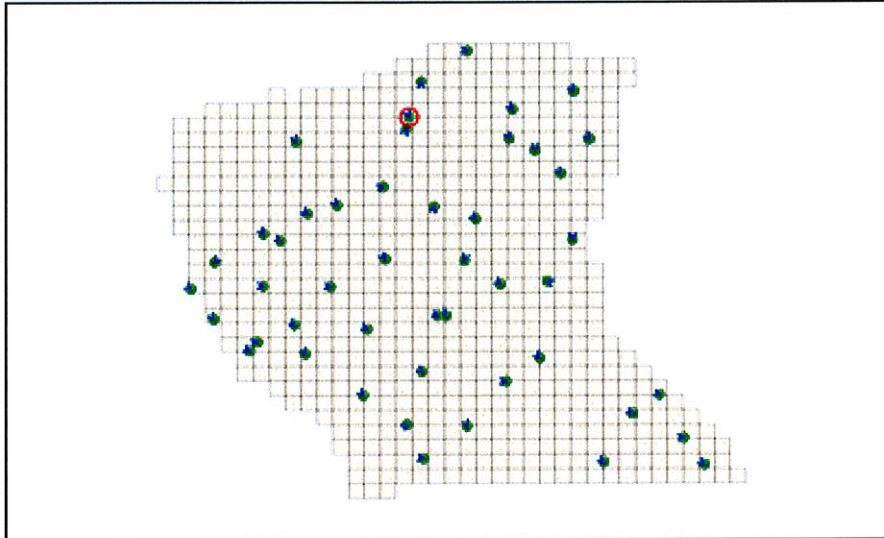
Index File Name: cumberland_files.shp
of Polygons: 735
of Matching Images: 735
Polygon ID: file_name
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Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



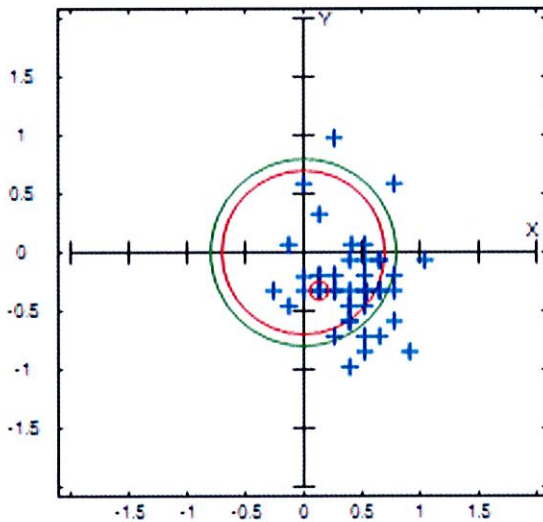


Vector Offset



Scaling Factor: 200

Circular Error

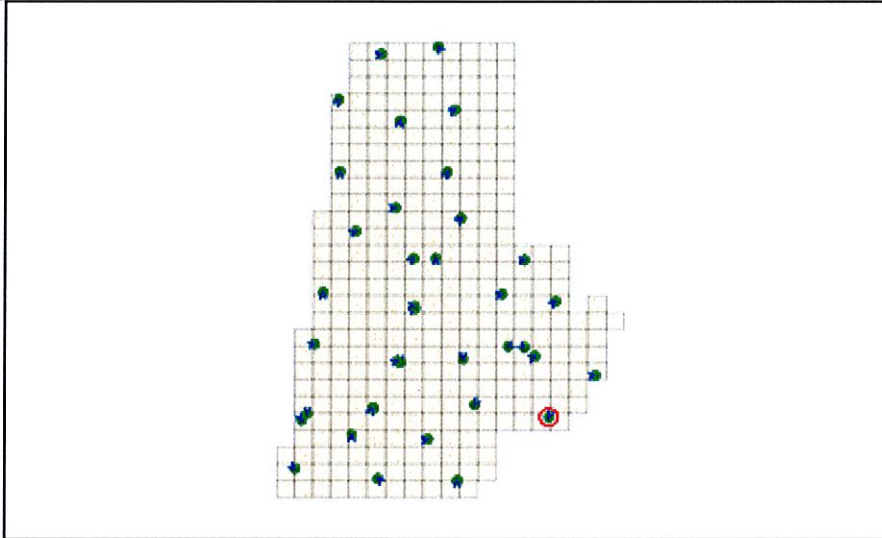


Error Statistics

Min ΔX :	-0.26
Min ΔY :	-0.977
Max ΔX :	1.042
Max ΔY :	0.977
Mean ΔX :	0.397
Mean ΔY :	-0.262
RmseX:	0.486
RmseY:	0.448
RmseH:	0.661
NSSDA:	1.144
No. Obs.:	47
CE 90:	0.698
CE 95:	0.797
CI:	0.093

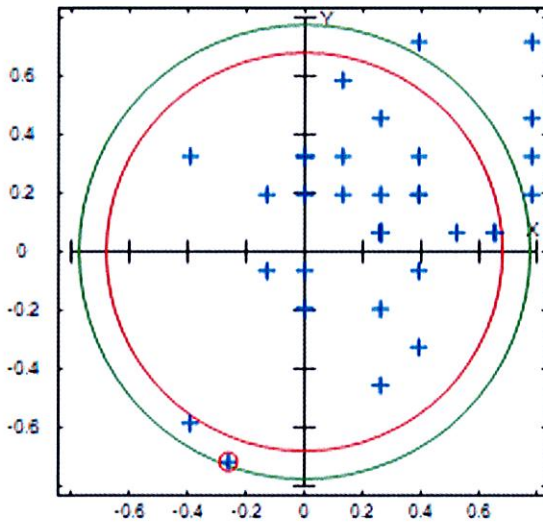


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.391
Min ΔY :	-0.716
Max ΔX :	0.781
Max ΔY :	0.716
Mean ΔX :	0.229
Mean ΔY :	0.121
RmseX:	0.385
RmseY:	0.338
RmseH:	0.512
NSSDA:	0.886
No. Obs.:	37
CE 90:	0.68
CE 95:	0.775
CI:	0.102



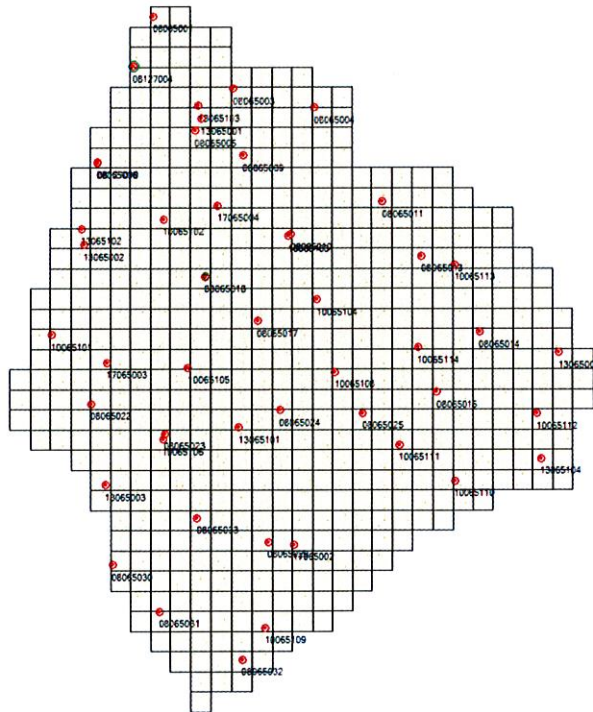
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 2/20/2018 Finish: 2/20/2018

Metadata Information

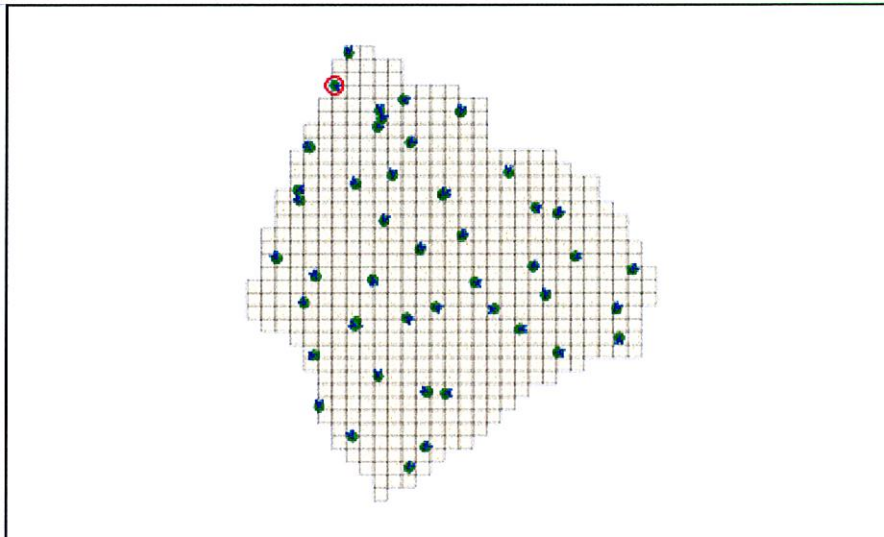
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of Matching Images: 590
Polygon ID: file_name
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Scaling Used: 1:25050

Tiled-Image Area



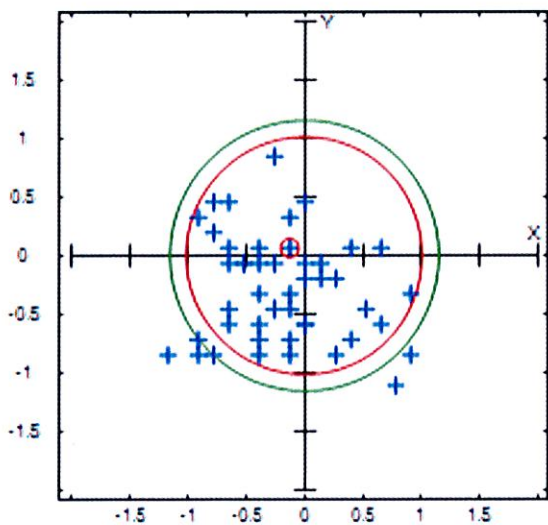


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.172
Min ΔY :	-1.107
Max ΔX :	0.911
Max ΔY :	0.846
Mean ΔX :	-0.182
Mean ΔY :	-0.29
RmseX:	0.531
RmseY:	0.524
RmseH:	0.745
NSSDA:	1.29
No. Obs.:	48
CE 90:	1.013
CE 95:	1.155
CI:	0.134



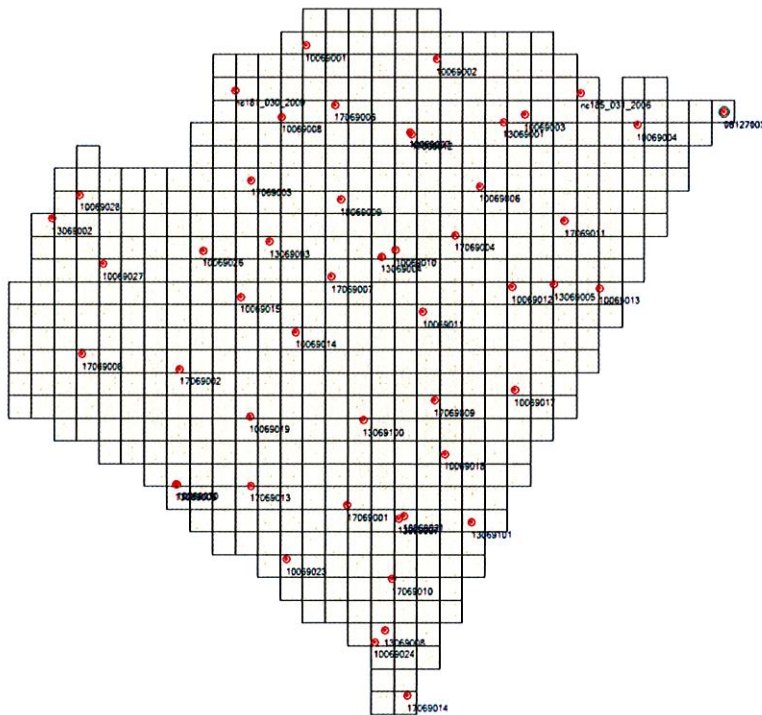
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/13/2017 Finish: 12/13/2017

Metadata Information

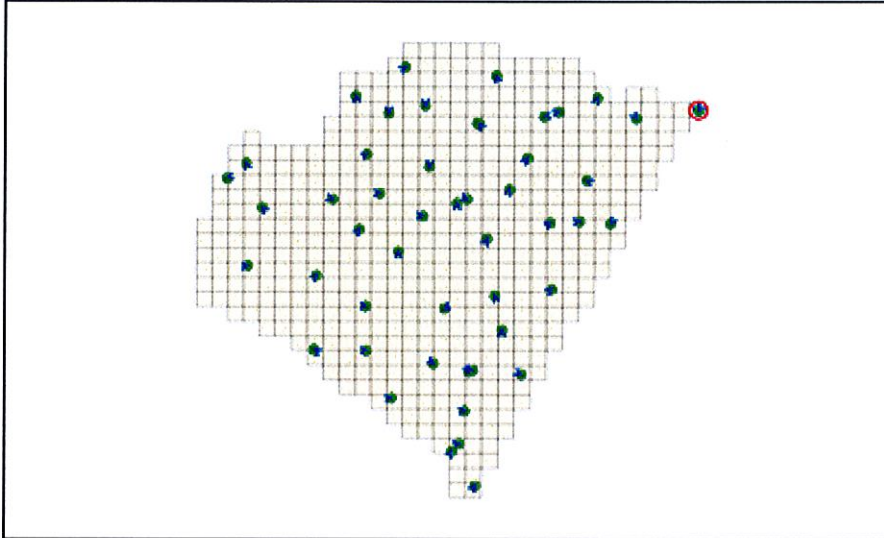
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Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



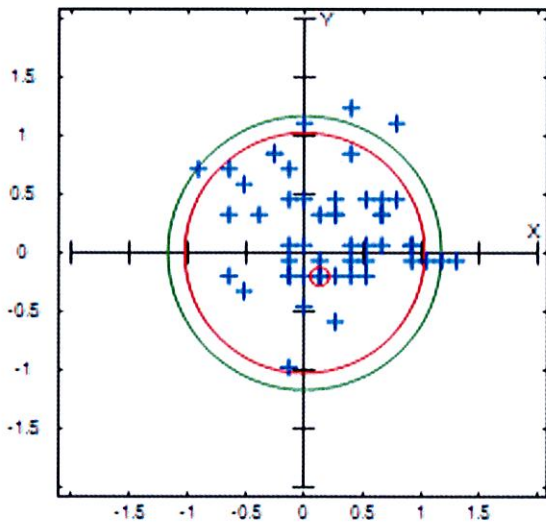


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.911
Min ΔY :	-0.977
Max ΔX :	1.302
Max ΔY :	1.237
Mean ΔX :	0.207
Mean ΔY :	0.188
RmseX:	0.54
RmseY:	0.485
RmseH:	0.726
NSSDA:	1.257
No. Obs.:	51
CE 90:	1.026
CE 95:	1.17
CI:	0.131



