

# Installation, Licensing and Updates

## New Features in LP360 2014.1

LP360



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Revision 1.0



As I looked over previous issues of GeoCue Group News, I noticed that we announced in June that we would release LP360 2014.1 in late July! Well, obviously that did not happen. I made the decision in July to postpone the release while we added tools to measure LIDAR vertical accuracy and orthophoto horizontal accuracy in accordance with the latest American Society for Photogrammetry and Remote Sensing (ASPRS) geospatial accuracy specification. Unfortunately, the draft version of this standard has not yet been approved. Therefore, we are releasing LP360 with tools compliant with the June 2014 draft of the spec. If it changes, we will modify our reporting and update LP360 in a service pack release.

As I look back over the significant new features that we have added with 2014, I see that our foci were improving the Point Cloud Task (PCT) tools and adding capability to support point clouds derived from dense image matching. This latter work is primarily in support of data collected with small Unmanned Aerial Systems (sUAS). Part of the work in support of sUAS workflows has been to add many of the features that were previously only in the LP360 ArcGIS extension to the 64-bit standalone Windows version of LP360. This was done because many of the users of sUAS are from the surveying community where GIS tools are not often standard kit. As we move forward in time, we will continue to bring the two version of LP360 (ArcGIS extension and 64 bit standalone) into parity.

All of the features listed below are available in both the LP360 extension for ArcGIS and LP360 Standalone unless otherwise indicated. If a feature requires the Standard or Advanced level of LP360, I have parenthetically indicated this. The major additions to LP360 for the 2014 release include:

- Enhanced LAS load performance. We use the Davidson Country (Nashville) LIDAR data set for stress testing. This set comprises 1,073 LAS files containing 3.9 billion points which total 110 GB of data. Cataloging these files requires 15 seconds. Opening the entire data set now requires only 100 seconds. Of course, once loaded you have a synoptic view of this entire county of 0.7 m LIDAR data, all displayed in ArcGIS! (thanks to USDA for this dataset).
- Comprehensive support for LAS 1.4, including promoting previous versions of LAS to Point Data Record Formats 6 and above.
- Adding profile extraction tools as a point cloud task (Standard). This is an important feature for cut and fill analysis such as volumetrics and road works. The new implementation allows you to clip the profiles based on a polygon (see Figure 1).

