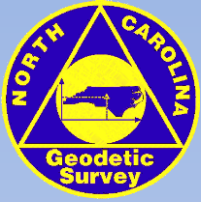


# ***NCGS: Positioning NC today and for the future!***




## **North Carolina Geodetic Survey**

Establishing and Maintaining  
the Official Survey Base  
in North Carolina



# NGS Coordinate Conversion Tool



 **BETA** This is a BETA Release Site National Geodetic Survey

NGS Home | About NGS | Data & Imagery | Tools | Surveys | Science & Education Search

Conversion from lat-long | Conversion to lat-long | Conversion of multiple coordinates | Web services | Downloads

Choose a location to generate projected coordinates

Enter decimal degrees or drag map marker


Lat

Lon

or degrees-minutes-seconds

Lat

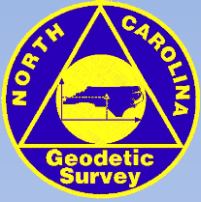
Lon



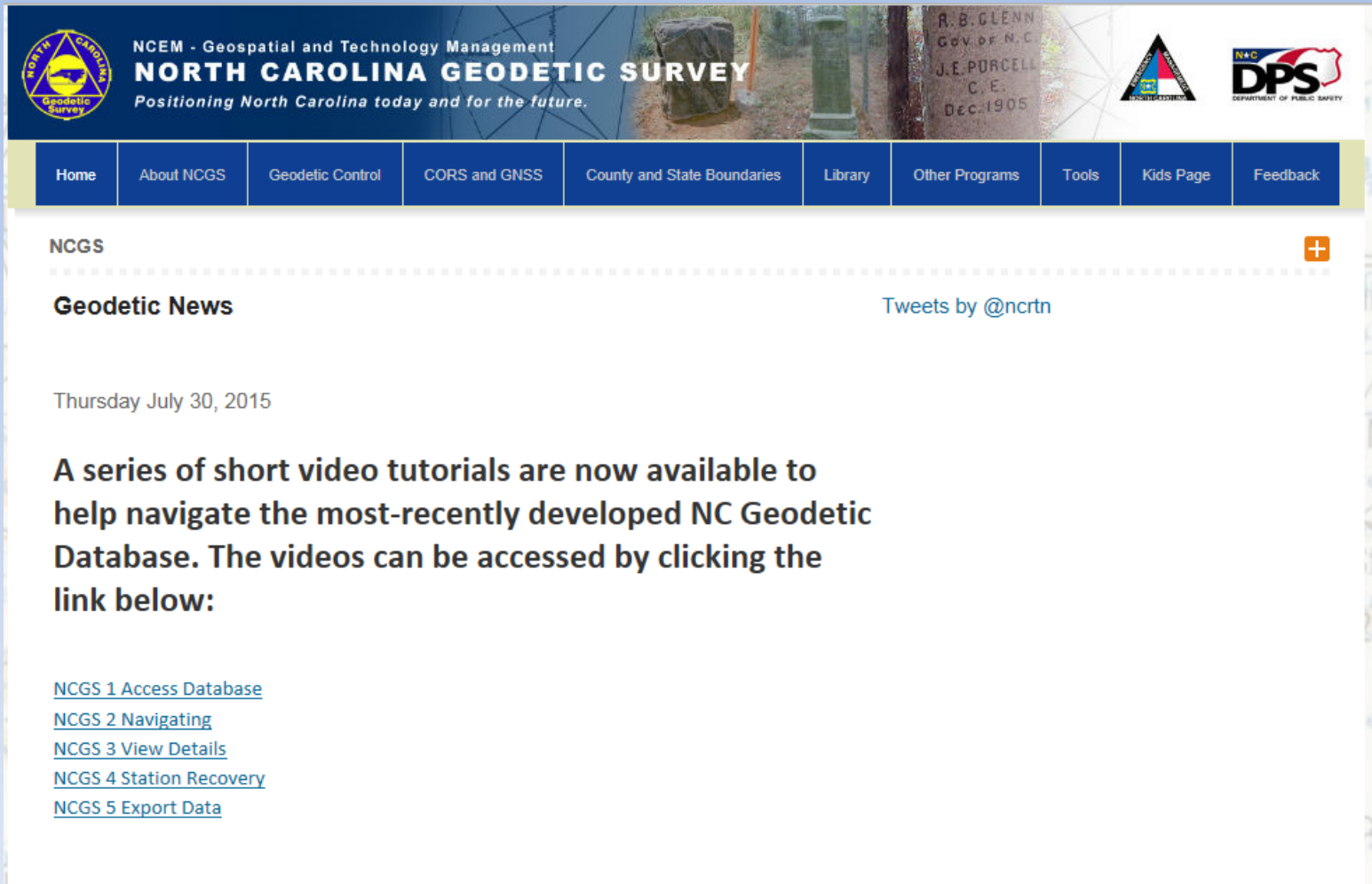
Choose a datum  NAD83  NAD27/Old HI/PR 40/AS 62/GU 63

Enter an Ellipsoid Height in meters  (optional, affects XYZ and Combined Factors)

<http://beta.ngs.noaa.gov/gtkweb/>



# Instructional Videos



The screenshot shows the website for the North Carolina Geodetic Survey. At the top left is the logo. The main header reads "NCEM - Geospatial and Technology Management" and "NORTH CAROLINA GEODETIC SURVEY" with the tagline "Positioning North Carolina today and for the future." Below the header is a navigation menu with links: Home, About NCGS, Geodetic Control, CORS and GNSS, County and State Boundaries, Library, Other Programs, Tools, Kids Page, and Feedback. The main content area is titled "NCGS" and features a "Geodetic News" section. The news item is dated "Thursday July 30, 2015" and contains the text: "A series of short video tutorials are now available to help navigate the most-recently developed NC Geodetic Database. The videos can be accessed by clicking the link below:". Below this text are five hyperlinks: "NCGS 1 Access Database", "NCGS 2 Navigating", "NCGS 3 View Details", "NCGS 4 Station Recovery", and "NCGS 5 Export Data".

NCEM - Geospatial and Technology Management  
**NORTH CAROLINA GEODETIC SURVEY**  
*Positioning North Carolina today and for the future.*

Home About NCGS Geodetic Control CORS and GNSS County and State Boundaries Library Other Programs Tools Kids Page Feedback

NCGS

**Geodetic News** Tweets by @ncrtn

Thursday July 30, 2015


**A series of short video tutorials are now available to help navigate the most-recently developed NC Geodetic Database. The videos can be accessed by clicking the link below:**

[NCGS 1 Access Database](#)  
[NCGS 2 Navigating](#)  
[NCGS 3 View Details](#)  
[NCGS 4 Station Recovery](#)  
[NCGS 5 Export Data](#)




# Instructional Videos



 **NGS Video Library**  
National Geodetic Survey

NGS Home | About NGS | Data & Imagery | Tools | Surveys | Science & Education |  Search



**NGS Video Library**

Videos available below:

- **Series on Geodetic Datums**
  - What are Geodetic Datums? (4:30)
  - How Were Geodetic Datums Established? (3:11)
  - What is the Status of Today's Geodetic Datums? (4:48)
  - What's Next for Geodetic Datums? (4:41)
  - [Click here](#) to view these videos on YouTube.
- Precision and Accuracy in Geodetic Surveying (2:25)
- Two 'Right' Feet? Understanding the Difference Between U.S. Survey Feet and International Feet (2:39)
- Geospatial Infrastructure for Coastal Communities: Informing Adaptation to Sea Level Rise (4:06)

**Links to other videos:**

- [Surveyors, Part 1](#) (2:44)

**Navigation**


- Corbin Training Center
- Online Learning Resources
- Upcoming Classes
- Past Classes
- Directions
- Lodging/Transportation
- Photos
- ISS Program
- Interactive Web Map

[Join Our Mailing List](#)

**Contact Us**

Phone: (540) 373-1243  
Fax: (540) 373-4327  
Email Us

**What are Geodetic Datums? (4:30)**

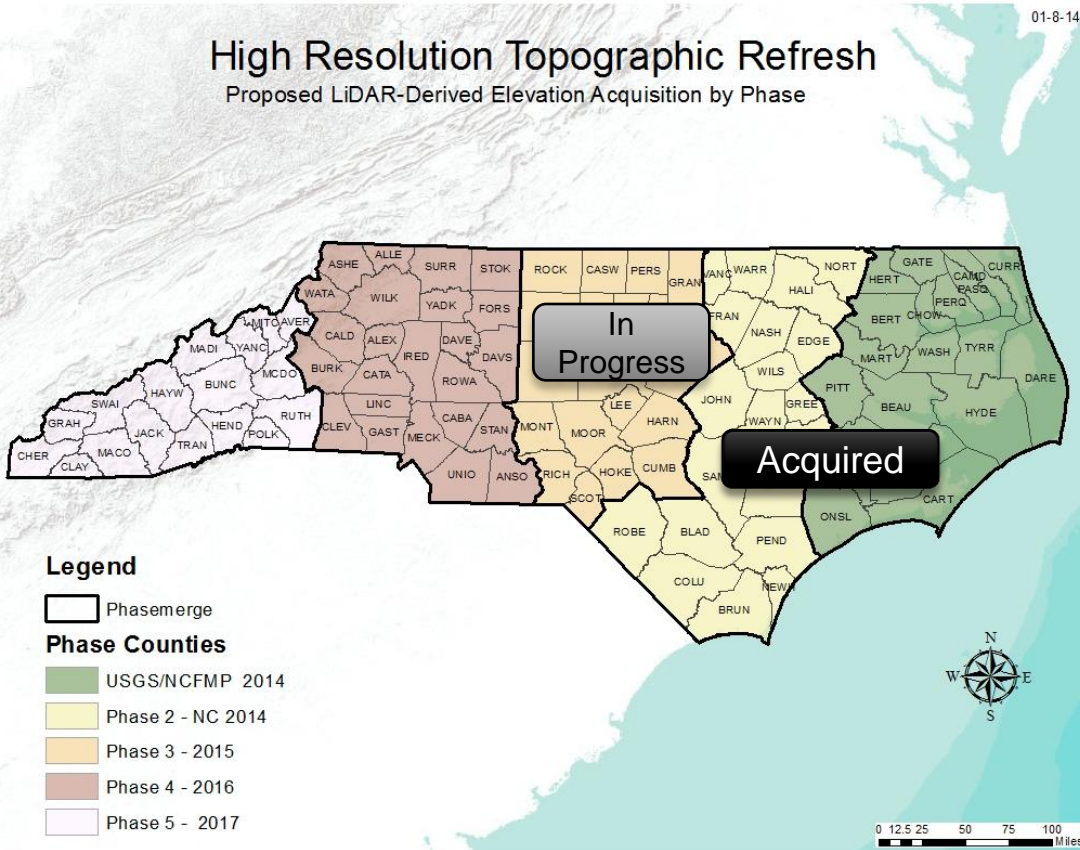


■ [Right-click here](#) and select 'Save As' or 'Save Link As' to download the mp4 file.