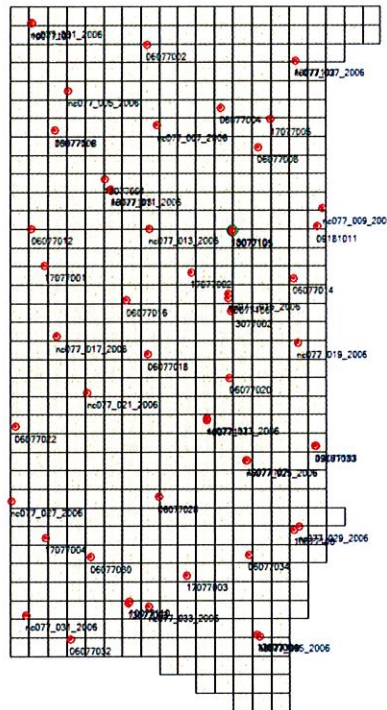
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/13/2017 Finish: 12/13/2017

Metadata Information

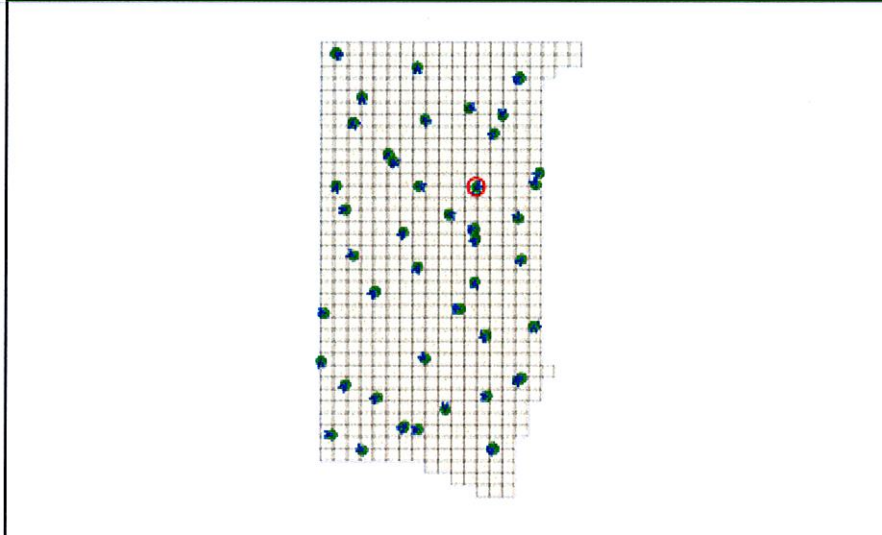
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of Matching Images: 611
Polygon ID: file_name
Units: Feet
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Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



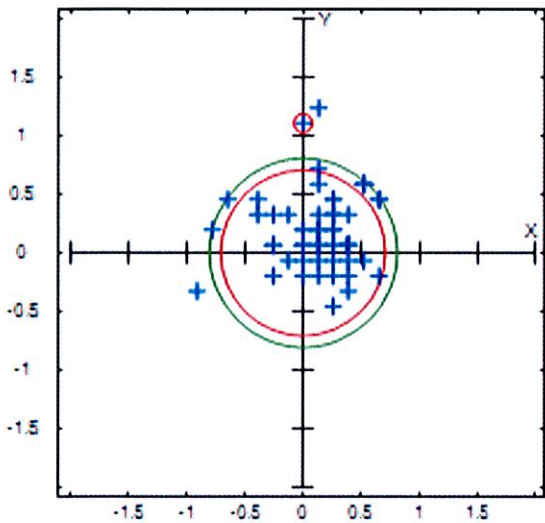


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.911
Min ΔY :	-0.456
Max ΔX :	0.651
Max ΔY :	1.237
Mean ΔX :	0.128
Mean ΔY :	0.184
RmseX:	0.354
RmseY:	0.372
RmseH:	0.514
NSSDA:	0.889
No. Obs.:	56
CE 90:	0.708
CE 95:	0.807
CI:	0.086



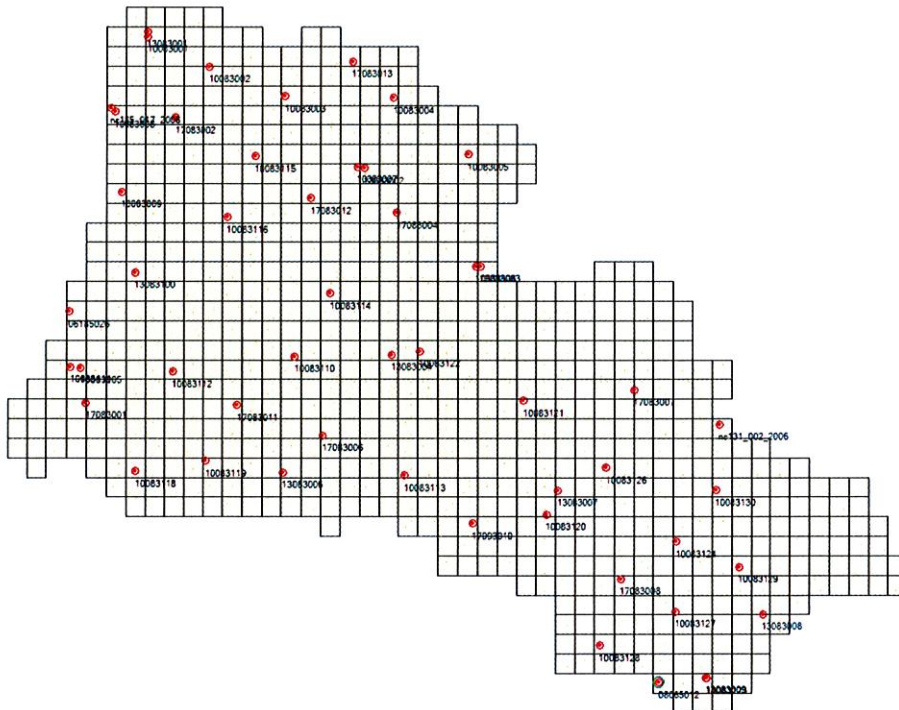
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 2/20/2018 Finish: 2/20/2018

Metadata Information

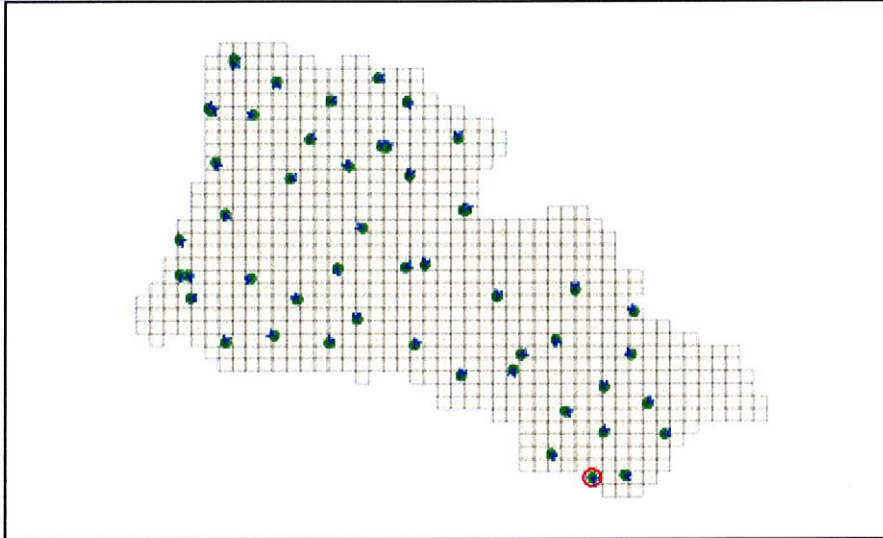
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Polygon ID: file_name
Units: Feet
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Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



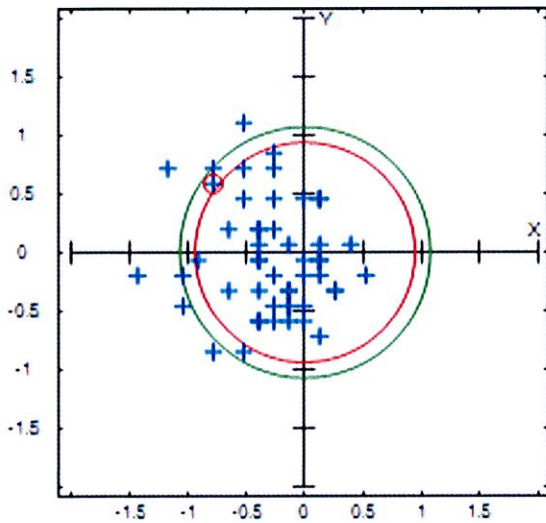


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.432
Min ΔY :	-0.846
Max ΔX :	0.521
Max ΔY :	1.107
Mean ΔX :	-0.288
Mean ΔY :	-0.055
RmseX:	0.495
RmseY:	0.467
RmseH:	0.68
NSSDA:	1.178
No. Obs.:	52
CE 90:	0.938
CE 95:	1.07
CI:	0.119



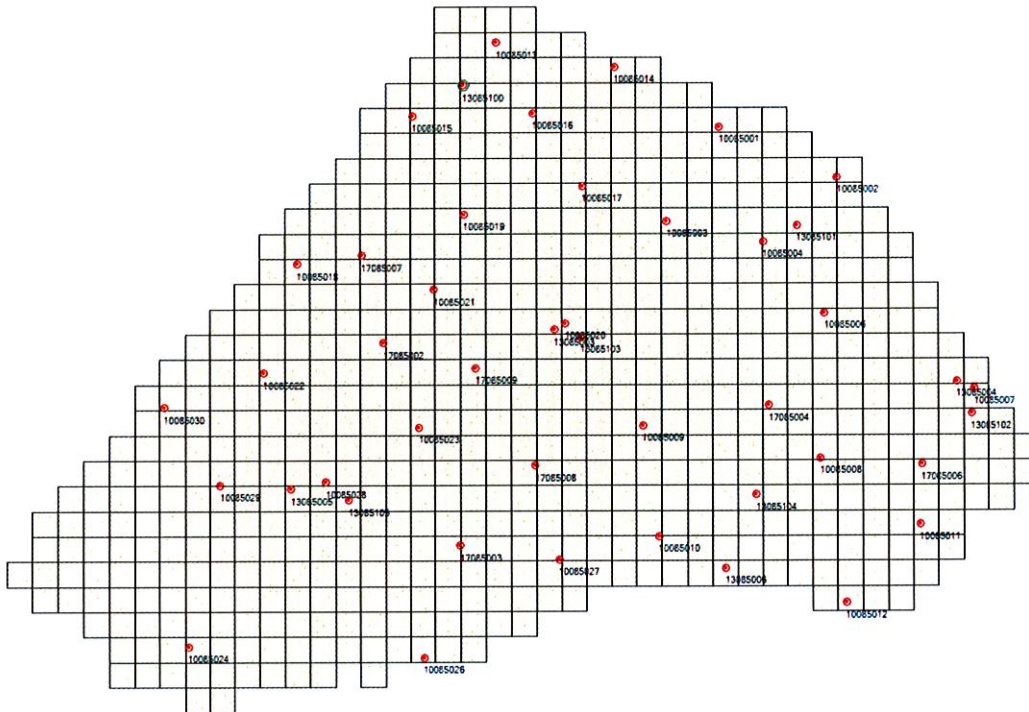
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/13/2017 Finish: 12/13/2017

Metadata Information

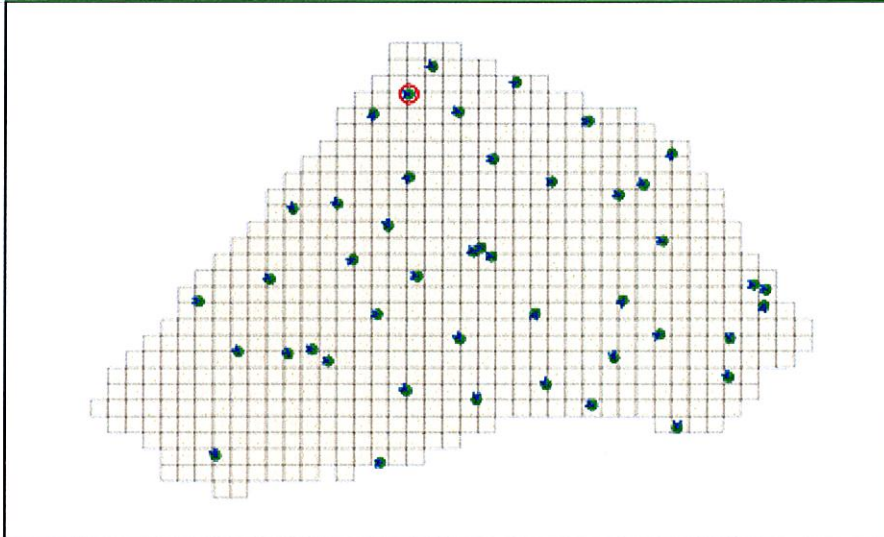
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Scaling Used: 1:25050

Tiled-Image Area



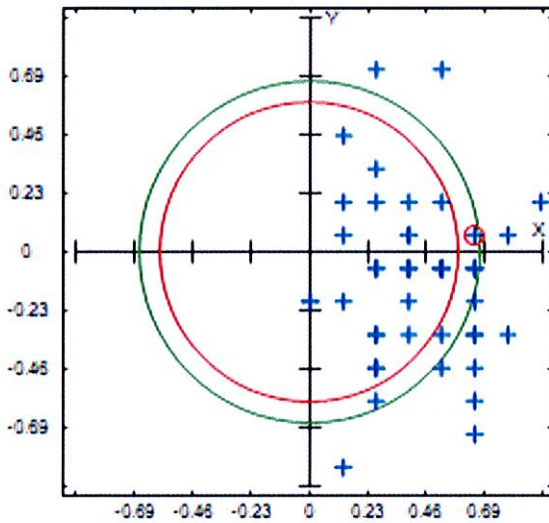


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	0
Min ΔY :	-0.846
Max ΔX :	0.911
Max ΔY :	0.716
Mean ΔX :	0.422
Mean ΔY :	-0.111
RmseX:	0.475
RmseY:	0.342
RmseH:	0.586
NSSDA:	1.014
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CE 90:	0.588
CE 95:	0.671
CI:	0.08