**B** LP360 Basic Edition  
**S** LP360 Standard Edition  
**U** LP360 sUAS Edition  
**A** LP360 Advanced Edition

**A** ArcGIS  
**W** Windows  
**G** GeoCue

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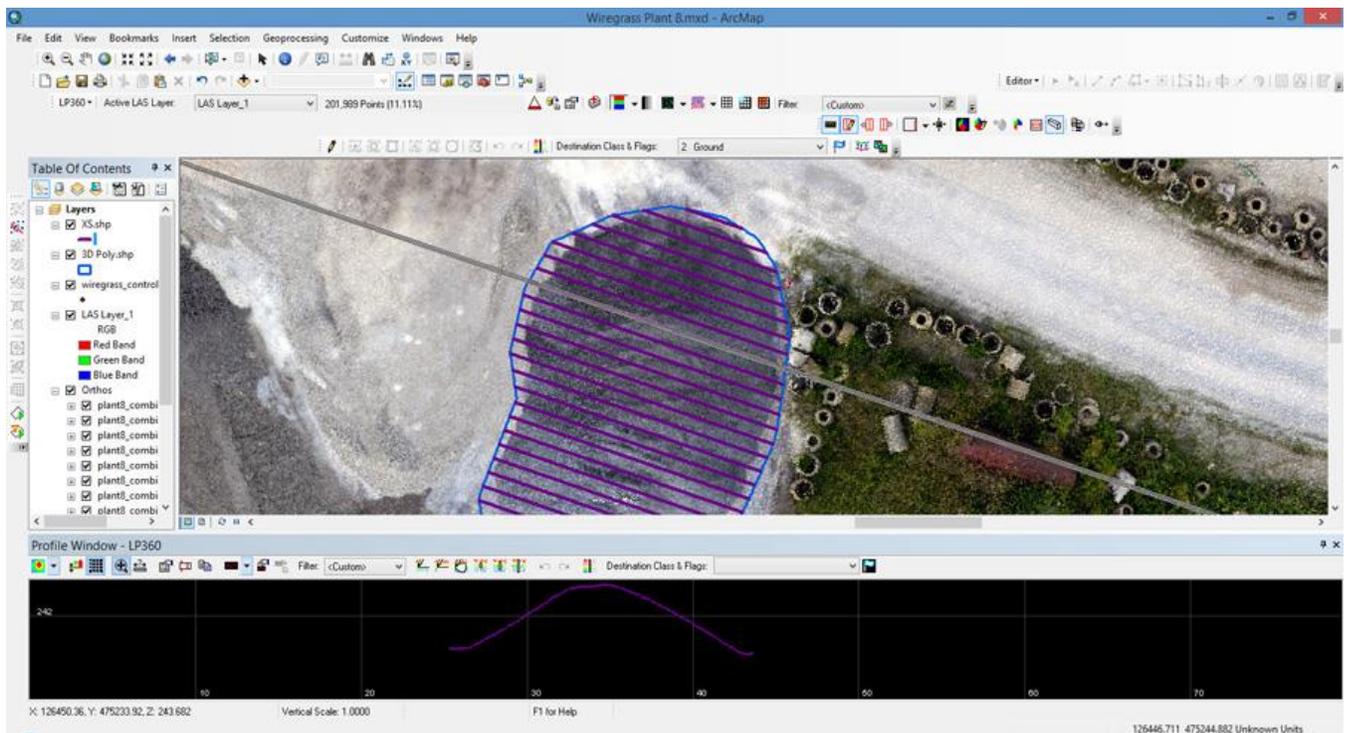


Figure 1: Cross Sections (purple) clipped to a bounding polygon (blue)

- Full support for the new ASPRS accuracy specification. This means that you can now assess the horizontal accuracy of digital ortho photos and mosaics using LP360 (Figure 2). This feature is critically important for sUAS metric mapping projects.