# STATEWIDE PHASES

## Original Plan

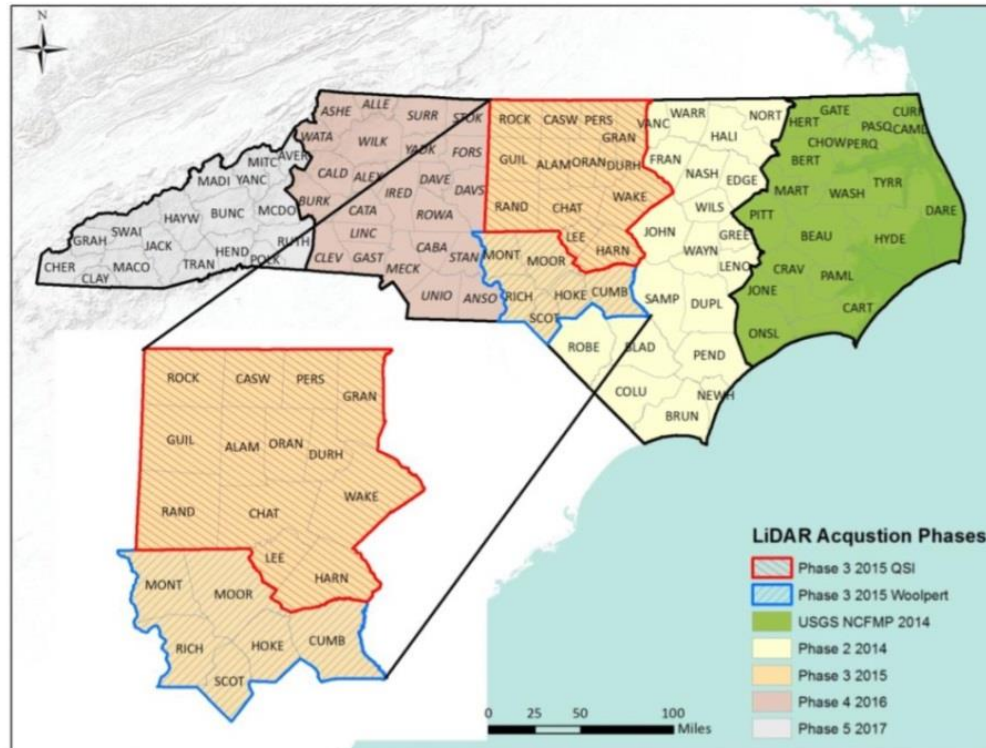
- The Plan put forward was a 5 phase 4 year plan
- Phase 1- USGS
- Phase 2- NC
  - Both occurred in 2014
- Phase 3 – NC (2015)



The Plan added Onslow County to Phase 1 with the Coordination effort of NRCS

Therefore moving the NC collection Phase 2 to add Robeson County

# Phase 3 NC Collection 2015



- 3.5 million appropriated by the General Assembly based on value to the state
- 1 million paid by NCDOT.

# State Specifications

## Collection

- The 2014 LiDAR data collection will meet 2 points per square meter standard with nominal post spacing of 0.7 meters.
- All data will include multi-return and intensity values.
- Data collected will support a 9.25 cm (3.36 inches) RMSEz and 18.13 cm FVA based on NDEP guidelines.



# State Specifications

- Classification

Class	Description
1	Processed Unclassified
2	Ground
3	Low Veg/Strata
4	Medium Veg/Strata
5	High Veg/Strata
6	Buildings (Automated)
7	Noise (High/Low)
9	Water (Hydro Cleaned Areas)
12	Flight Line Overlap
13	Roads
14	Bridges
17	Overlap Default
18	Overlap Ground
25	Overlap Water

