



## Click Here to View our Previous Articles

[Mobile 3D Laser Scanning/Mapping – What can it do for you?](#)

[BMP \(a.k.a. Best Management Practice\) What is it and what is criteria for implementation?](#)

[Hot Weather Concreting](#)

[CFS - Certified Floodplain Surveyor - How Can One Benefit You?](#)

[Finding Potential Foundation Savings The Marchetti Dilatometer Test](#)

## Dear Barry,

Welcome to the quarterly newsletter from **ESP Associates, P.A.** (ESP). Each quarter, ESP produces an informational article about a particular topic that we feel may be of value to our clientele. We hope you find the material informative and we welcome the opportunity to assist you with any support that you may need. All articles presented are also available on our website [www.espassociates.com](http://www.espassociates.com).

## Using Mobile Terrestrial LiDAR and GIS Analyses to Assist In Levee Risk Assessment

The spring of 2011 has shown massive flooding effects across much of the Midwest, Northeast, and along the Mississippi River Valley all the way to New Orleans. The heavy rains have caused swollen lakes, reservoirs, rivers, and tributaries that are putting pressure on existing dams, spillways, and levees which provide protection to people and their property. One of the main questions this raises is will the levee hold? Most levees fail when the floodwaters overtop the crest of the levee at one or more locations along its length. With the help of Mobile Terrestrial LiDAR technology and GIS Analyses, experienced engineers can provide much needed information to help make these determinations.



Figure 1: Un-cleaned Point Cloud on the Left, Cleaned "Bare Earth" Ground Points on the Right.

To obtain Mobile Terrestrial LiDAR along a levee, two things are needed: permission from the levee owner to access the structure and a vehicle traversable path along the top of the levee. Once access permission is obtained, the data collection is as simple as driving along the crest of the levee along its entire length. The resulting dataset is a point cloud with sub-centimeter post spacing, along with geo-referenced pictures and an .avi (movie) file. Once the LiDAR has been post processed, the point cloud is cleaned to bare earth (ground) points and a digital terrain model (DTM) is constructed.

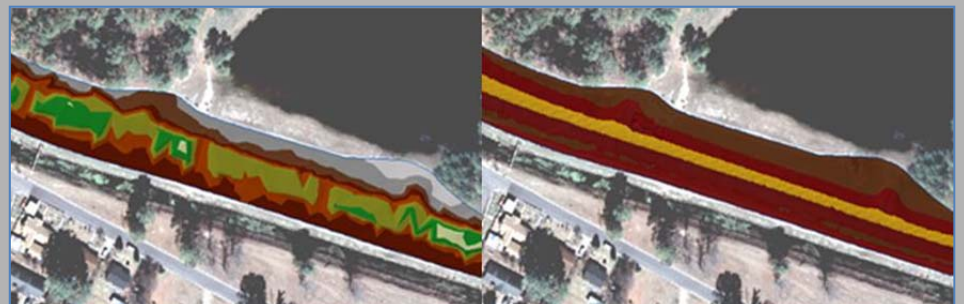


Figure 2: Two Digital DTM models of the same levee structure.