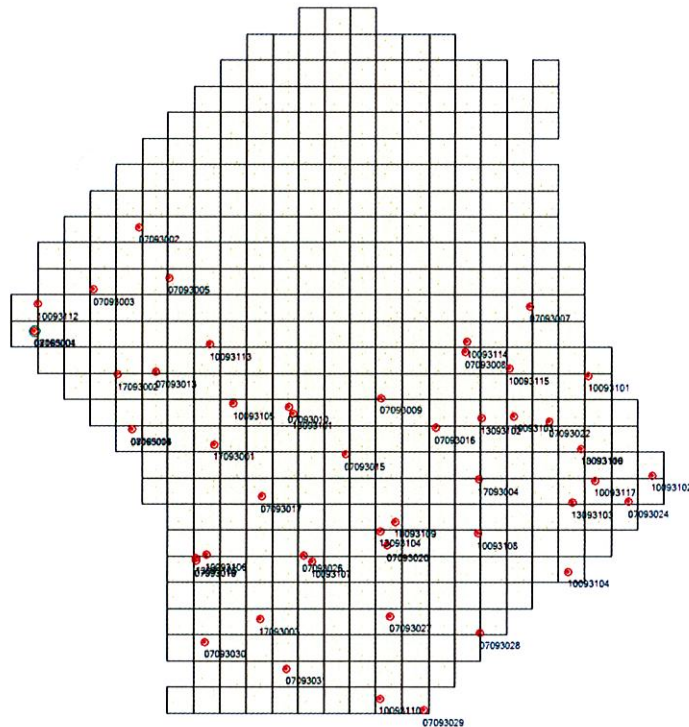
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Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 12/12/2017 Finish: 12/12/2017

Metadata Information

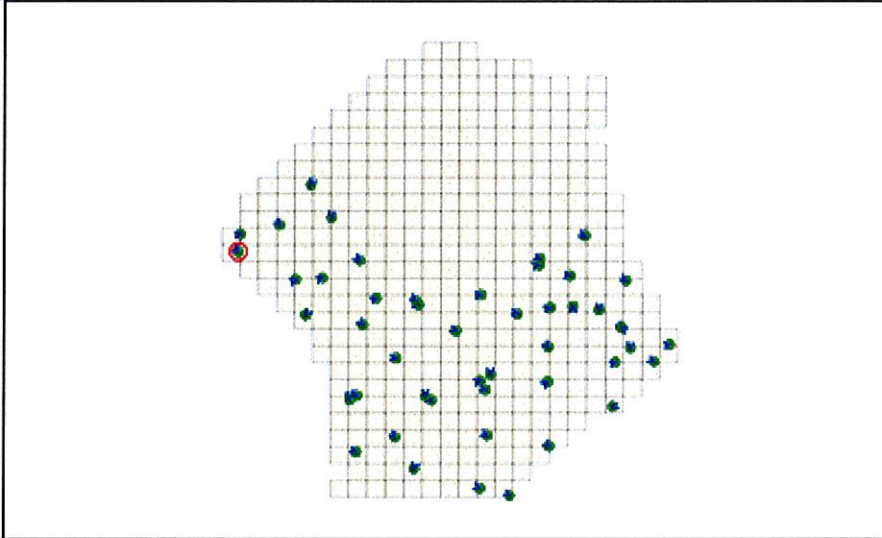
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Scaling Used: 1:25050

Tiled-Image Area



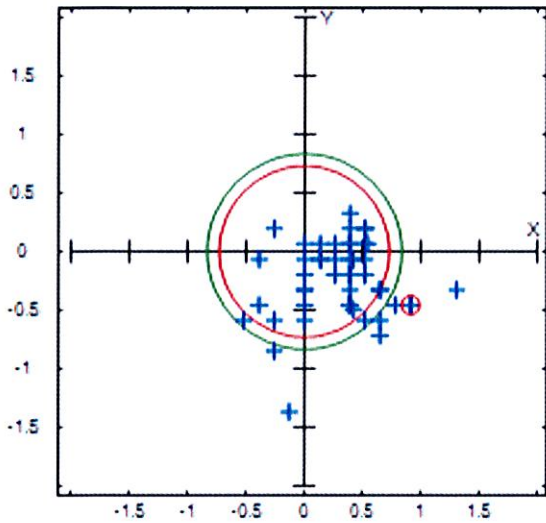


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.521
Min ΔY :	-1.367
Max ΔX :	1.302
Max ΔY :	0.326
Mean ΔX :	0.306
Mean ΔY :	-0.237
RmseX:	0.47
RmseY:	0.396
RmseH:	0.615
NSSDA:	1.064
No. Obs.:	51
CE 90:	0.731
CE 95:	0.834
CI:	0.093



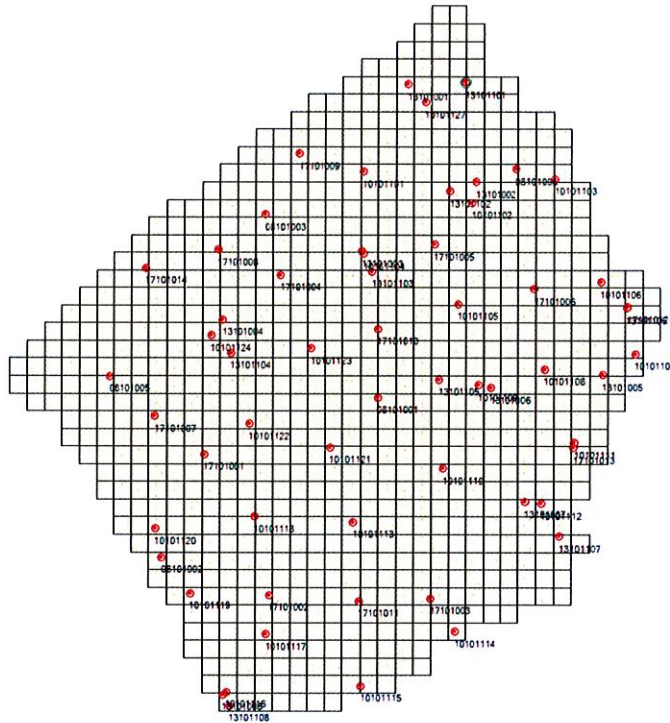
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/13/2017 Finish: 12/13/2017

Metadata Information

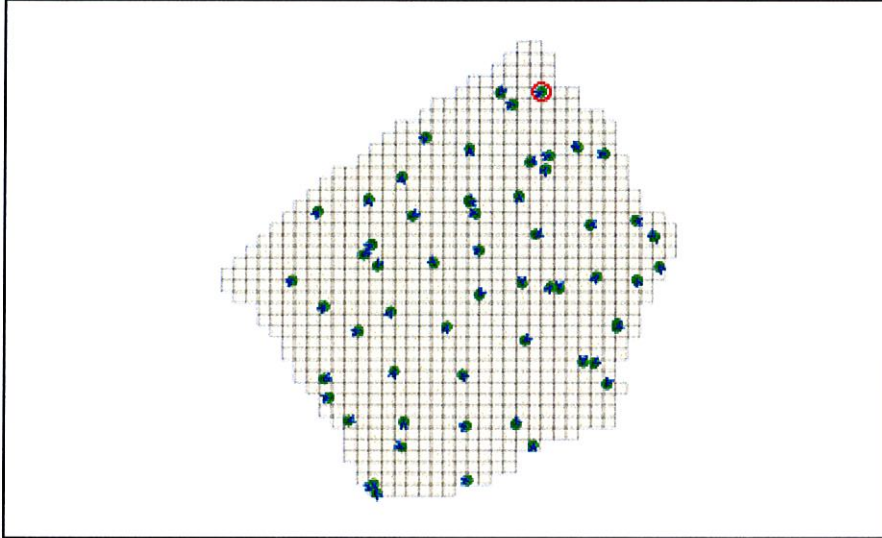
Index File Name: johnston_files.shp
of Polygons: 888
of Matching Images: 888
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_Imagery\Johnston2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



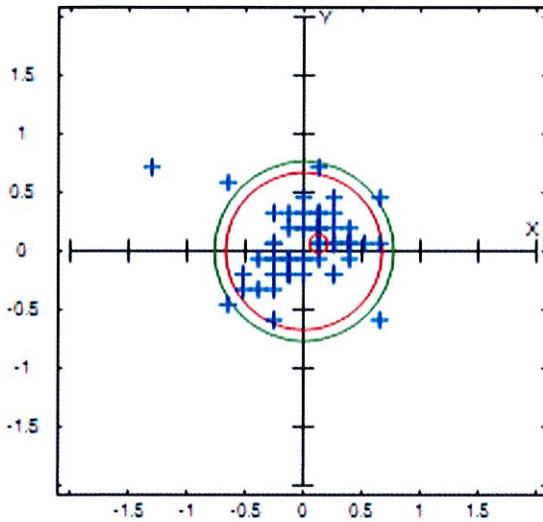


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.302
Min ΔY :	-0.586
Max ΔX :	0.651
Max ΔY :	0.716
Mean ΔX :	0.002
Mean ΔY :	0.061
RmseX:	0.345
RmseY:	0.283
RmseH:	0.446
NSSDA:	0.772
No. Obs.:	60
CE 90:	0.672
CE 95:	0.767
CI:	0.079



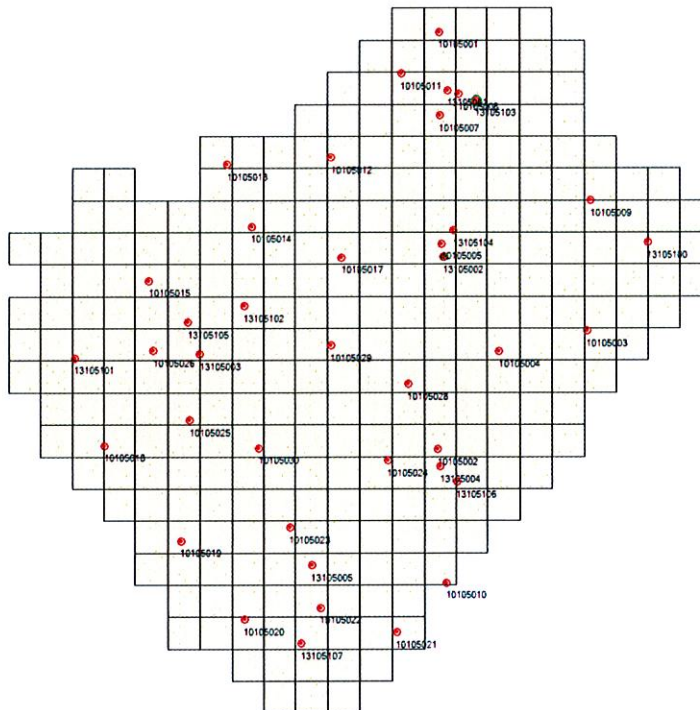
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 2/1/2018 Finish: 2/1/2018

Metadata Information

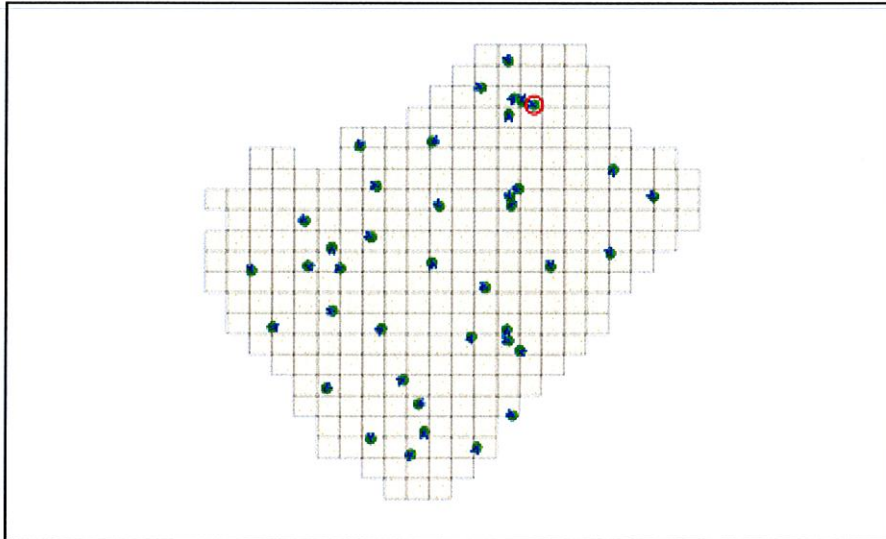
Index File Name: lee_files.shp
of Polygons: 289
of Matching Images: 289
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_Imagery\Lee2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



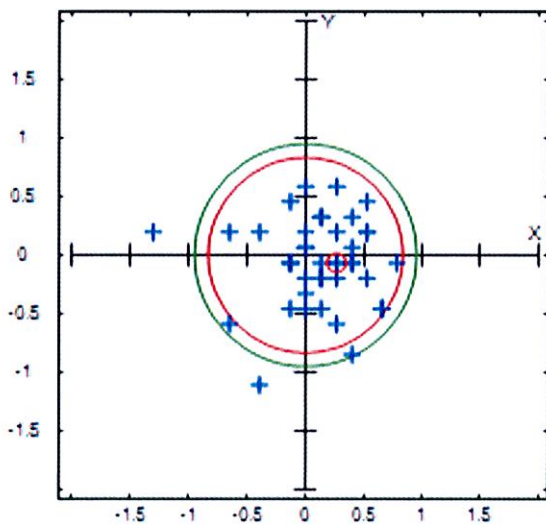


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.302
Min ΔY :	-1.107
Max ΔX :	0.781
Max ΔY :	0.586
Mean ΔX :	0.114
Mean ΔY :	-0.065
RmseX:	0.41
RmseY:	0.377
RmseH:	0.557
NSSDA:	0.965
No. Obs.:	40
CE 90:	0.832
CE 95:	0.949
CI:	0.12