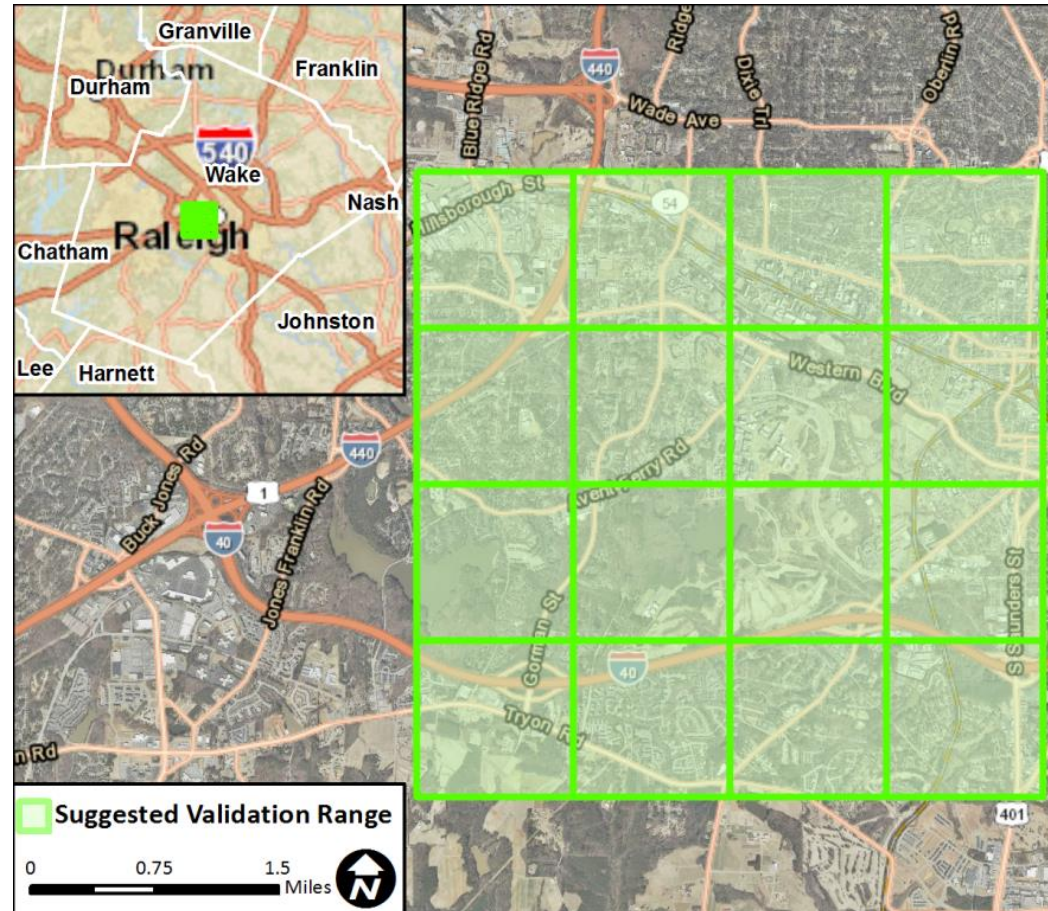


# State Specifications

This project has set up an Validation Range

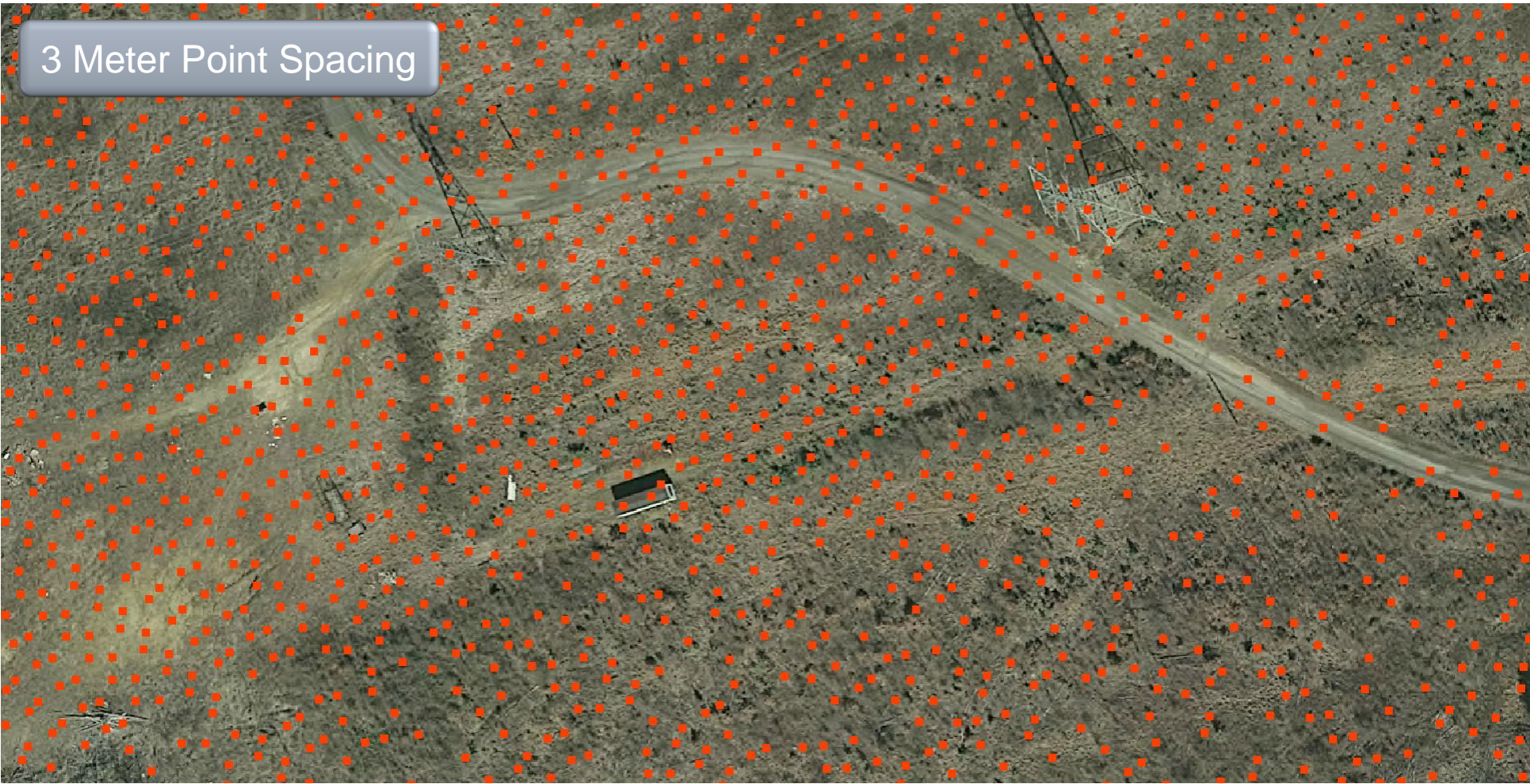
- Flown by each sensor to check horizontal and vertical Accuracy of the collection.
- Gives the teams the capability of adjusting the sensors to match on another
- USGS contractors utilized the validation range