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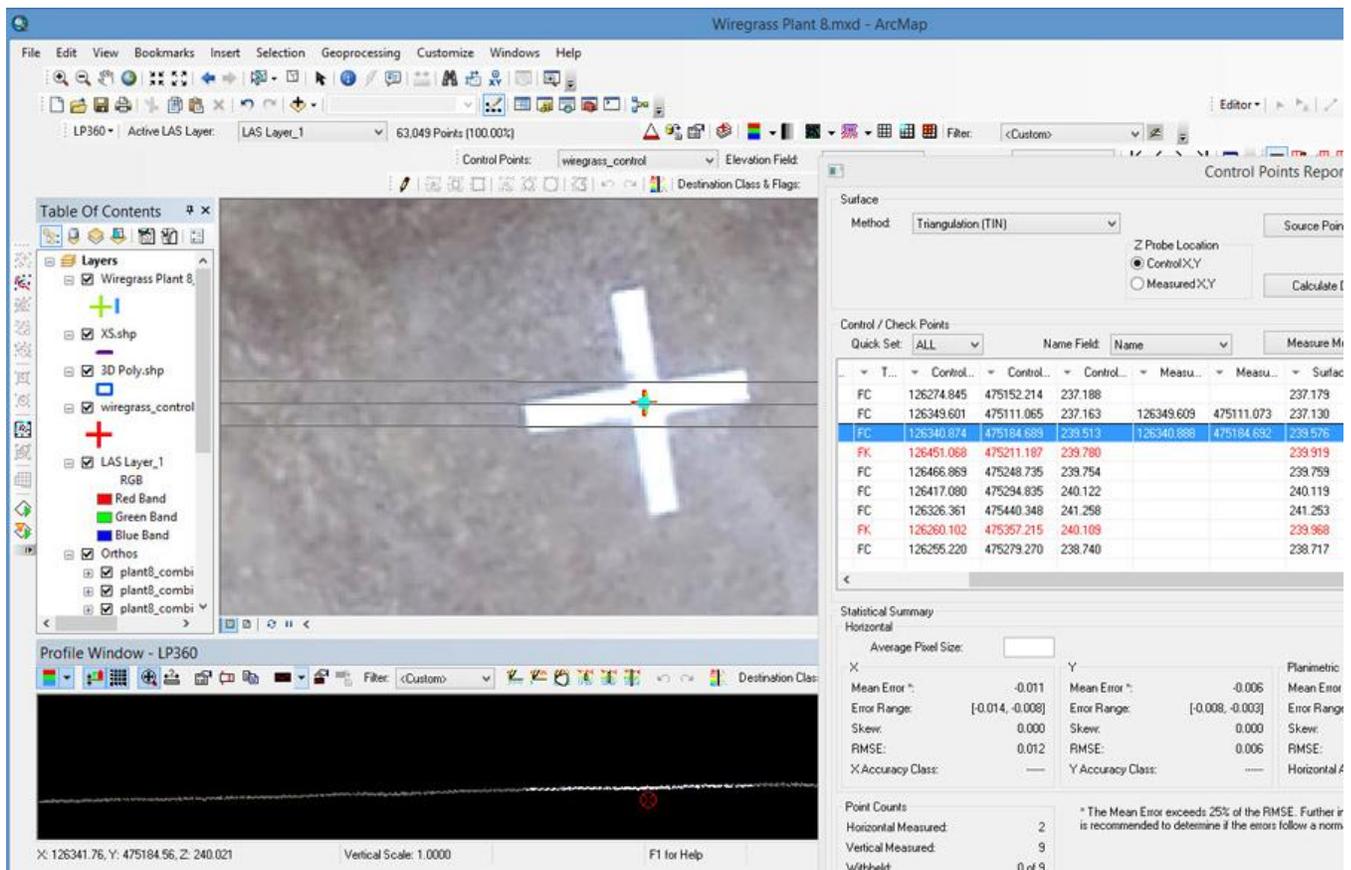


Figure 2: Measuring Control and Check Points (Horizontal and Vertical)

- We have added new image management tools in LP360 Standalone. Now when you read in image files, they are automatically collected into Group layers in the table of contents based on image types. This is analogous to the way LP360 groups LAS files. This is extremely convenient when working with a large number of images because it allows you to control all of the enhancement parameters from a single control.
- Railroad track centerline ('alignment') extraction and top of rail classification Point Cloud Task (Advanced). This new point cloud task allows you to semi-automatically extract a 3D vector that represents a rail alignment. You can also automatically classify the top of rail points (Figure 3)