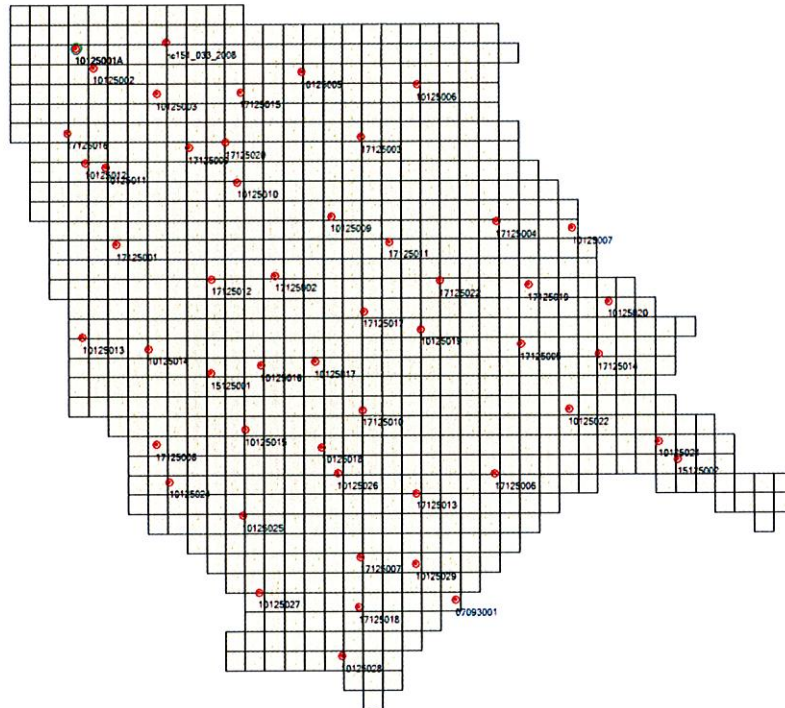
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 1/30/2018 Finish: 1/30/2018

Metadata Information

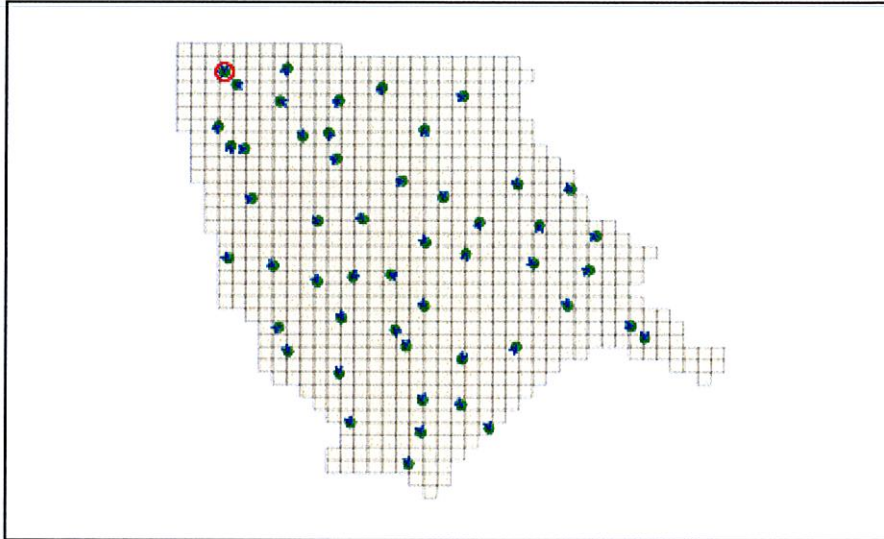
Index File Name: moore_files.shp
of Polygons: 830
of Matching Images: 830
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\Moore2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



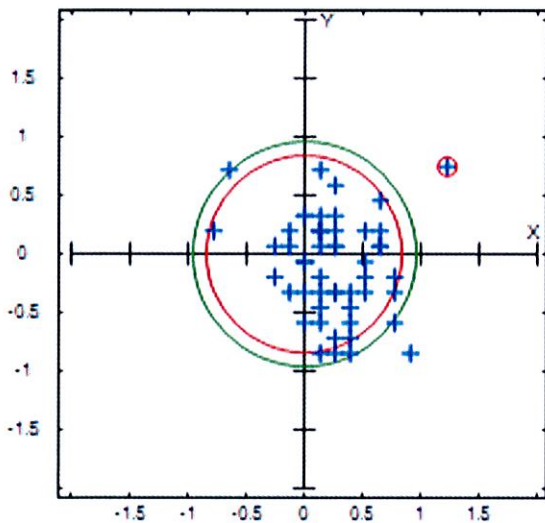


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.781
Min ΔY :	-0.846
Max ΔX :	1.223
Max ΔY :	0.747
Mean ΔX :	0.241
Mean ΔY :	-0.1
RmseX:	0.432
RmseY:	0.429
RmseH:	0.609
NSSDA:	1.055
No. Obs.:	52
CE 90:	0.841
CE 95:	0.959
CI:	0.107



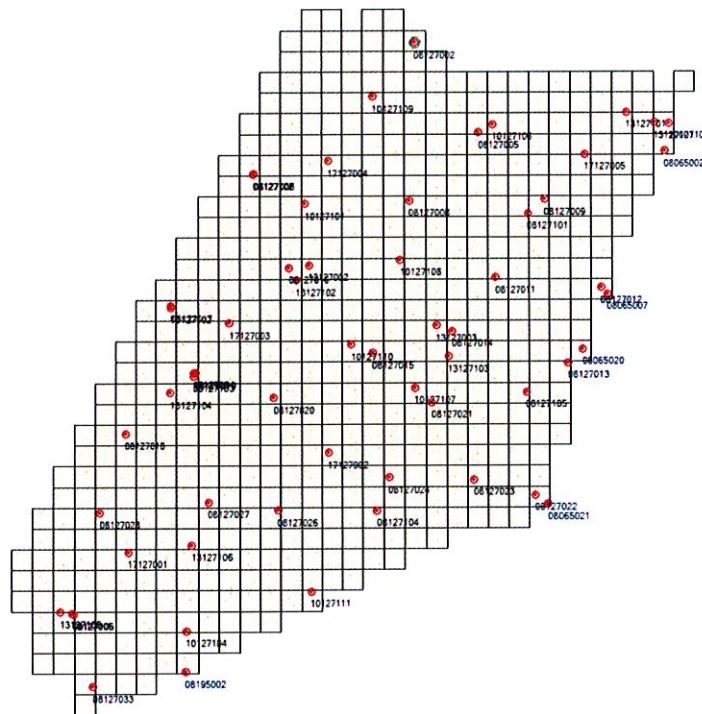
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 2/20/2018 Finish: 2/20/2018

Metadata Information

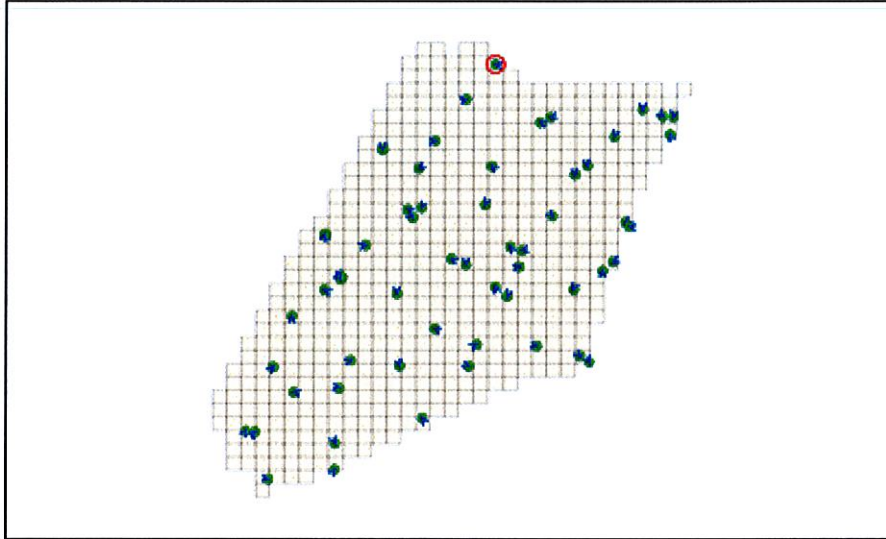
Index File Name: nash_tiles.shp
of Polygons: 609
of Matching Images: 609
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\NASH2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



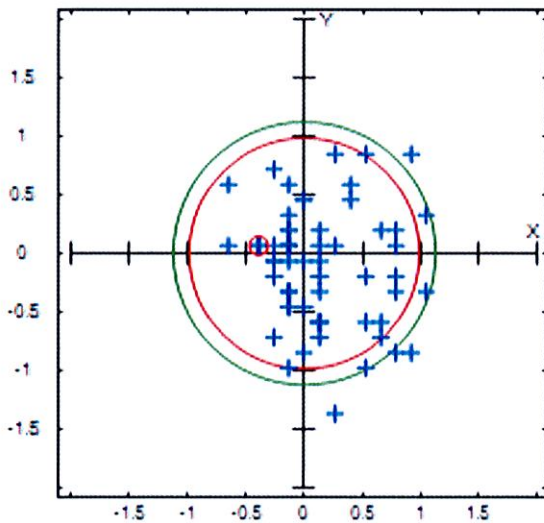


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.651
Min ΔY :	-1.367
Max ΔX :	1.042
Max ΔY :	0.846
Mean ΔX :	0.145
Mean ΔY :	-0.106
RmseX:	0.443
RmseY:	0.503
RmseH:	0.67
NSSDA:	1.159
No. Obs.:	60
CE 90:	0.984
CE 95:	1.122
CI:	0.116



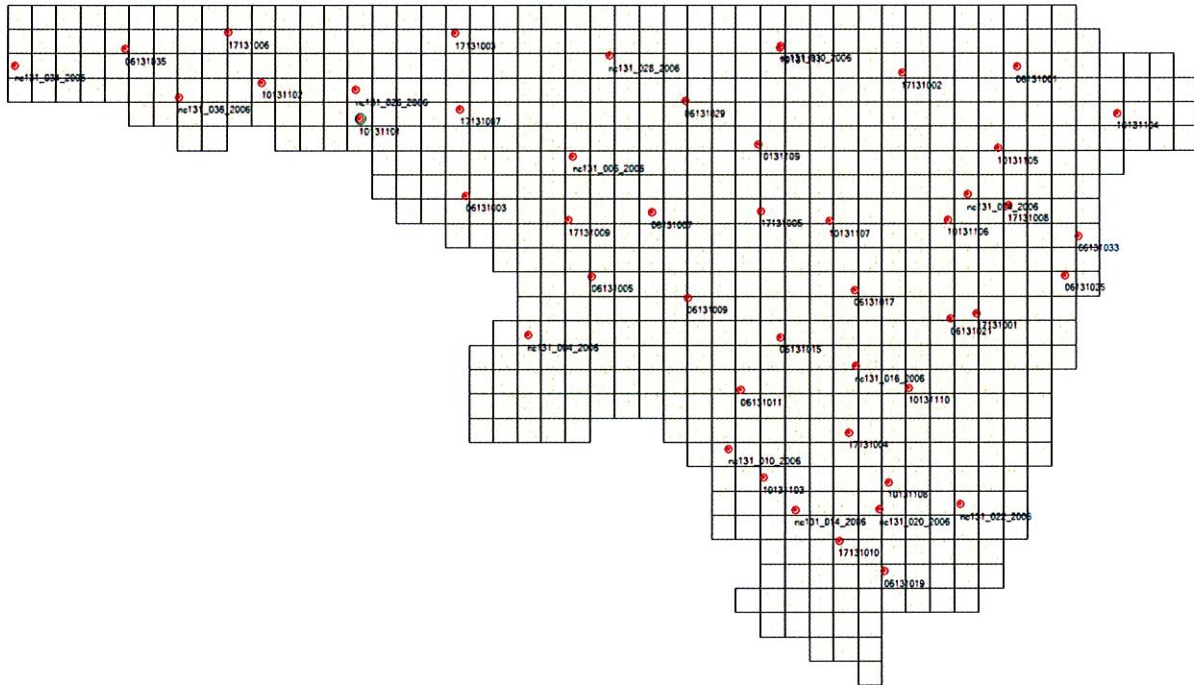
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 2/20/2018 Finish: 2/20/2018

Metadata Information

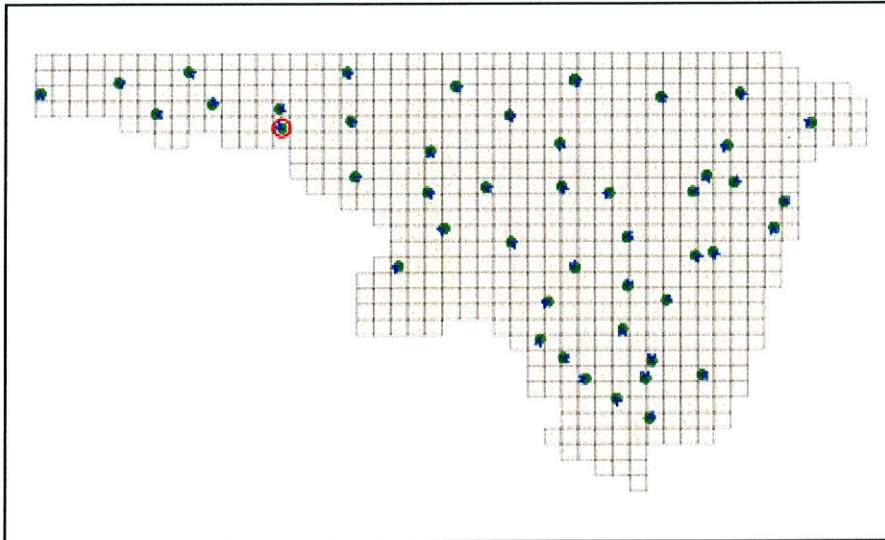
Index File Name: northhampton_tiles.shp
of Polygons: 670
of Matching Images: 670
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\NORTHAMPTON2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



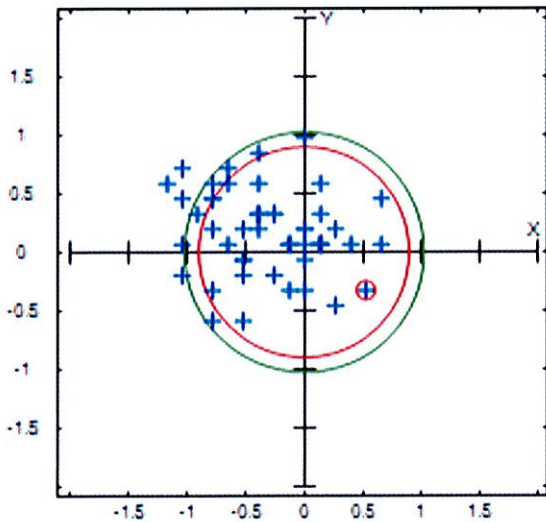


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-1.172
Min ΔY :	-0.586
Max ΔX :	0.651
Max ΔY :	0.977
Mean ΔX :	-0.317
Mean ΔY :	0.168
RmseX:	0.565
RmseY:	0.398
RmseH:	0.691
NSSDA:	1.197
No. Obs.:	48
CE 90:	0.898
CE 95:	1.025
CI:	0.118