# Validation Range





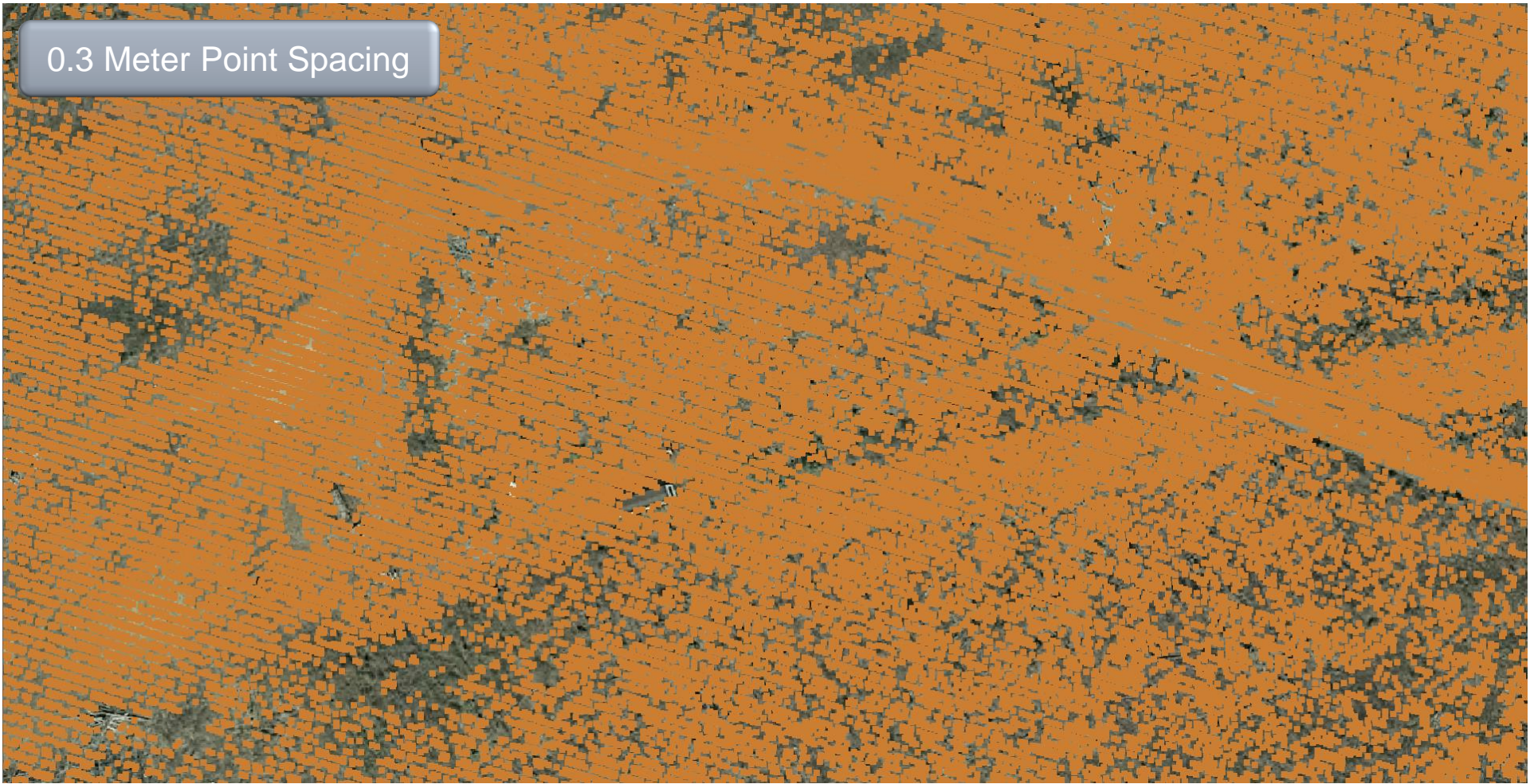
3 Meter Point Spacing



3 Meter Elevation Model (2003 NC LiDAR)

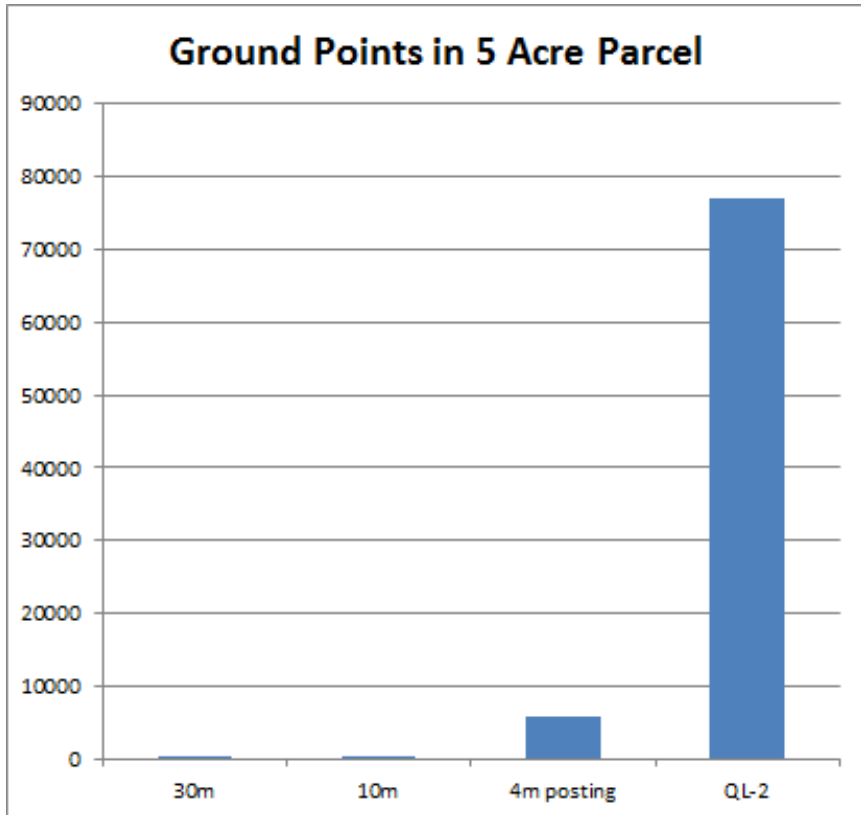


0.3 Meter Point Spacing



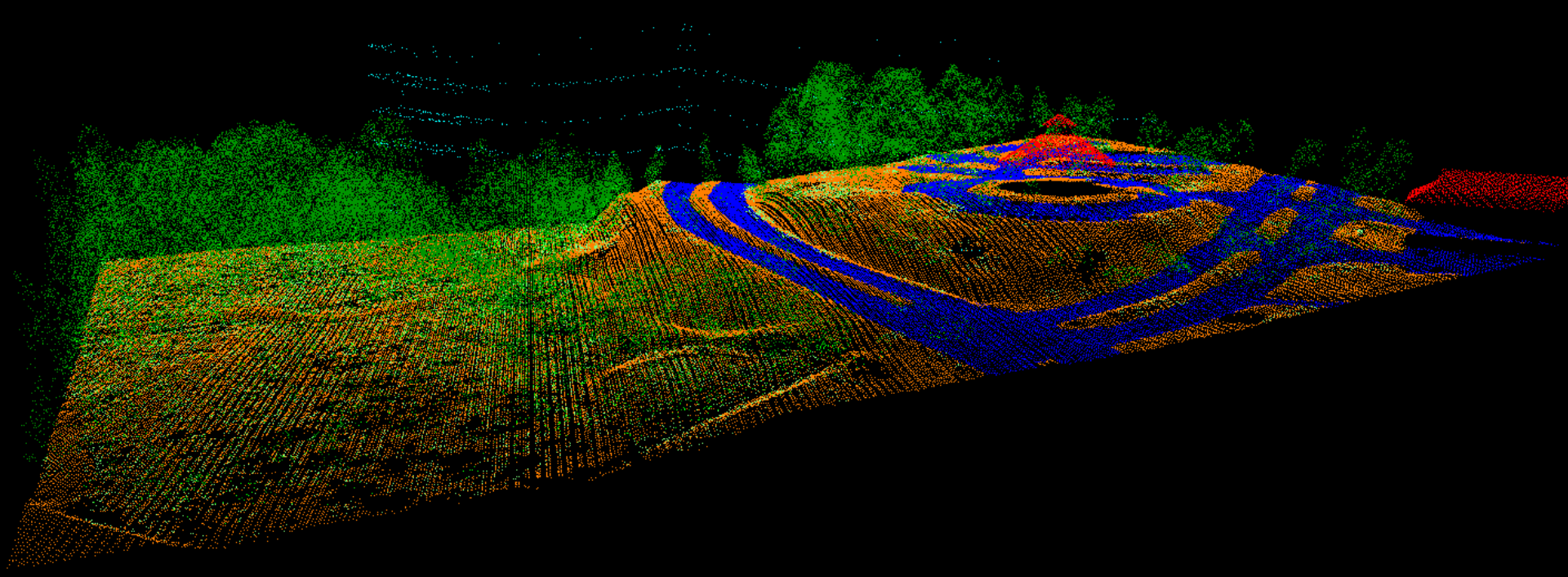
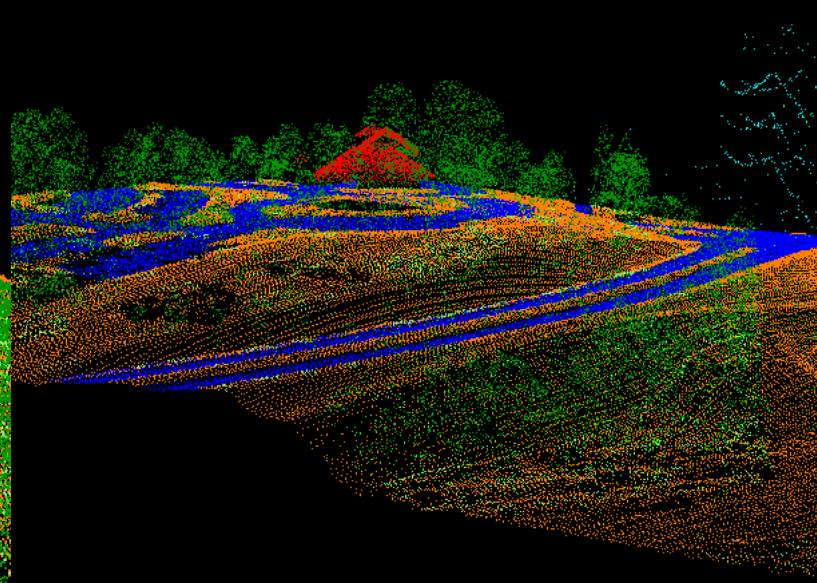
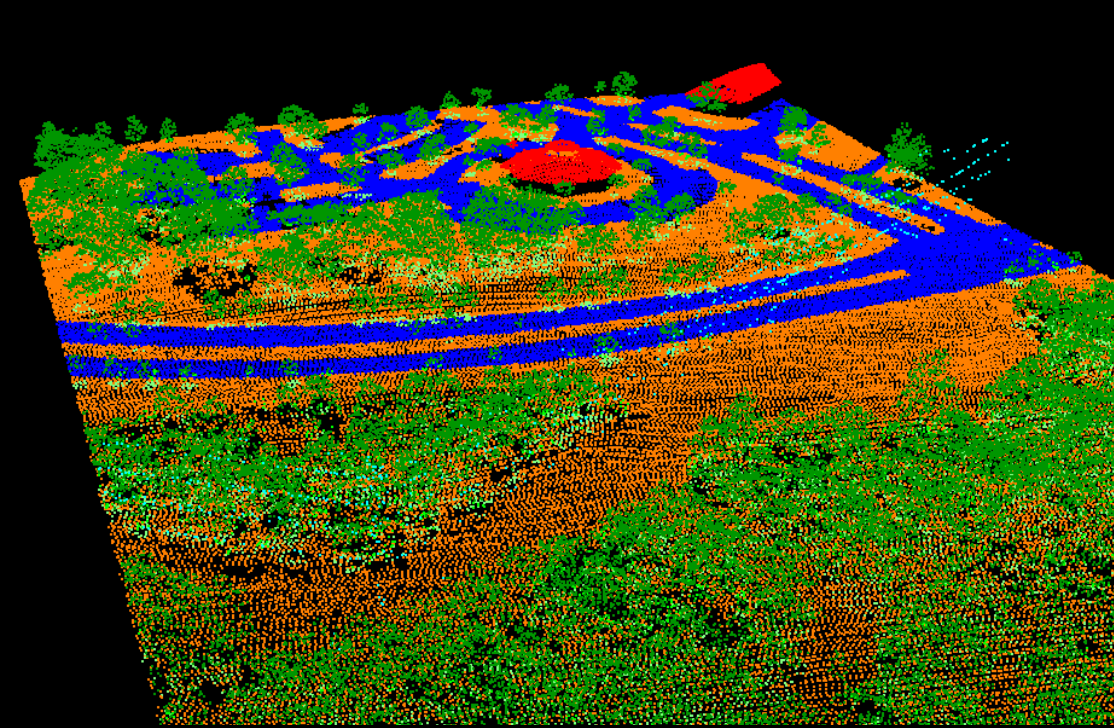
QL2 Elevation Model

# Summary



LIDAR Quality	Ground Points in 5 Acre Parcel
30m NED	32
10m NED	300
3m (circa 2003)	7,696
QL2	76,957