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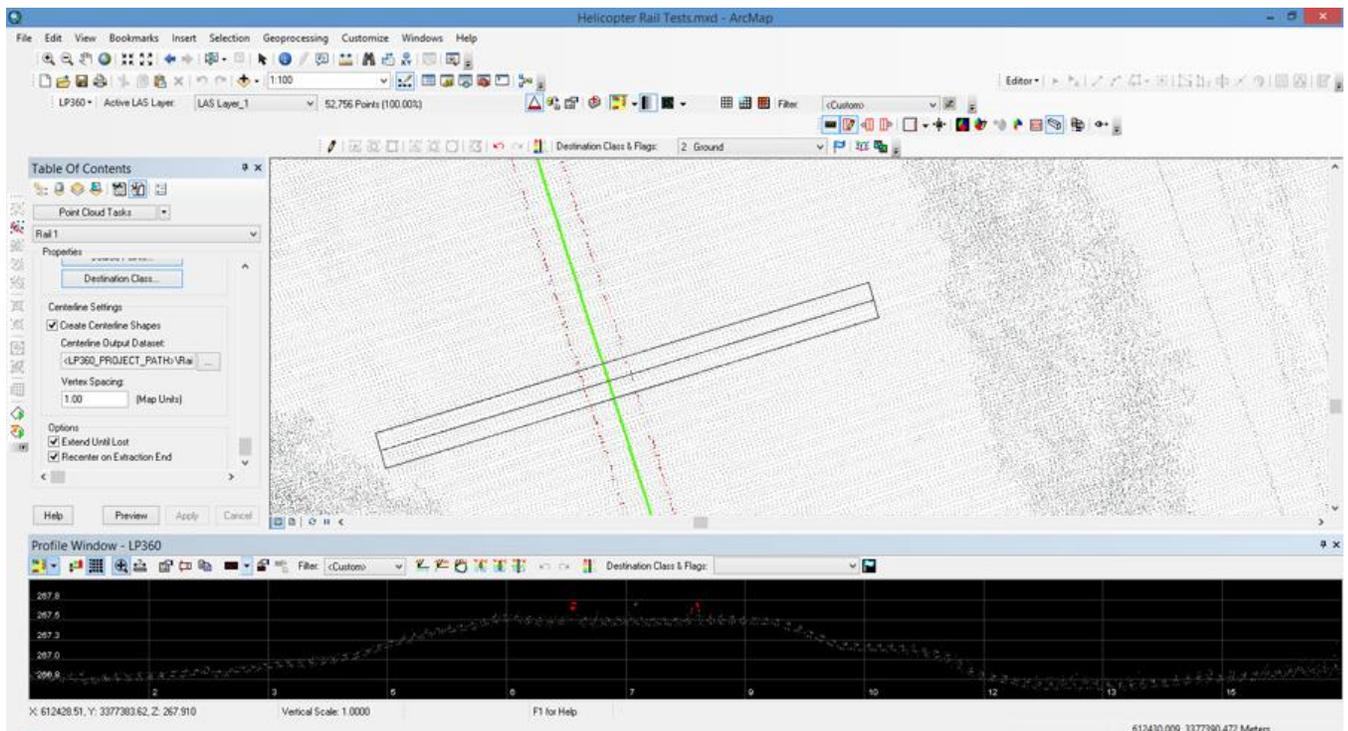


Figure 3: Rail Alignment and Track extraction

- Classify by Feature has been moved to a Point Cloud Task, in both ArcGIS and Standalone (Standard). This allows you to combine this classification tool with other PCTs in a macro. For example, you might use the Point Group Tracing PCT to vectorize clusters of points and then use Classify by Feature to do classification. You can get quite creative with point cloud tasks. For example, I have strung a few together to create 3D vector models of transmission lines.
- Line and Polygon vertex spacing and smoothing Point Cloud Task (Standard). This new task allows you to change the number of vertices in a line or polygon by either thinning (using a variation of the Ramer–Douglas–Peucker algorithm) or to increase the number of vertices. This is handy in quite a few different workflows. For example, you can trace a long, straight line feature (such as a railroad rail) as a two point line, add vertices every few meters via this PCT and then conflate Z onto the vertices using the Conflate Z point cloud task.
- Import ASCII to Shape – This is a new option on the import ASCII tool (normally used to import ASCII point cloud files into LAS files). The intent is to allow you to import Control Point files in ASCII format and convert to Shape. This completes the control/check point assessment workflow for LP360 Standalone (where you do not have the nice ArcGIS tools for manipulating vector data).

In addition to the major new features highlighted above, we have also addressed many areas of the software to improve both performance and stability.

Everyone who has LP360 on current maintenance will be able to update to the new release by using the “LP360 – Check for updates” feature in LP360. We will send out an email blast when the new release has been posted to the download server.

I think you will find tremendous added value in this new release of LP360. LP360 was already the premiere tool for point cloud exploitation. This new release greatly advances this standing as well as

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positioning LP360 as the most capable tool in the marketplace for exploiting point clouds from dense image matching projects.