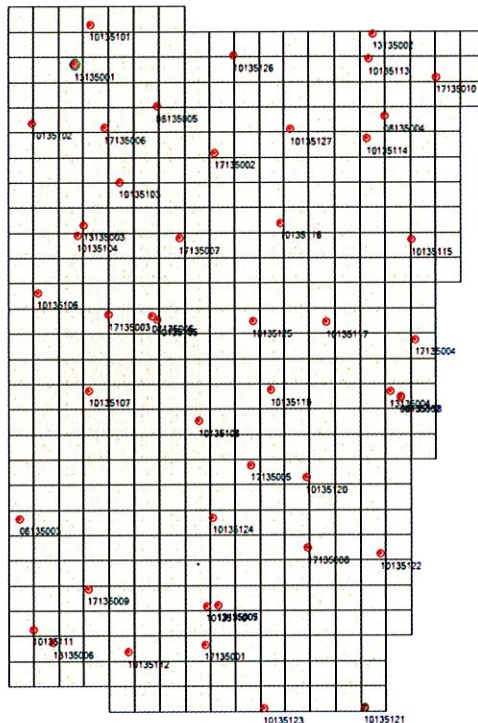
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/12/2017 Finish: 12/12/2017

Metadata Information

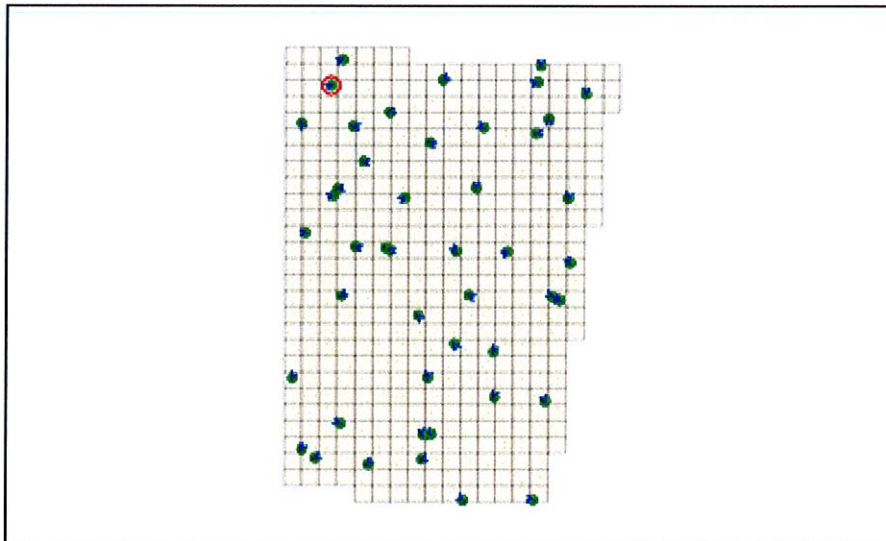
Index File Name: orange_files.shp
of Polygons: 462
of Matching Images: 462
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\Orange2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



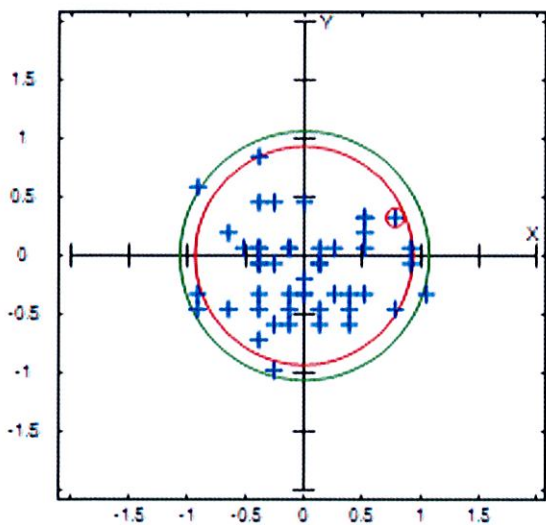


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.911
Min ΔY :	-0.977
Max ΔX :	1.042
Max ΔY :	0.846
Mean ΔX :	-0.008
Mean ΔY :	-0.125
RmseX:	0.486
RmseY:	0.393
RmseH:	0.625
NSSDA:	1.082
No. Obs.:	48
CE 90:	0.932
CE 95:	1.062
CI:	0.123



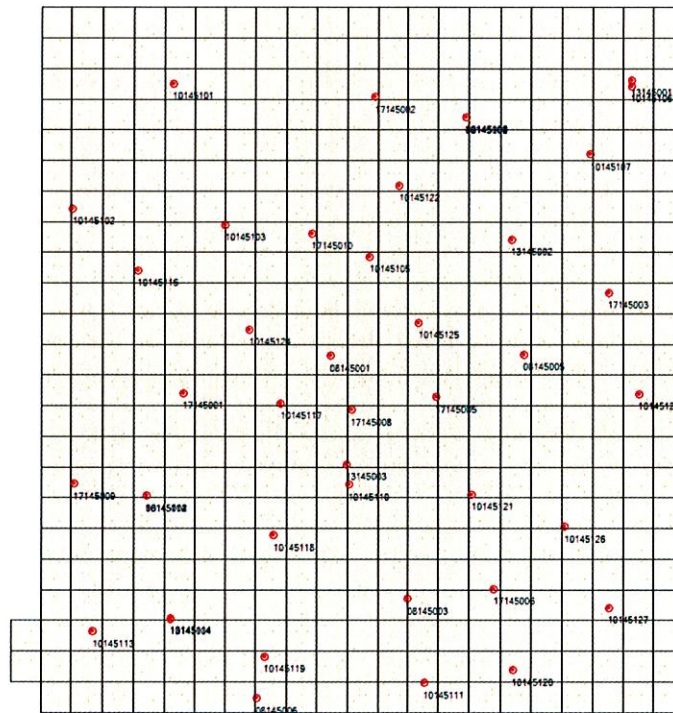
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/8/2017 Finish: 12/8/2017

Metadata Information

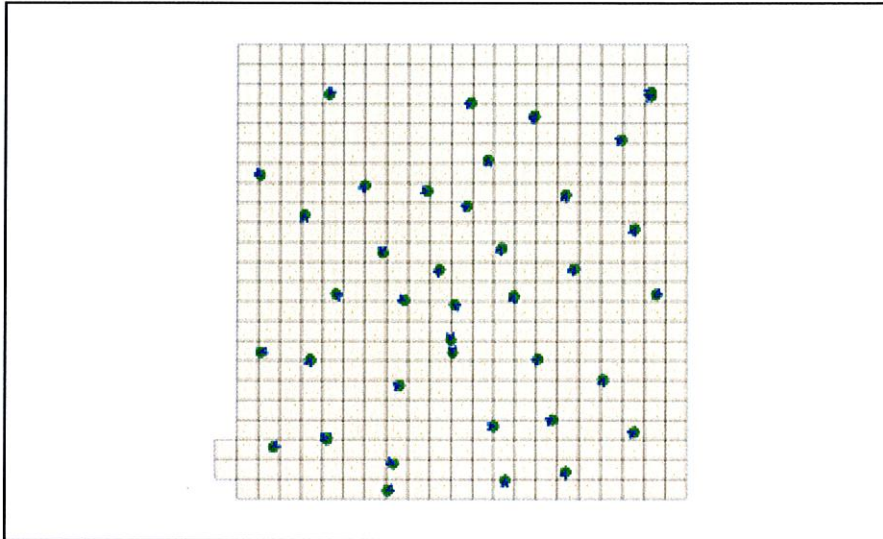
Index File Name: person_files.shp
of Polygons: 485
of Matching Images: 485
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\Person2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



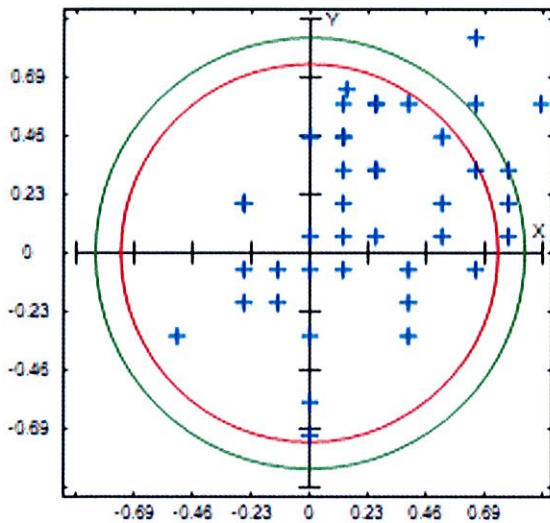


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.521
Min ΔY :	-0.716
Max ΔX :	0.911
Max ΔY :	0.846
Mean ΔX :	0.227
Mean ΔY :	0.166
RmseX:	0.403
RmseY:	0.387
RmseH:	0.559
NSSDA:	0.967
No. Obs.:	42
CE 90:	0.742
CE 95:	0.846
CI:	0.105



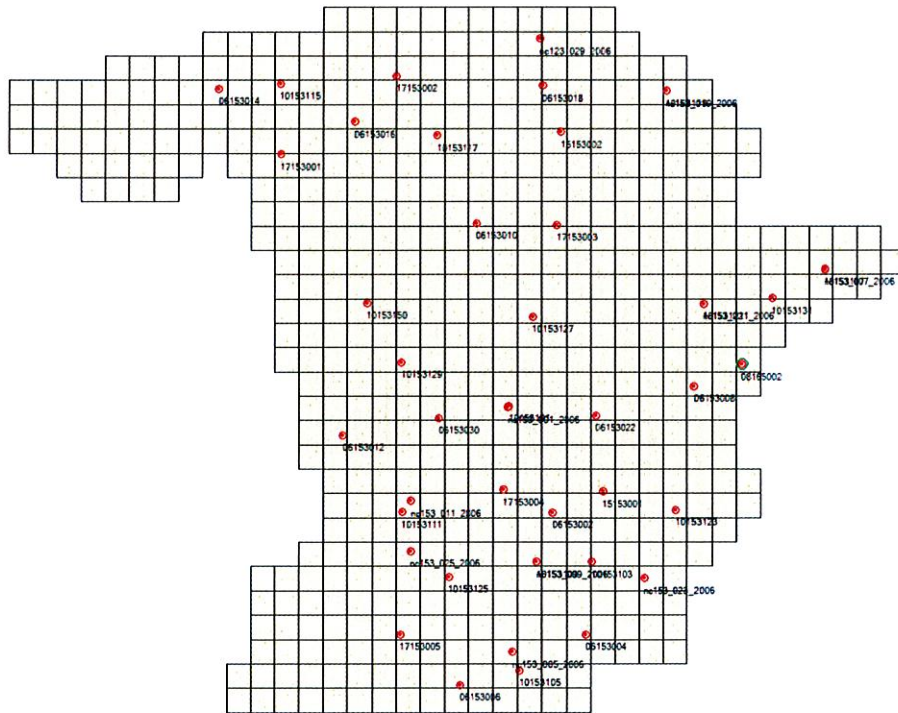
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 1/30/2018 Finish: 1/30/2018

Metadata Information

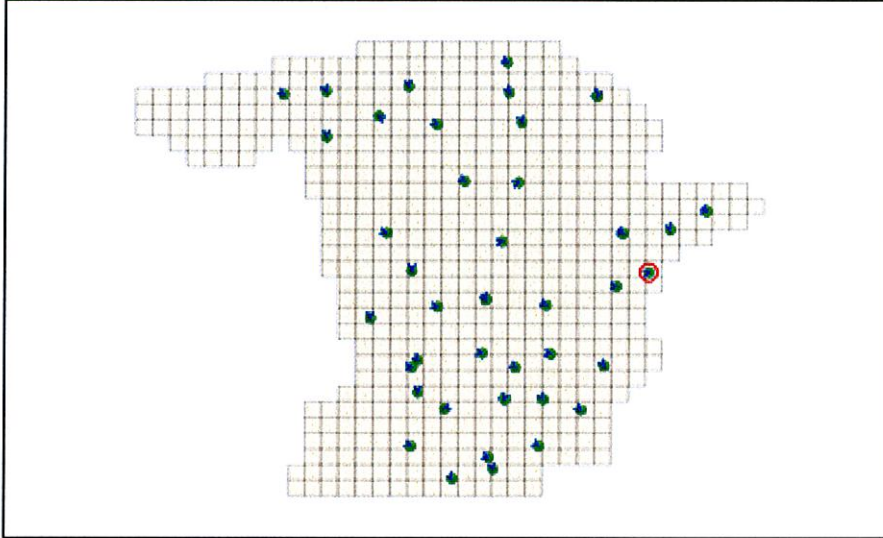
Index File Name: richmond_tiles.shp
of Polygons: 602
of Matching Images: 602
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\Richmond2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



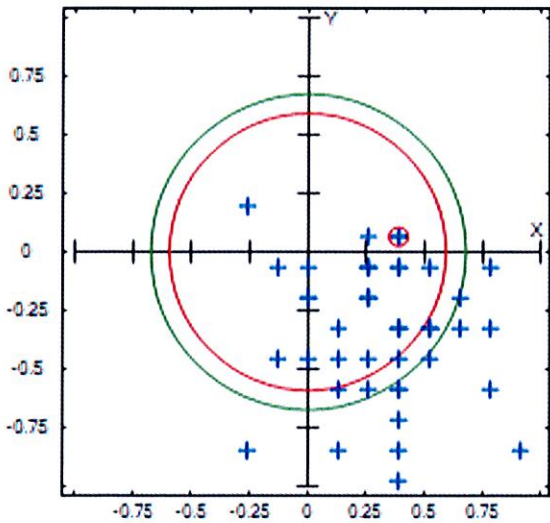


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.26
Min ΔY :	-0.977
Max ΔX :	0.911
Max ΔY :	0.195
Mean ΔX :	0.318
Mean ΔY :	-0.334
RmseX:	0.414
RmseY:	0.436
RmseH:	0.601
NSSDA:	1.041
No. Obs.:	45
CE 90:	0.591
CE 95:	0.674
CI:	0.08