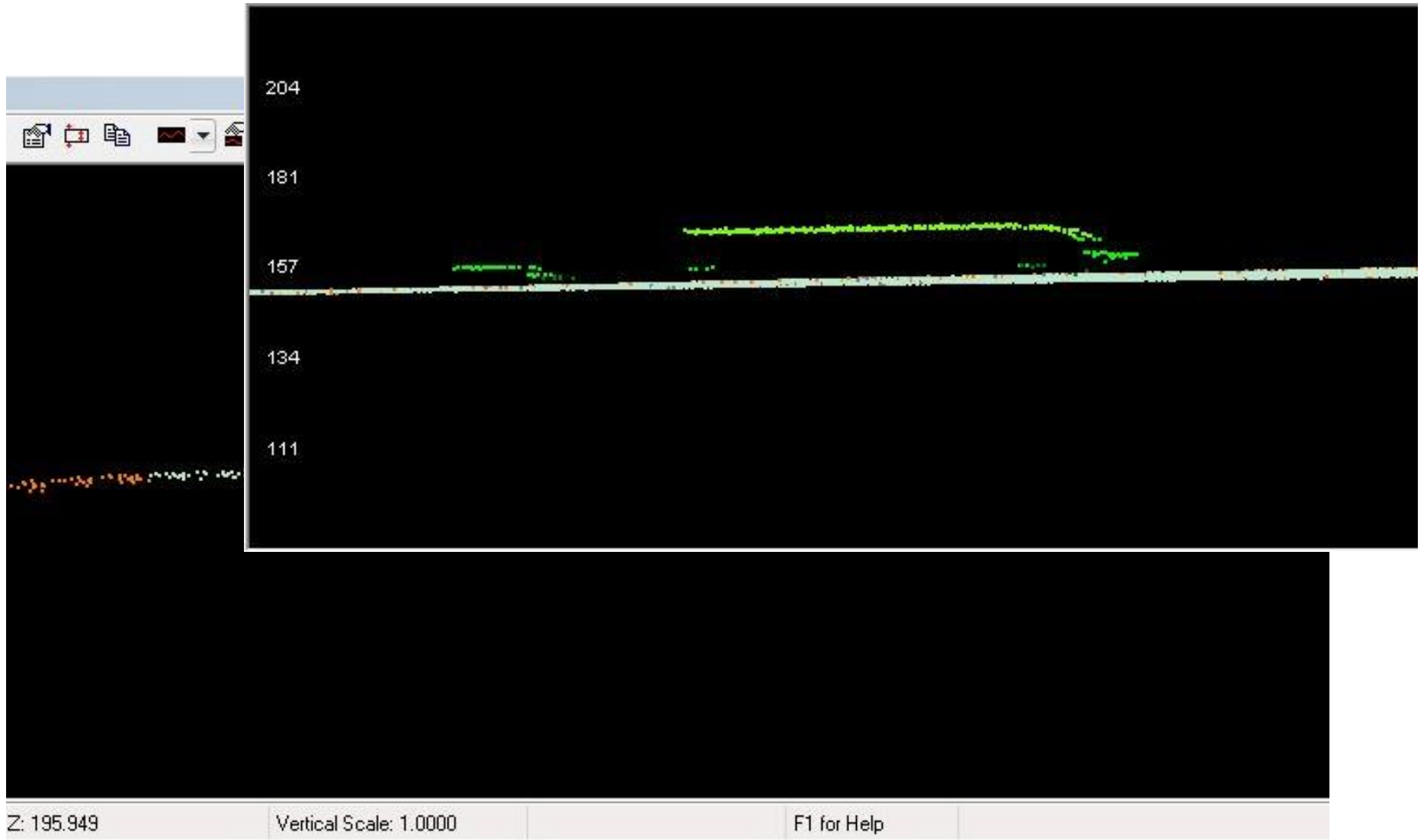






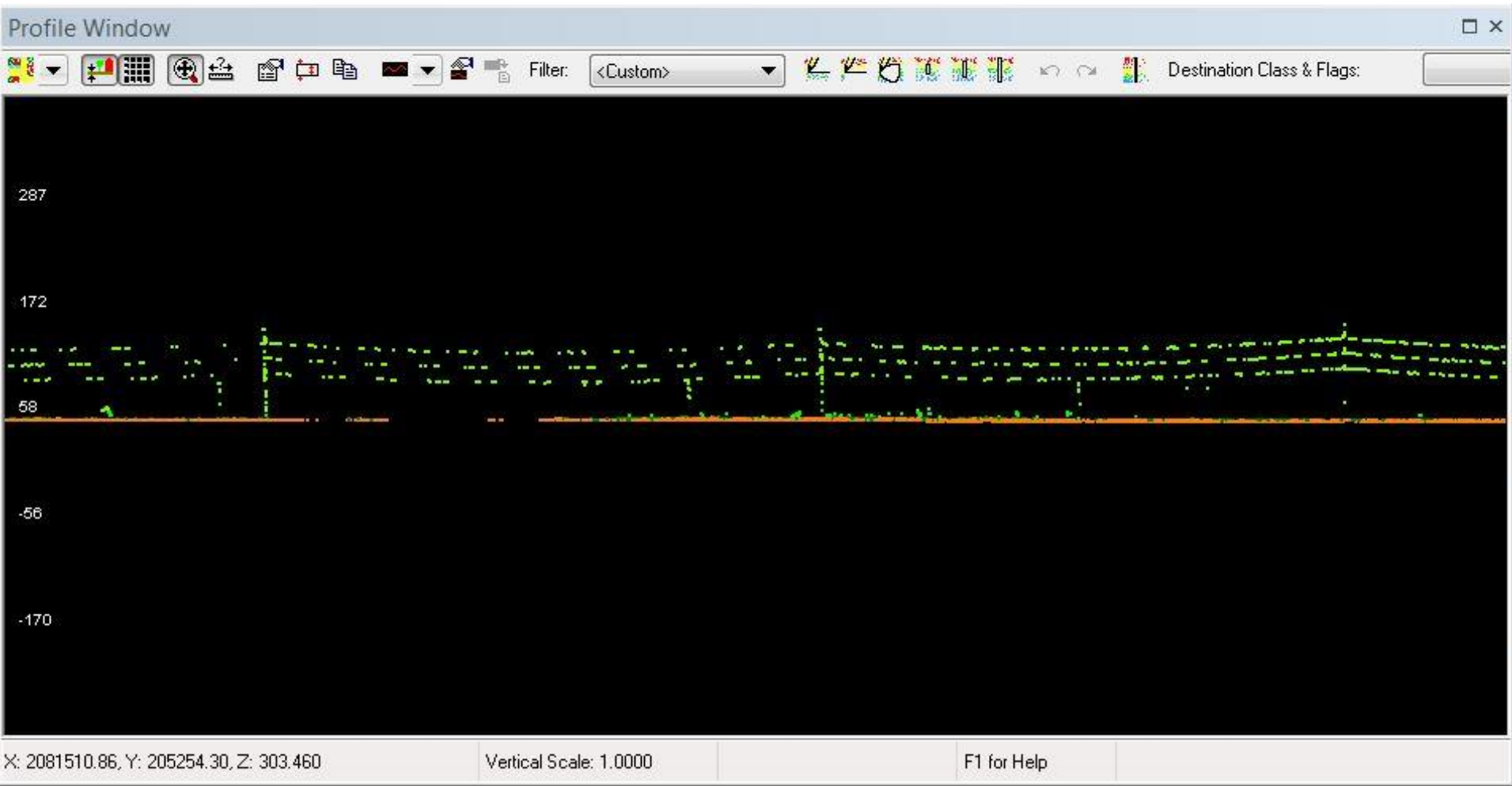


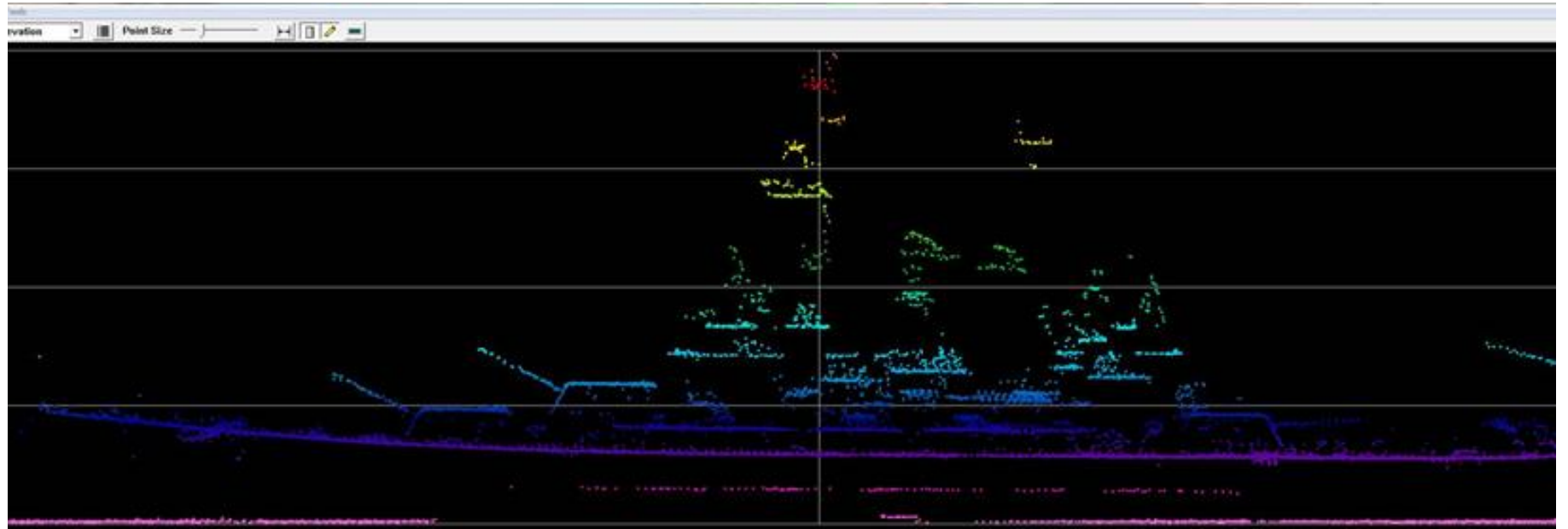
# Vehicles





# Utility Profile







# SPATIAL Data Download

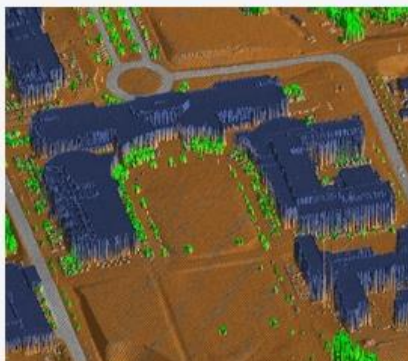
## Login with NCID

A North Carolina ID (NCID) is required.  
Don't have a NCID? Sign up [here](#).

NCID USER NAME:

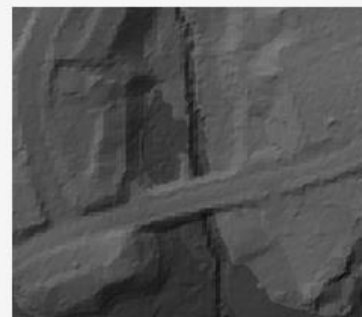
PASSWORD:

## Login here for QL2 LiDAR



This data is Quality Level 2 (QL2) and was collected at a spacing of approximately 2 points per meter. All returns classified data is available.

## Download legacy LiDAR at NC FRIS



All counties in North Carolina currently have legacy bare earth LiDAR from the initial statewide collection conducted from 2001-2005. This data was collected at a spacing of approximately 1 point per 3-4 meters.



### This is a beta version of the Spatial Data Download site.

This is not the final version and you may encounter downtime, errors or bugs. If you do: [Email Your Feedback](#)

NCFMP will not be liable for any loss suffered by any party as a result of their use of the site. Any downloading of material is done at the users own risk and the user will be solely responsible for any loss that results from such activities.



# QL2 LIDAR DATA DOWNLOAD

To request an entire city or county, go to the [Large Data Request](#) page. Download legacy LiDAR at [NC FRIS](#)



Select Area

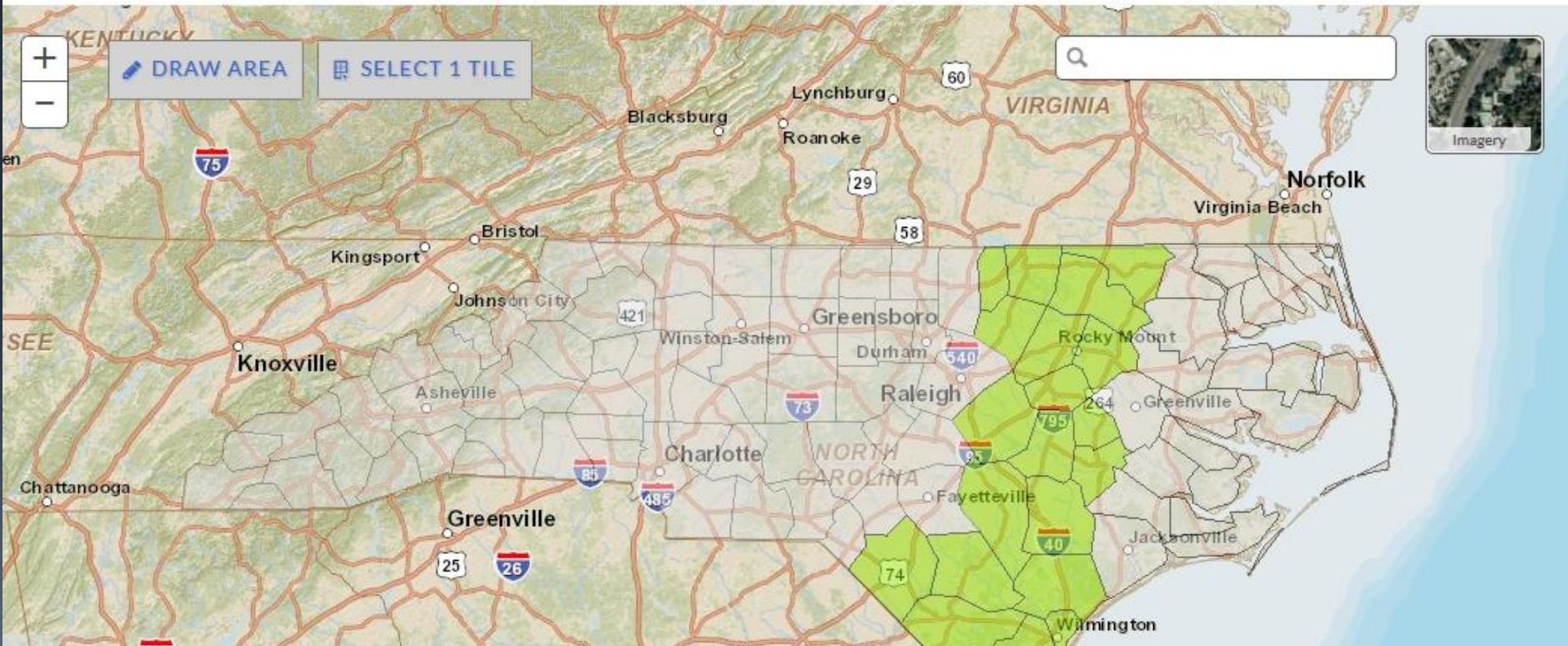


Select File Output



Submit Request

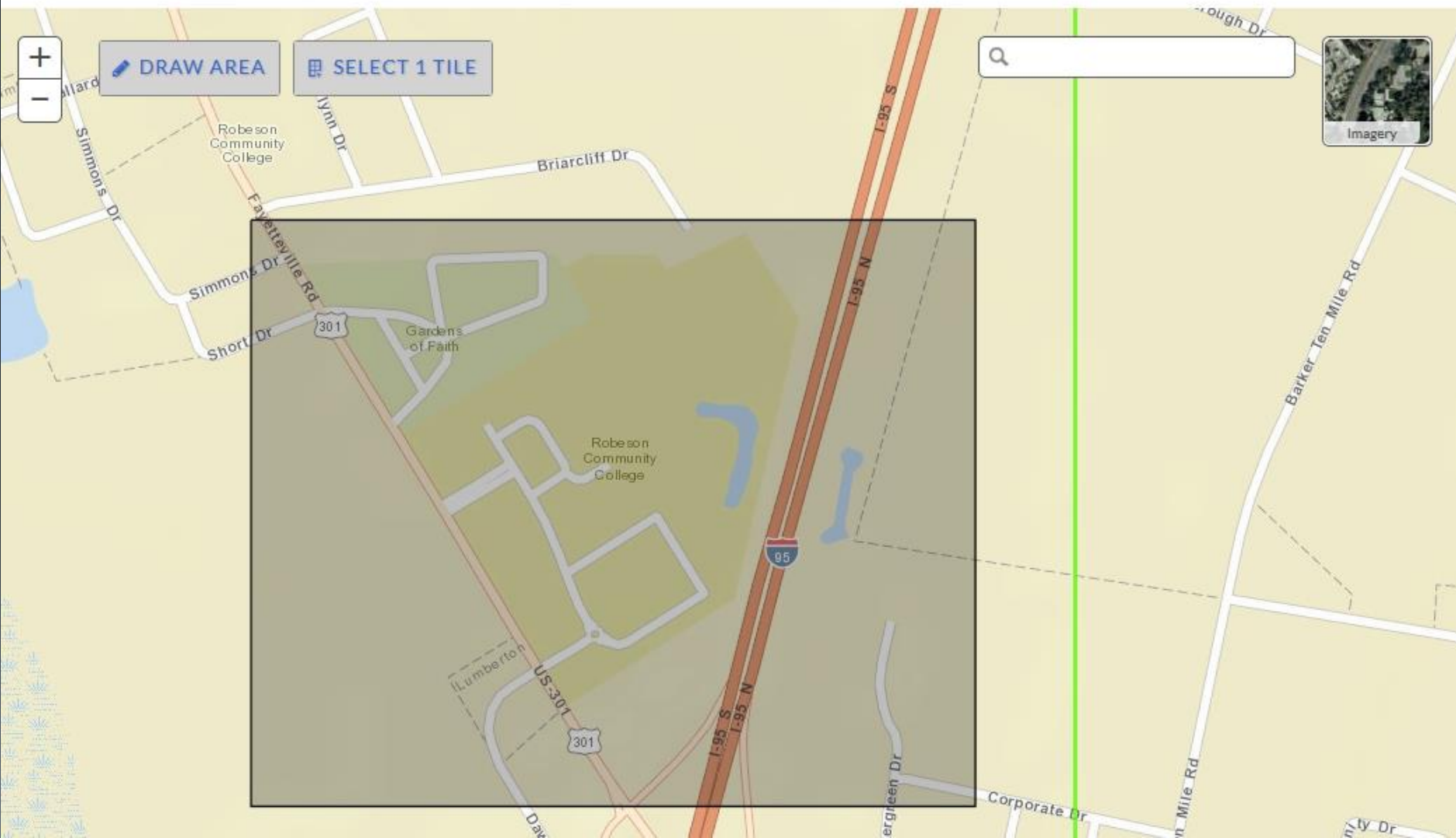
**i** QL2 LiDAR is available on the **green areas** on the map. To select an area crossing **multiple tiles**, click "Draw Area" and then draw a small box on the map. Areas must be less than 4 tiles.



❓ QL2 LiDAR is available on the **green areas** on the map. To select an area crossing multiple tiles, click "Draw Area" and then draw a small box on the map. Areas must be less than 4 tiles.

❓ Click Next to Continue

NEXT



## QL2 LIDAR DATA DOWNLOAD

To request an entire city or county, go to the [Large Data Request](#) page. Download legacy LiDAR at [NC FRIS](#)



Select Area



Select File Output



Submit Request

Select the classes of LiDAR you wish to include in your output **.LAS** file.

ALL CLASSES

This dataset contains all classes including ground, roads, vegetation and water

BARE EARTH

This dataset represents the earth's surface with all vegetation and human-made structures removed. The output .LAS file will contain classes 2 (Ground) and 13 (Roads).

INDIVIDUAL CLASSES

- Ground
- Strata/Vegetation
- Buildings
- Roads
- Bridges

PREVIOUS

SUBMIT REQUEST







## QL2 LIDAR DATA DOWNLOAD

To request an entire city or county, go to the [Large Data Request](#) page. Download legacy LiDAR at [NC FRIS](#)



Select Area



Select File Output



Submit Request

**Your request has been submitted!**

Jobs are processed in the order they are received and may require up to 24 hours for processing. You will receive an email from [rmpclipandship@ncdps.gov](mailto:rmpclipandship@ncdps.gov) when your files are ready for download. Please make sure to add [rmpclipandship@ncdps.gov](mailto:rmpclipandship@ncdps.gov) to your safe sender list.

[SUBMIT ANOTHER REQUEST](#)

[VIEW REQUEST HISTORY](#)



**This is a beta version of the Spatial Data Download site.**

This is not the final version and you may encounter downtime, errors or bugs. If you do: [Email Your Feedback](#)

NCFMP will not be liable for any loss suffered by any party as a result of their use of the site. Any downloading of material is done at the users own risk and the user will be solely responsible for any loss that results from such activities.

**SPATIAL**  
Data Download




NC Floodplain Mapping Program  
4105 Reedy Creek Drive  
Raleigh, NC 27607

Mailing Address  
4218 Mail Service Center  
Raleigh, NC 27699-4218

Phone: (919) 715-5711



## REQUEST SUMMARY

-  Click the column names to sort your requests.
-  **Pending** requests may take up to 24 hours to process. You will receive an email when your data is ready for download.
-  Click the Download button to access your completed data request files.

Status	ID	Date	Type	
 Pending	61	3/11/2015 9:30:40 AM	Rectangle	
 Complete	32	3/2/2015 1:54:51 PM	Rectangle	<a href="#">↓ DOWNLOAD</a>

Your Spatial Data Download Job #61 is complete.

**Selected Area (NC State Plane Feet)**

Min X: 1,996,197.63

Min Y: 335,246.80

Max X: 1,999,539.66

Max Y: 337,937.92

The the data will be available for download for 3 days.

**Download Files**

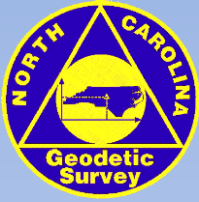
Files are zipped using open source 7-Zip compression (.7z file type). 7-Zip is free and does not require registration.

**Download 7-Zip**

If you have any questions, please contact Hope Morgan at [hope.morgan@ncdps.gov](mailto:hope.morgan@ncdps.gov) or John Lay at [john.lay@ncdps.gov](mailto:john.lay@ncdps.gov).