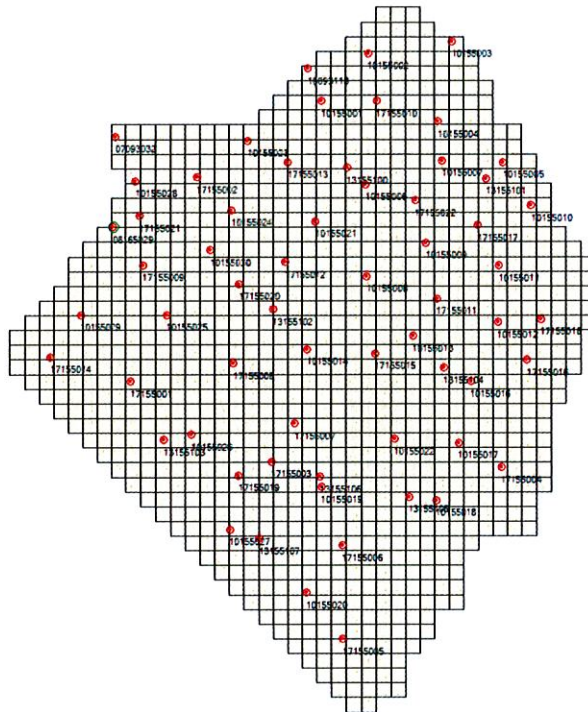
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 1/29/2018 Finish: 1/29/2018

Metadata Information

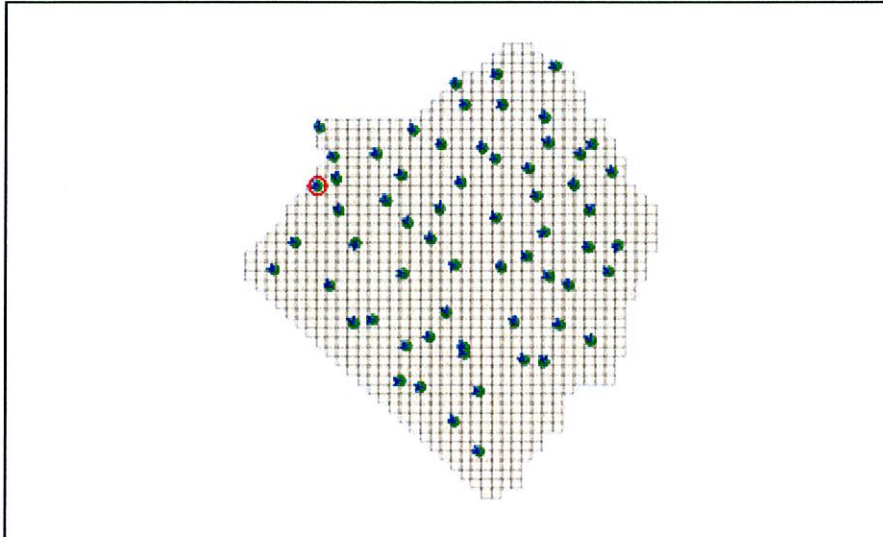
Index File Name: robeson_files.shp
of Polygons: 1133
of Matching Images: 1133
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_Imagery\Robeson2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



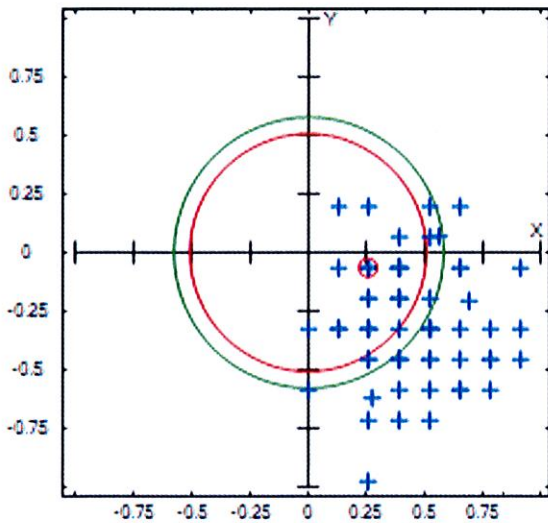


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	0
Min ΔY :	-0.977
Max ΔX :	0.911
Max ΔY :	0.195
Mean ΔX :	0.438
Mean ΔY :	-0.295
RmseX:	0.489
RmseY:	0.387
RmseH:	0.624
NSSDA:	1.08
No. Obs.:	62
CE 90:	0.507
CE 95:	0.579
CI:	0.059



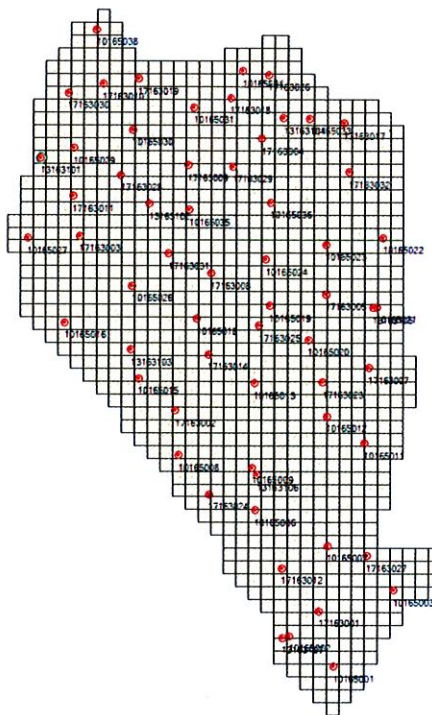
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/8/2017 Finish: 12/8/2017

Metadata Information

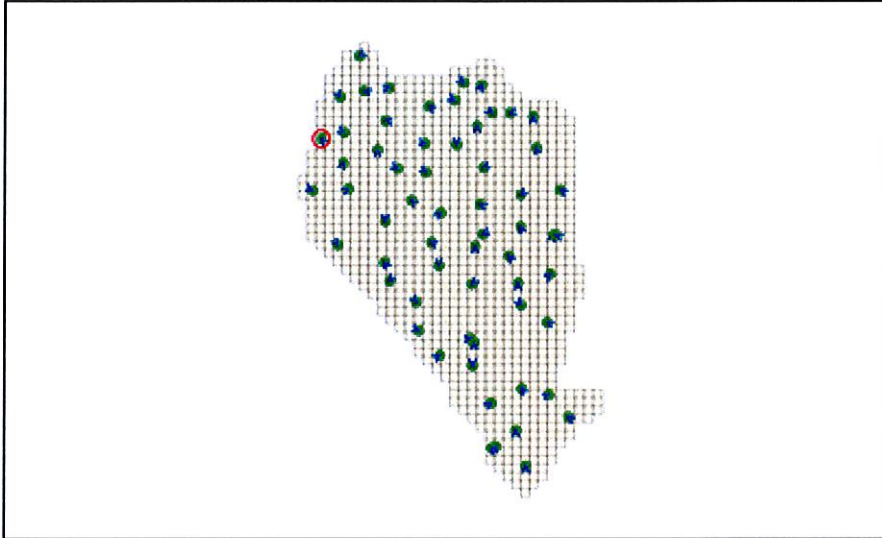
Index File Name: sampson_tiles.shp
of Polygons: 1093
of Matching Images: 1093
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_Imagery\Sampson2017\Imagery\TIF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



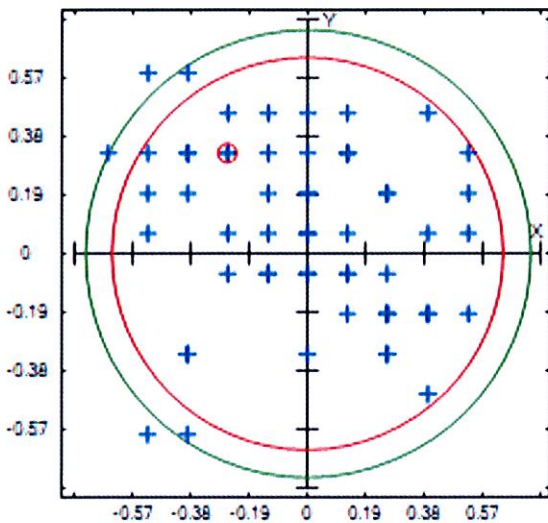


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.651
Min ΔY :	-0.586
Max ΔX :	0.521
Max ΔY :	0.586
Mean ΔX :	-0.015
Mean ΔY :	0.074
RmseX:	0.309
RmseY:	0.289
RmseH:	0.423
NSSDA:	0.732
No. Obs.:	61
CE 90:	0.636
CE 95:	0.726
CI:	0.074



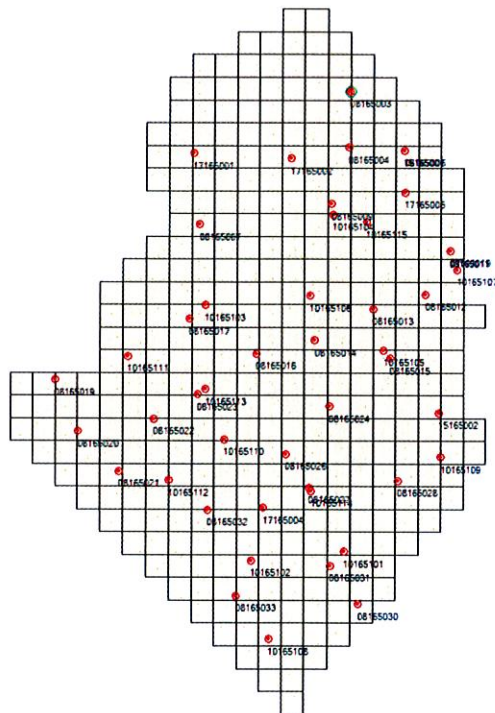
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 1/29/2018 Finish: 1/29/2018

Metadata Information

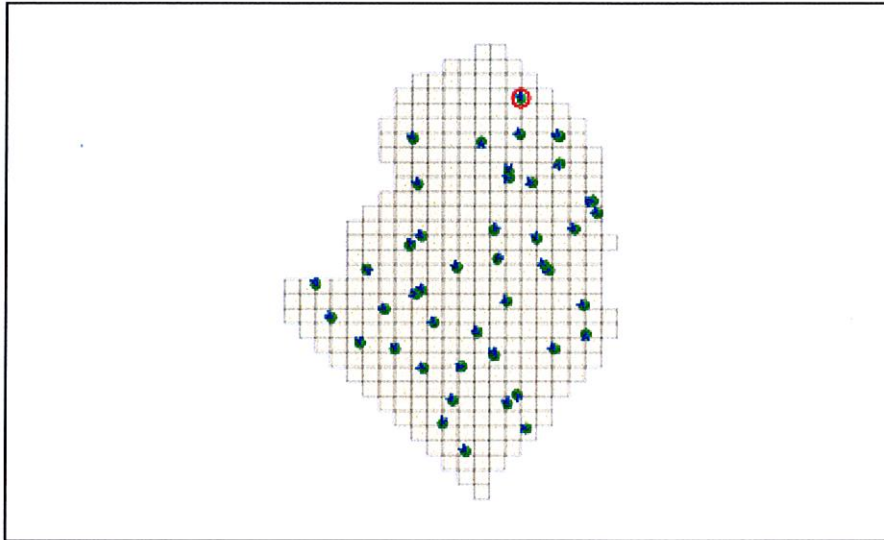
Index File Name: scotland_tiles.shp
of Polygons: 382
of Matching Images: 382
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\Scotland2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



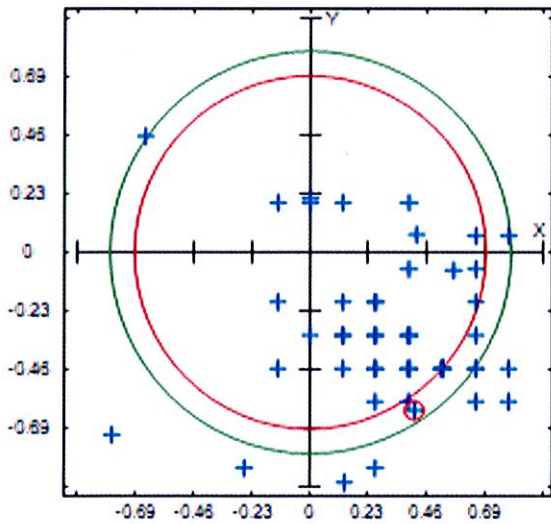


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.781
Min ΔY :	-0.903
Max ΔX :	0.781
Max ΔY :	0.456
Mean ΔX :	0.296
Mean ΔY :	-0.305
RmseX:	0.448
RmseY:	0.43
RmseH:	0.621
NSSDA:	1.074
No. Obs.:	47
CE 90:	0.693
CE 95:	0.79
CI:	0.092

NORTH CAROLINA GEODETIC SURVEY

Claude T Bowers Building
4105 Reedy Creek Road
Raleigh, North Carolina 27607
(919)733-3836



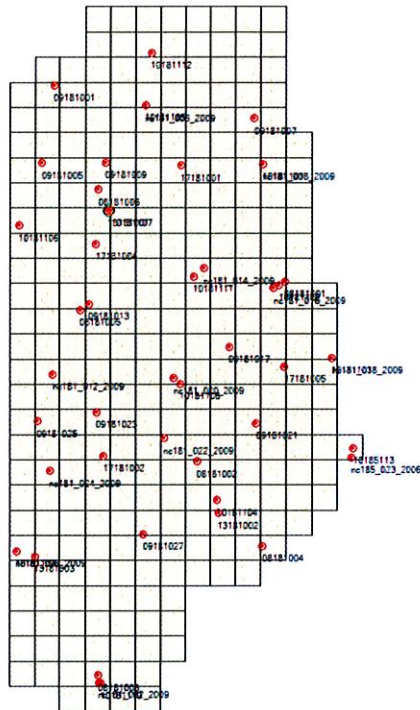
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 2/20/2018 Finish: 2/20/2018

Metadata Information

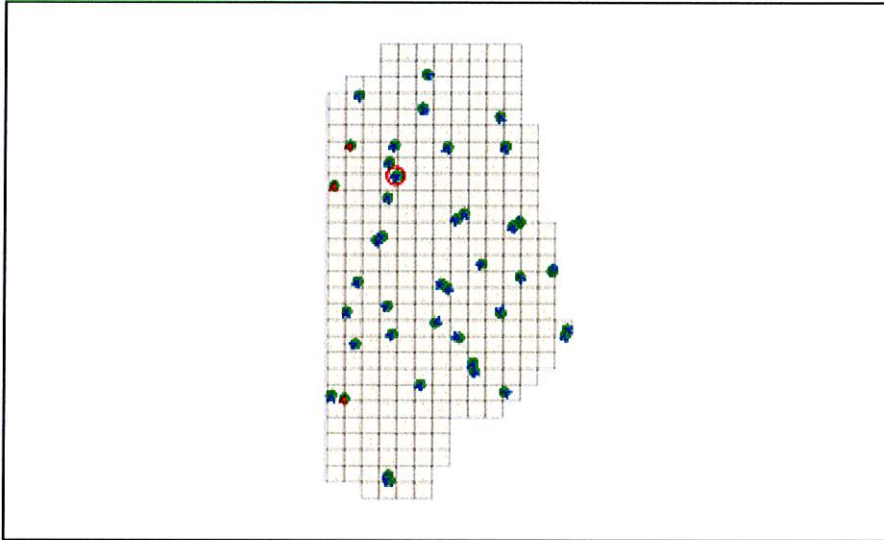
Index File Name: vance_tiles.shp
of Polygons: 302
of Matching Images: 302
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\VANCE2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