*Thank you for using [Spatial Data Download!](#)*

E-mail correspondence sent to and from this address may be subject to the provisions of G.S. 132-1, the North Carolina Public Records Law, and may be subject to monitoring and disclosed to third parties, including law enforcement personnel, by an authorized state official.



# Statewide Imagery Project



## North Carolina Statewide Digital Orthoimagery, Business Plan for Four-Year Acquisition and Urban Counties

### Statewide Digital Orthoimagery Acquisition Cycle



#### Orthoimagery Acquisition

- Coastal – 2012
- Eastern Piedmont – 2013
- Northern Piedmont and Mountains – 2014
- Southern Piedmont and Mountains – 2015

Sources: NC Center for Geographic Information and Analysis and the Working Group for Orthophotography Planning Statewide Mapping Advisory Committee

April 2013

0 50 Miles







NC OneMap GeoSpatial P... x

data.nconemap.com/ Press Tab to search NC OneMap Search

Mail BBT Slash Your Cell Pho... Online convert TIFF,... AWStats Document... Web 3.0 Working with Lidar ArcGIS | Don Meltz

Help About NC OneMap

# NC OneMap GeoSpatial Portal

HOME SEARCH BROWSE DOWNLOAD IMAGERY MAP VIEWER

## Home




**We've changed!** The NC OneMap GeoSpatial Portal has added functionality that makes finding and using data easier than ever. Want to see the most recently added or updated items, view items alphabetically, and download larger areas of imagery for multiple years? Check, check, and check. [Watch the video](#) to see a demo of all the changes or visit the new [services page](#) to see a listing of map services we host.

**Find Resource...**

**Tutorial Videos**

**Most Recently Added/Updated Resources...**

Expand results

-  [North Carolina Game Lands - September 2013](#)
-  [Submerged Aquatic Vegetation - SAV](#)
-  [Biodiversity/Wildlife Habitat Assessment \(BWhA\) - July 2013](#)



NC OneMap GeoSpatial P... x

data.nconemap.com/geoportal/catalog/raster/download.page

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[Help](#) [About](#) [NC OneMap](#)

# NC OneMap GeoSpatial Portal

HOME SEARCH BROWSE **DOWNLOAD IMAGERY** MAP VIEWER

## Select imagery for download

**Zoom in and select an area for download**

Pan/zoom with Draw desired area:

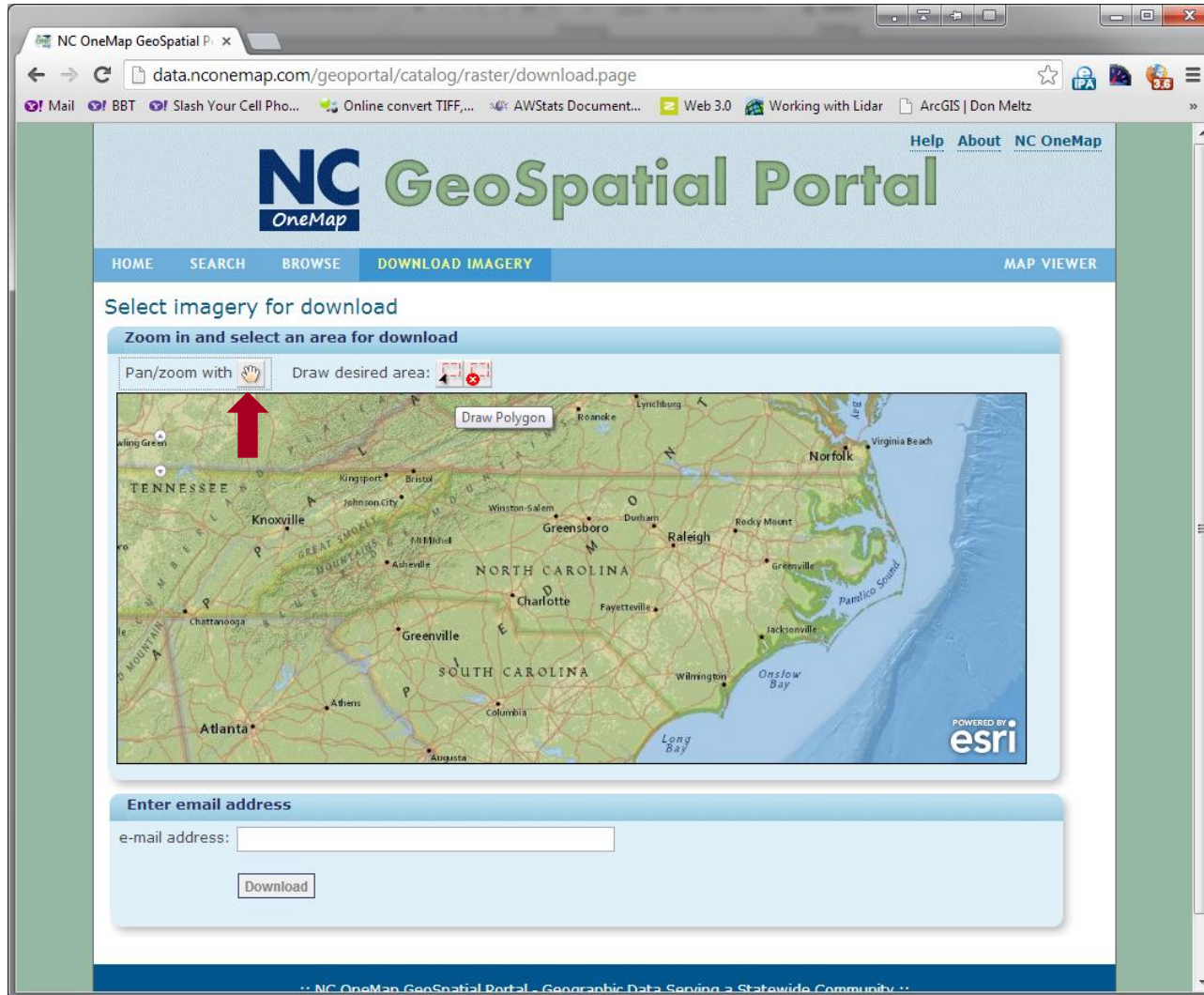
Enter email address

e-mail address:

POWERED BY **esri**

NC OneMap GeoSpatial Portal - Geographic Data Serving a Statewide Community

Step 1 - Zoom to area of interest (drag a box with mouse or use zoom tools)





Step 2 - Get a list of available imagery by drawing a box to define the project area

NC OneMap GeoSpatial Portal

data.nconemap.com/geoportal/catalog/raster/download.page

Mail BBT Slash Your Cell Pho... Online convert TIFF,... AWStats Document... Web 3.0 Working with Lidar ArcGIS | Don Meltz

Help About NC OneMap

NC OneMap GeoSpatial Portal

HOME SEARCH BROWSE **DOWNLOAD IMAGERY** MAP VIEWER

Select imagery for download

Zoom in and select an area for download

Pan/zoom with Draw desired area:

Select year(s) to download

2008  Preview

2010  Preview

Enter email address

e-mail address:

Download

POWERED BY ESRI

NC OneMap GeoSpatial Portal - Geographic Data Serving a Statewide Community

Step 3 - mouse over year to see coverage extent; click respective year to preview

The screenshot shows the NC OneMap GeoSpatial Portal interface. The browser address bar displays the URL `data.nconemap.com/geoportal/catalog/raster/download.page`. The page title is "NC OneMap GeoSpatial Portal". The navigation menu includes "HOME", "SEARCH", "BROWSE", "DOWNLOAD IMAGERY", and "MAP VIEWER".

The main content area is titled "Select imagery for download". Below this, there is a section "Zoom in and select an area for download" with a "Pan/zoom with" icon and a "Draw desired area:" tool. A map shows a satellite view of a coastal area with a yellow dashed rectangle indicating the selected area. A "Select year(s) to download" menu is open, listing years 2002, 2006, 2008, 2010, and 2012. Each year has a "Preview" button. Red arrows point to the "Preview" buttons for 2006 and 2012.

Below the map, there is an "Enter email address" section with an "e-mail address:" input field and a "Download" button.

At the bottom of the page, there is a footer: "NC OneMap GeoSpatial Portal - Geographic Data Serving a Statewide Community".

Step 4 - Select years to download, enter email address, click download

The screenshot shows the 'NC OneMap GeoSpatial Portal' website. The browser address bar displays 'data.nconemap.com/geoportal/catalog/raster/download.page'. The page has a navigation menu with 'HOME', 'SEARCH', 'BROWSE', 'DOWNLOAD IMAGERY', and 'MAP VIEWER'. The main heading is 'Select imagery for download'. Below this, there is a section titled 'Zoom in and select an area for download' which includes a map and a 'Select year(s) to download' panel. The map shows a grid over a landscape with a red dashed box indicating a selected area. The 'Select year(s) to download' panel lists years 2002, 2006, 2008, 2010, and 2012, each with a 'Preview' button. The 2012 option is selected. Below the map is an 'Enter email address' section with a text input field containing 'john.doe@email.com' and a 'Download' button. Red arrows with numbers 1, 2, and 3 point to the 2012 year selection, the email input field, and the Download button, respectively.

NC OneMap GeoSpatial Portal

Help About NC OneMap

HOME SEARCH BROWSE **DOWNLOAD IMAGERY** MAP VIEWER

Select imagery for download

Zoom in and select an area for download

Pan/zoom with Draw desired area:

Select year(s) to download

<input type="checkbox"/> 2002	<input type="button" value="Preview"/>
<input type="checkbox"/> 2006	<input type="button" value="Preview"/>
<input type="checkbox"/> 2008	<input type="button" value="Preview"/>
<input type="checkbox"/> 2010	<input type="button" value="Preview"/>
<input checked="" type="checkbox"/> 2012	<input type="button" value="Preview"/>

1

2

3

Download

ville Beach

POWERED BY esri

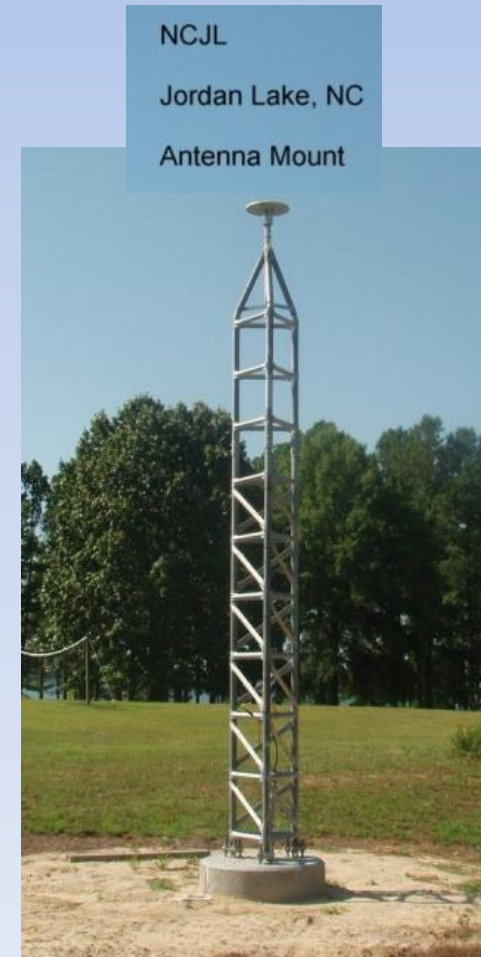
NC OneMap GeoSpatial Portal - Geographic Data Serving a Statewide Community



# NC CORS Network

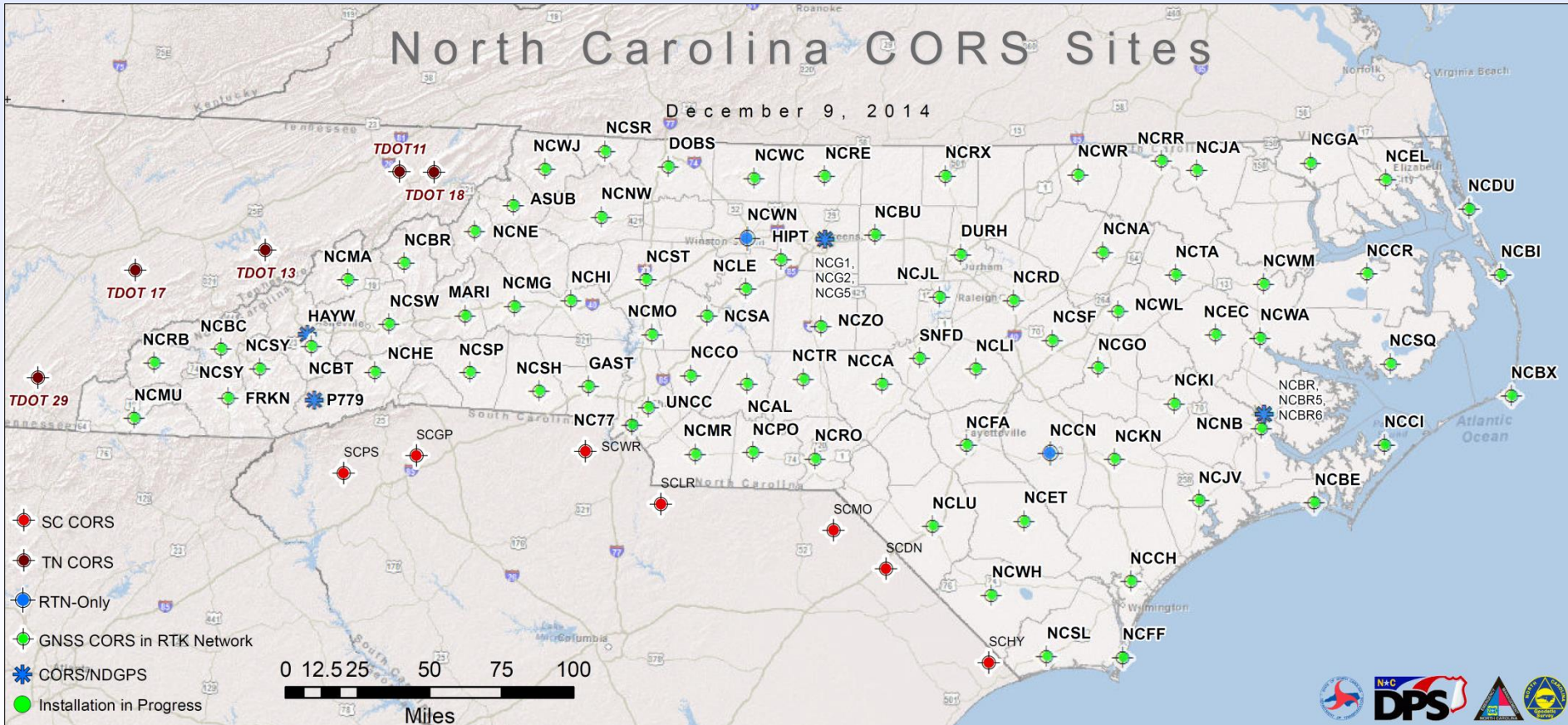


- Continuously Operating Reference Station (CORS)
  - A permanent and continuously recording Global Navigation Satellite System (GNSS) receiver, antenna (with a surveyed reference position), & support equipment
  - NC CORS Network
    - Composed of 91 CORS
      - 1 new CORS has been installed
        - Raeford (NCRF)
      - 1 CORS has been upgraded to GNSS
        - P779





# NC CORS Network



<http://geodeticsurvey.nc.gov/Pages/CORS-and-GNSS.aspx>



North Carolina Emergency Management



# RTN port request

**NCEM - Geospatial and Technology Management**  
**NORTH CAROLINA GEODETIC SURVEY**  
Positioning North Carolina today and for the future.

Home About NCGS Geodetic Control **CORS and GNSS** County and State Boundaries Library Other Programs Tools Kids Page

## North Carolina Geodetic Survey

### North Carolina GNSS Real Time Network

**Geodetic News**  
**Cabarrus-Stanly County Boundary Recorded**

Monday, June 30, 2014

The Cabarrus-Stanly County Boundary resurvey has been approved and recorded.

Cabarrus County Register of Deeds:

- Plat Book 66, pages 26-29

Stanly County Register of Deeds:

- Plat Book 23, pages 290-293

**Unmanned Aircraft Systems Forum**

Monday, June 02, 2014

**AGENDA**  
Unmanned Aircraft Systems (UAS) Forum

June 12, 2014  
9:00 a.m. to 12:15 p.m.

Magnolia Building (#15 on the campus map), rm #103  
Asheville-Duncombe Tech  
340 Victoria Rd (Google coords: 35.570079, -82.557235)  
Asheville, NC 28801

**Tweets**

- NC Geodetic Survey @ncrtn**  
The NCAL (Albemarle), NCLE (Lexington) and NCMR (Monroe) CORS are operating again.
- NC Geodetic Survey @ncrtn**  
The NCAL (Albemarle), NCLE (Lexington) and NCMR (Monroe) CORS are currently not operating.
- NC Geodetic Survey @ncrtn**  
The NCBE (Beaufort) CORS is operating again.
- NC Geodetic Survey @ncrtn**  
The NCBE (Beaufort) CORS is currently not operating.
- NC Geodetic Survey @ncrtn**  
The NCWJ (West Jefferson) CORS operating again.  
Expand

Tweet to @ncrtn

**Create Account**  
Register a new account

**Personal Data**

First Name:

Last Name:

Address:

Zip Code:

City:

District:

Country:

E-Mail:

Separate multiple e-mails by ", "

Additional E-Mail:

Phone Number Home:

Phone Number Business:

Phone Number Mobile:

GSM Phone Number for TNC:

Language:

<http://geodeticsurvey.nc.gov/Pages/CORS-and-GNSS.aspx>

**NC SURVEYORS**

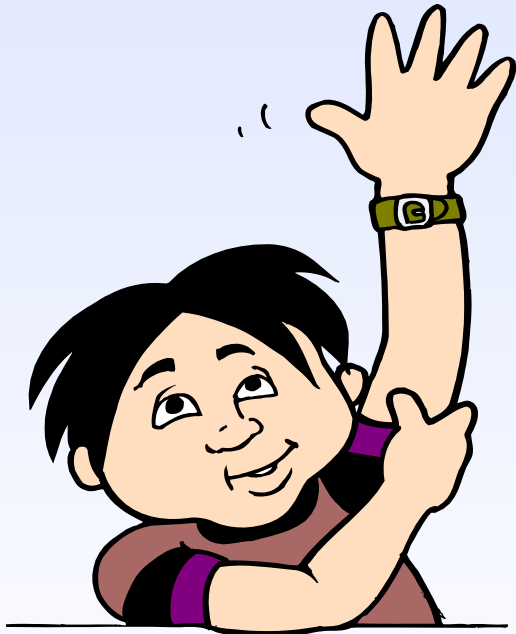
**Following  
In Their  
Footsteps**

**1939** P  
S

**NORTH CAROLINA**



# Questions?



Gary Thompson, PLS  
NC Geodetic Survey  
4105 Reedy Creek Road  
Raleigh, NC 27607

Main office: 919-733-3836  
Direct line: 919-948-7844

[gary.thompson@ncdps.gov](mailto:gary.thompson@ncdps.gov)