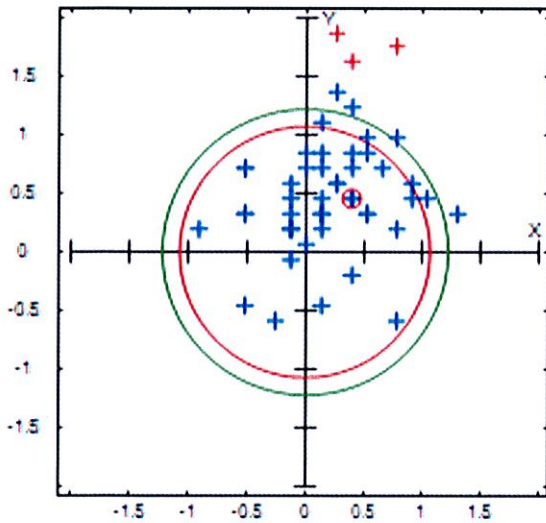


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.911
Min ΔY :	-0.586
Max ΔX :	1.302
Max ΔY :	1.866
Mean ΔX :	0.214
Mean ΔY :	0.52
RmseX:	0.505
RmseY:	0.743
RmseH:	0.898
NSSDA:	1.555
No. Obs.:	48
CE 90:	1.071
CE 95:	1.221
CI:	0.141



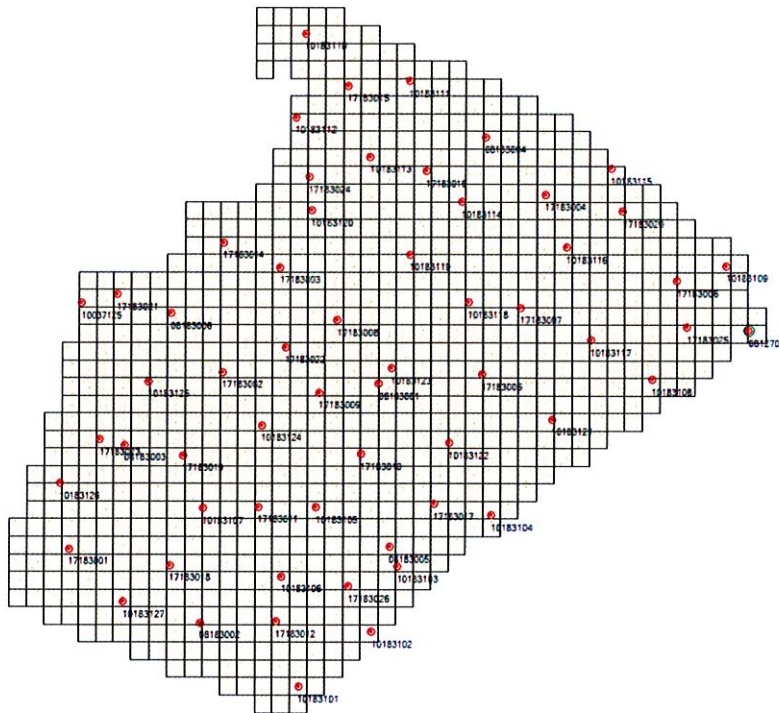
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/13/2017 Finish: 12/13/2017

Metadata Information

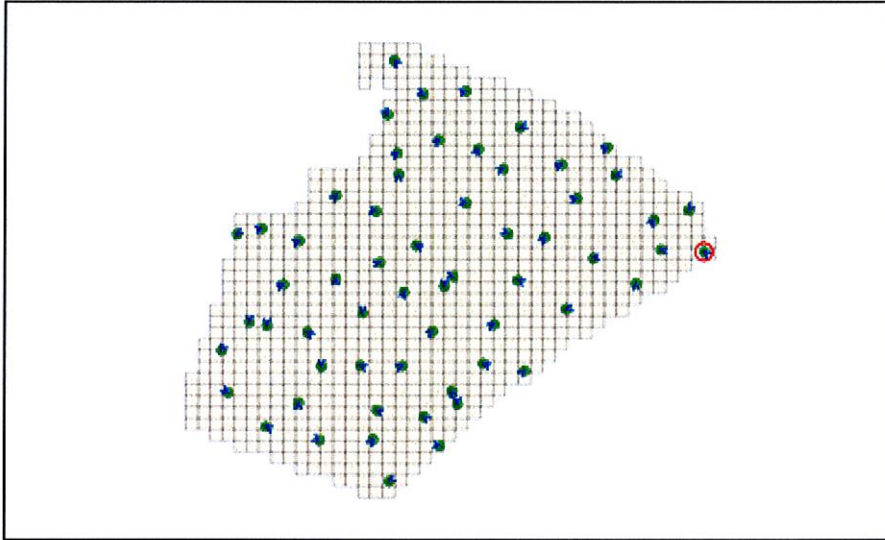
Index File Name: wake_tiles.shp
of Polygons: 951
of Matching Images: 951
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_Imagery\Wake2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



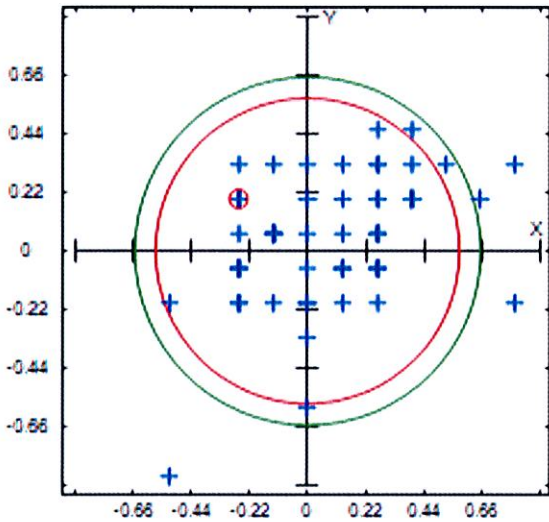


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.521
Min ΔY :	-0.846
Max ΔX :	0.781
Max ΔY :	0.456
Mean ΔX :	0.085
Mean ΔY :	0.05
RmseX:	0.304
RmseY:	0.243
RmseH:	0.389
NSSDA:	0.674
No. Obs.:	60
CE 90:	0.573
CE 95:	0.654
CI:	0.068



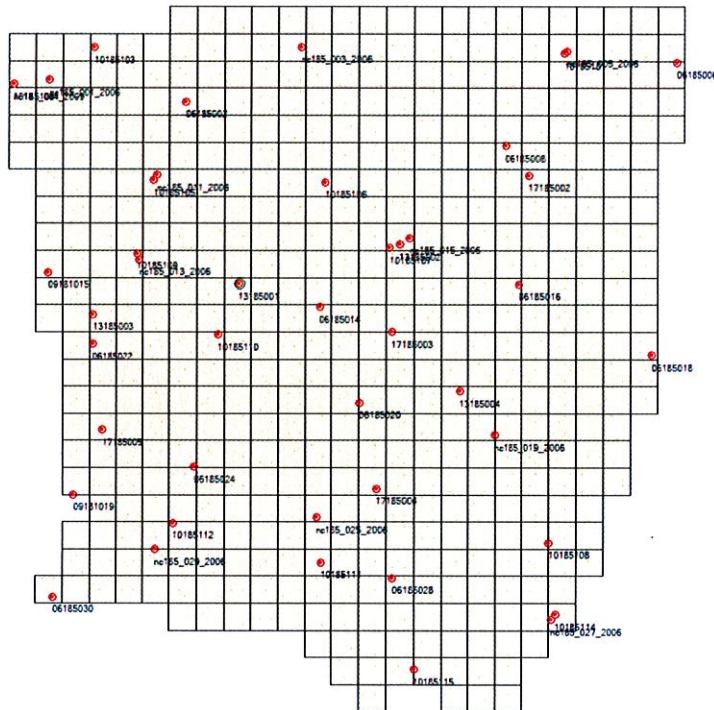
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Acquisition: Start: 2/21/2018 Finish: 2/21/2018

Metadata Information

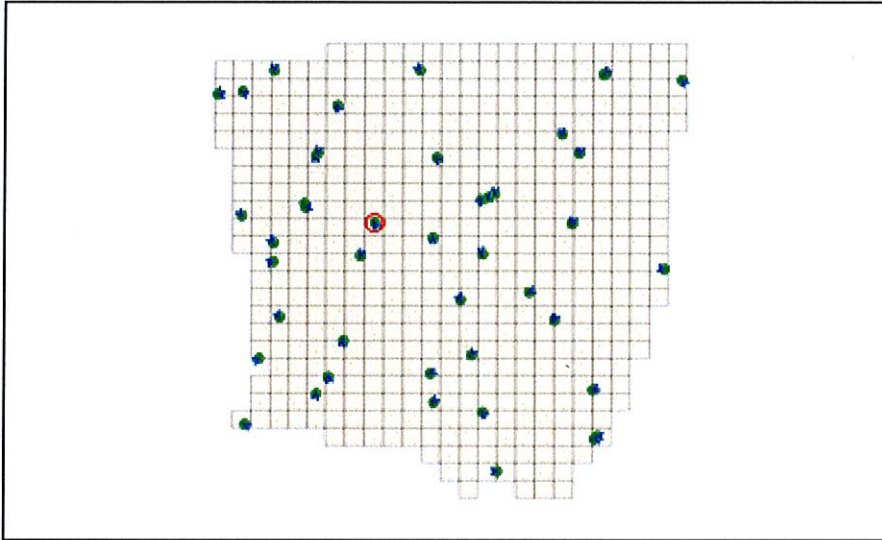
Index File Name: warren_files.shp
of Polygons: 524
of Matching Images: 524
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\WARREN2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



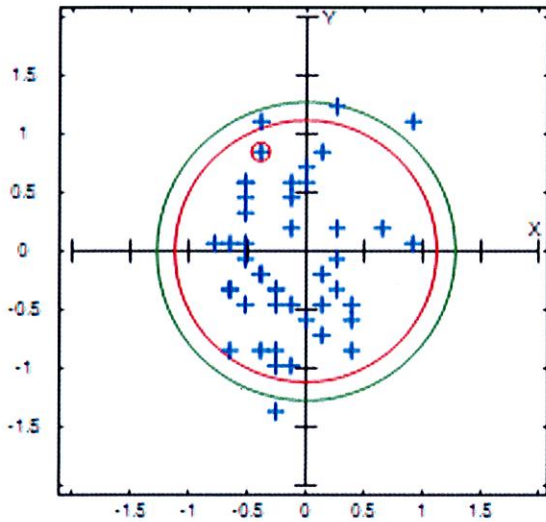


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.781
Min ΔY :	-1.367
Max ΔX :	0.911
Max ΔY :	1.237
Mean ΔX :	-0.133
Mean ΔY :	-0.065
RmseX:	0.431
RmseY:	0.623
RmseH:	0.758
NSSDA:	1.311
No. Obs.:	45
CE 90:	1.117
CE 95:	1.274
CI:	0.152



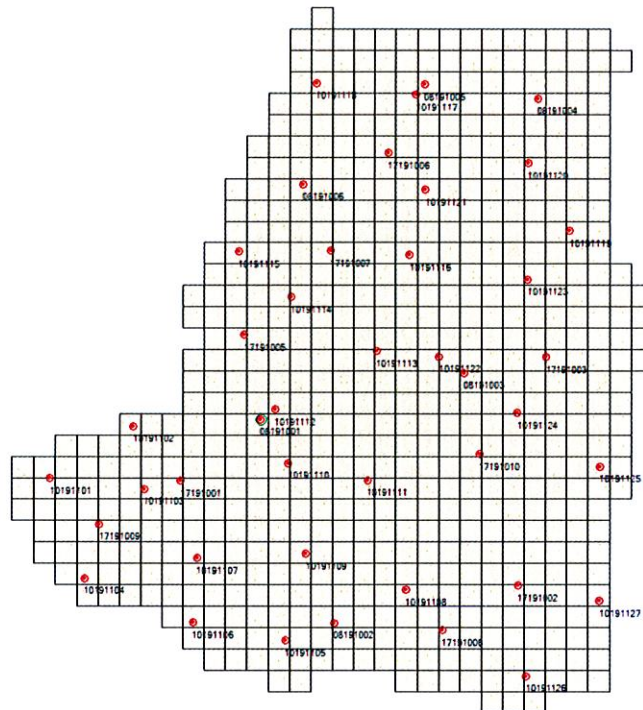
Project Information

Prepared By: Watson Ross
Project Name: 2017 Orthoimagery Project
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 12/8/2017 Finish: 12/8/2017

Metadata Information

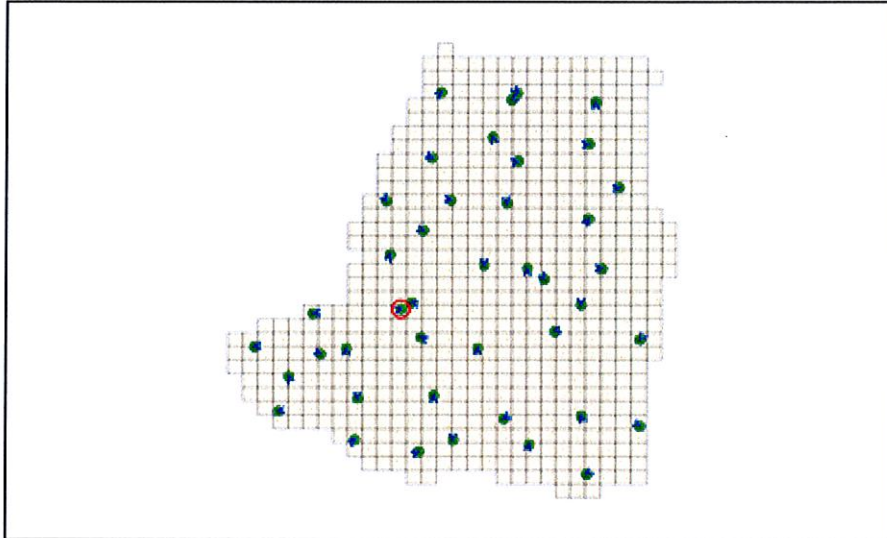
Index File Name: wayne_tiles.shp
of Polygons: 652
of Matching Images: 652
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\Wayne2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



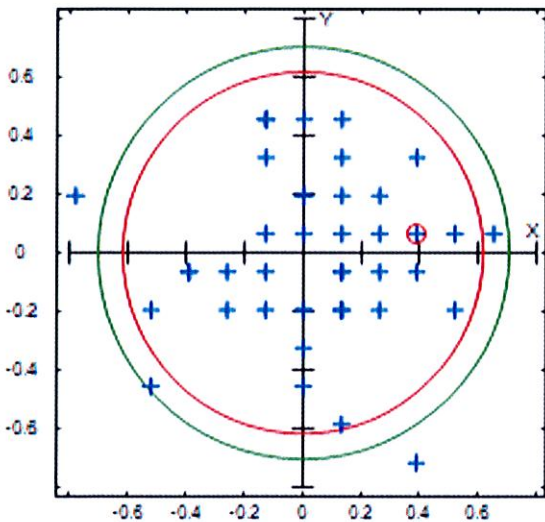


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.781
Min ΔY :	-0.716
Max ΔX :	0.651
Max ΔY :	0.456
Mean ΔX :	0.037
Mean ΔY :	-0.009
RmseX:	0.297
RmseY:	0.274
RmseH:	0.404
NSSDA:	0.699
No. Obs.:	42
CE 90:	0.617
CE 95:	0.704
CI:	0.087



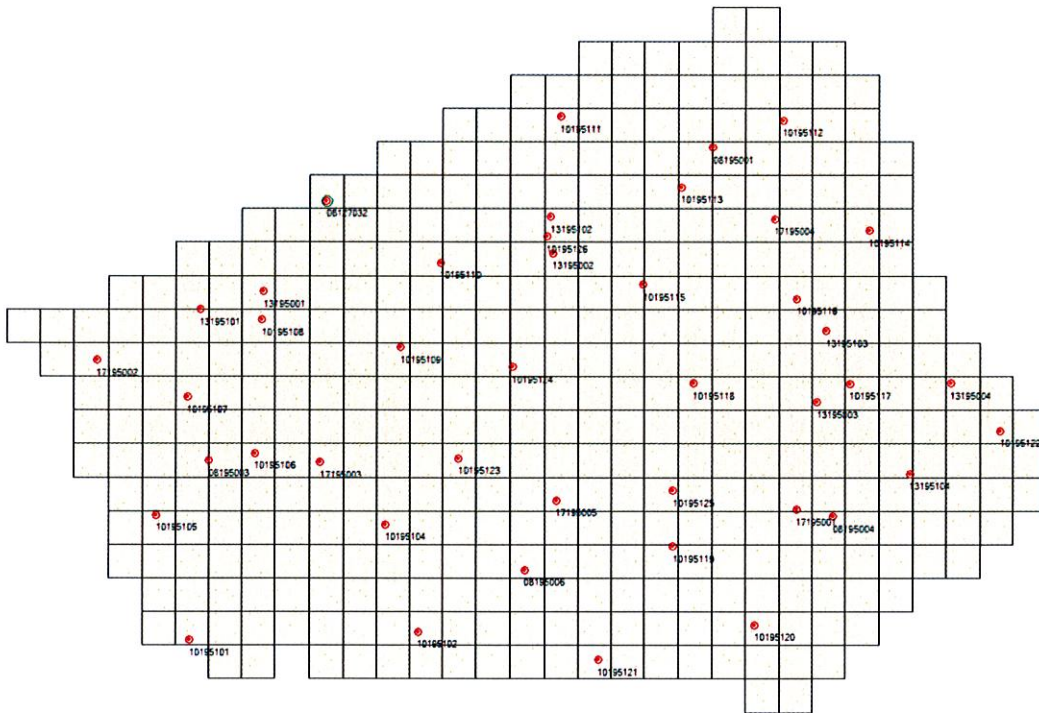
Project Information

Prepared By: Watson Ross
Project Name: 2017 Imagery QC
Sensor Info: NA
Sensor Resolution: 0.5
Vendor Name: NA
Date of Aquisition: Start: 2/21/2018 Finish: 2/21/2018

Metadata Information

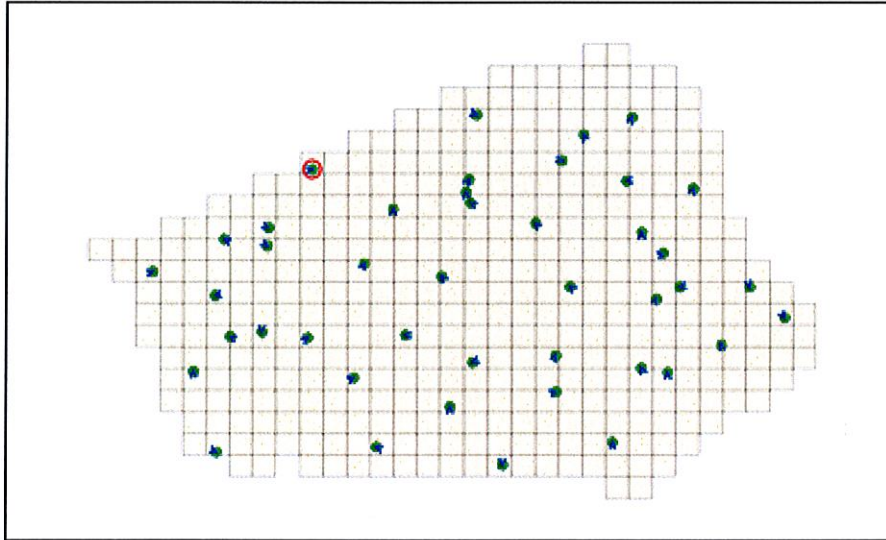
Index File Name: wilson_files.shp
of Polygons: 423
of Matching Images: 423
Polygon ID: file_name
Units: Feet
Image Folder Path: G:\2017_imagery\Wilson2017\Imagery\TIFF
Threshold: Other: 1.5
Scaling Used: 1:25050

Tiled-Image Area



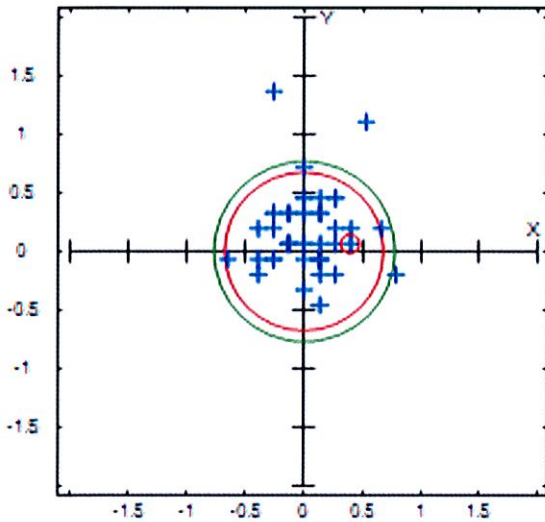


Vector Offset



Scaling Factor: 200

Circular Error



Error Statistics

Min ΔX :	-0.651
Min ΔY :	-0.456
Max ΔX :	0.781
Max ΔY :	1.367
Mean ΔX :	0.027
Mean ΔY :	0.174
RmseX:	0.284
RmseY:	0.38
RmseH:	0.475
NSSDA:	0.822
No. Obs.:	43
CE 90:	0.674
CE 95:	0.769
CI:	0.094

Station Name	PID	NAD83(2011) Ellipsoid Height (m)	NAVD88 Orthometric Height (m)	NAD83 (2011) Latitude DMS	Longitude DMS	SPC North (m)	SPC East (m)	SPC Combined Factor
ALBEMARLE CORS ARP	DG5755	112.63	142.97	35 20 17.30339 N	080 12 48.52476 W	176846.6	499299.251	0.99985604
ASHEBORO 2 CORS ARP	DL6900	210.381	240.79	35 37 49.38501 N	079 45 53.75304 W	208859.939	540319.797	0.99986134
BURLINGTON CORS ARP	DF9213	173.401	203.61	36 05 29.58604 N	079 26 12.17620 W	259845.465	570271.809	0.99995269
CARTHAGE CORS ARP	DG5938	149.613	181	35 20 30.04880 N	079 23 05.08515 W	176632.942	574629.599	0.99985034
DURHAM COOP CORS ARP	DG9328	117.466	148.79	35 59 46.12942 N	078 53 58.03641 W	249177.805	618666.816	0.99993843
ELIZABETHTOWN CORS ARP	DI1680	-9.537	25.46	34 39 13.60147 N	078 31 11.73447 W	100363.878	653606.669	0.99992817
FAYETTEVILLE 2006 CORS ARP	DH9594	16.914	50.45	35 02 02.48998 N	078 52 14.73160 W	142444.626	621393.108	0.99987712
GOLDSBORO CORS ARP	DK5550	14.068	48.9	35 25 16.86892 N	078 03 30.57562 W	185808.939	695094.939	0.99987475
GREENVILLE NC CORS ARP	DL7337	4.907	40.81	35 36 18.30987 N	077 21 55.47952 W	207005.628	757690.324	0.99989078
JACKSON NC CORS ARP	DH7133	13.257	47.68	36 24 30.56335 N	077 26 15.30879 W	296031.384	749749.096	1.00007439
JORDAN LAKE CORS ARP	DL3891	45.996	77.43	35 46 52.49646 N	079 02 03.92766 W	225330.877	606489.109	0.99990797
KENANSVILLE CORS ARP	DI1071	15.56	51.36	34 56 30.49763 N	077 58 49.94532 W	132685.36	702719.518	0.99988847
KINSTON CORS ARP	DM3989	-3.126	32.79	35 19 18.56728 N	077 36 49.27040 W	175242.563	735637.711	0.99987383
LILLINGTON 2004 CORS ARP	DG5759	25.706	58.73	35 25 12.54674 N	078 48 40.33946 W	185286.626	626745.253	0.99987286
LUMBERTON CORS ARP	DI1682	15.824	49.56	34 37 36.33605 N	079 04 39.69481 W	97263.238	602477.201	0.99992918
NASHVILLE CORS ARP	DK7576	34.5	68.96	35 58 09.06797 N	078 01 11.34161 W	246618.195	698006.712	0.99994546
POLKTON CORS ARP	DG7402	84.929	115.53	34 59 33.17297 N	080 10 37.85763 W	138473.153	502143.744	0.99986944
RALEIGH DOT CORS ARP	DG4687	51.789	85.04	35 45 49.50795 N	078 34 44.39448 W	223469.874	647669.715	0.99990429
ROCKINGHAM CORS ARP	DM3995	91.872	122.95	34 57 51.98780 N	079 47 47.74087 W	135010.039	536859.244	0.99987067
ROXBORO CORS ARP	DM3527	194.654	225.65	36 23 28.05620 N	078 59 54.41890 W	293001.606	609740.318	1.00003983
SANFORD CORS ARP	AM7024	95.45	127.14	35 28 24.67784 N	079 09 28.98436 W	191202.33	595258.352	0.99986507
SMITHFIELD CORS ARP	DK6525	24.469	58.66	35 33 49.60980 N	078 20 10.80495 W	201405.073	669760.307	0.99988353
TARBORO CORS ARP	DK7578	-0.513	34.83	35 52 56.96198 N	077 34 21.39610 W	237489.266	738477.556	0.99993315
TROY CORS ARP	DK4045	144.044	174.59	35 22 01.84517 N	079 52 12.77094 W	179740.437	530528.389	0.999852
WARRENTON CORS ARP	DM3529	76.208	109.53	36 23 41.68571 N	078 10 13.74958 W	293732.691	684023.061	1.00005974
WHITEVILLE CORS ARP	DI8943	-2.342	32.36	34 16 49.59006 N	078 42 59.33169 W	58881.567	635708.028	1.00001544
WILLIAMSTON 2 CORS ARP	DN8741	-21.901	14.182	35 49 49.75739 N	077 02 06.20973 W	232550.205	787120.808	0.99992694
WILSON CORS ARP	DK7563	11.179	46.03	35 42 26.29637 N	077 55 57.08393 W	217645.964	706192.128	0.99990236
ROANOKE RAPIDS BASE ARP	DN9330	10.602	44.65	36 28 29.12759 N	077 34 56.60686 W	303189.882	736656.06	1.00009891
RAEFORD BASE ARP	DQ5333	51.563	84.27	34 58 45.00930 N	079 13 04.01644 W	136373.746	589717.557	0.99987575
CLINTON BASE ARP	DP9434	23.891	58.49	34 59 25.64828 N	078 21 31.47858 W	137793.223	668139.836	0.99987918

m = meters

NAVD88 = North American Vertical Datum of 1988

NAD83 (2011) = North American Datum of 1983 realization of 2011

Acronyms, Abbreviations, and Definitions

ARP - Antenna Reference Point

CORS - Continuous Operating Reference Station

DMS - Degrees Minutes Seconds

m – Meter

PID - Permanent Identifier

SPC - State Plane Coordinates

Statistical Definitions:

Min ΔX / ΔY – These statistics represent the change in value between the X(Y)-coordinate location in the photo and X(Y)-coordinate location in the survey. The minimum of each simply represents the smallest value out of all of the analyzed locations. This component of the statistics can be used to show which user entered locations most closely correspond to the surveyed points.

Max ΔX / ΔY – These statistics represent the change in value between the X(Y)-coordinate location in the photo and X(Y)-coordinate location in the survey. The maximum value of each represents the largest value out of all of the analyzed locations. Maximum values can be used to show which user entered locations most closely correspond to the surveyed points.

Mean ΔX / ΔY - The statistics of the mean ΔX and mean ΔY are intended to show the average values of the ΔX and ΔY . These statistics show the change in value between the X(Y)-coordinate location in the photo and X(Y)-coordinate location in the survey. The mean values can be used to show the average off-sets of all of the analyzed locations

RMSE X / Y / H - The RMSE is used to describe accuracy encompassing both random and systematic errors. RMSE is the square root of the square of the difference between a true test point and an interpolated test point divided by the total number of test points in the arithmetic mean. RMSE X measures RMSE in the X direction only, and similarly RMSE Y measures RMSE in the Y direction only. RMSE H takes both X and Y directions into account, and measures the RMSE in a straight line between the true test point and the interpolated test point.

NSSDA – Horizontal accuracy standard adopted by the National Standard for Spatial Data Accuracy, computed utilizing the $RMSE_x$ and $RMSE_y$ values.

No. Obs. – Number of observations

CE 90 and CE 95 - Circular Error probable, defined as a circle, centered about the mean, whose boundary is expected to include a certain percentage of the population within it. In the case of CE90, 90% of the population is expected to be included within the circular radius and in the case of CE95, 95% of the population is expected to be included within the circular radius.

CI – Confidence Interval, which describes the uncertainty associated with a sampling method.