

## Elevation Framework Initiative Action Team

### Kickoff Meetings Notes

In attendance: (39, 29 onsite, 10 remote - listed in italics below)

Damon Pettitt, Albemarle County  
Vickie McEntire, Fairfax County  
Patrick Fly, Frederick County  
Jason Collins, Hanover County  
Larry Stipek, Loudoun County  
*Bob Pearsall, Montgomery County*  
*Robbie Huff*  
*Ivan Brown, City of Chesapeake*  
David Spears, DMME  
Amy Gilmer, DMME  
Allison Meehan, VDCR  
Brian Crumpler, VDEM  
Jim Pugh, VDOF  
Jason Braunstein, VDOF  
Darlette Meekins, VDOT  
Raleigh Cook, VDOT  
John Aaron, VDOT  
Elizabeth Campbell, VDOT

John Scrivani, VGIN  
Dan Widner, VGIN  
*Stefanie McGuffin, VGIN*  
Brian Rizzo, UMW  
Randy Wynne, Virginia Tech  
Kirsten Miles, UVA  
Jon Janowicz, FEMA  
Robin Danforth, FEMA  
Diane Eldridge USGS  
*Gayla Evans, USGS*  
*Jordan Menig, USGS*  
*Michelle Hamor, USACE*  
Brian Mayfield, Dewberry  
Tim Blak, Dewberry  
Brian Batten, Dewberry  
Don Cole, Woolpert  
*Rick Vincent, Sanborn*  
*Torin Haskell, QCoherent*

#### Agenda

10:00 am Welcome, Dan Widner, VGIN Coordinator  
10:05 am The Elevation FIAT – Intent and Process Overview, John Scrivani, VGIN  
10:15 am LiDAR Technology, Brian Mayfield, Tim Blak, Brian Batten, Dewberry  
11:15 am FEMA Flood Mapping and Elevation Needs, Jon Janowicz, FEMA  
11:45 am Roundtable Introductions  
12:00 noon Lunch  
1:00 pm Discussion of FIAT Charter and Next Steps (all participants)  
1:30 pm Visualizing and Using LiDAR Data, Sanborn  
2:00 pm USGS and the National Elevation Dataset, USGS  
3:00 pm Adjourn

#### Overview

Dan Widner gave an overview of the framework initiative team concept from the VGIN 2010-2015 Strategic Plan. John Scrivani presented background on current elevation datasets for Virginia, the results of previous efforts by VGIN, and suggested tasks for the FIAT.

#### LiDAR Technology

In Dewberry's presentation Tim Blak, Brain Mayfield and Brian Batten reviewed:

- the technology of LiDAR, swath width considerations, LiDAR point clouds and intensity images

- Dewberry's USGS GPSC2 Task Order for Virginia; Northumberland, Lancaster, Middlesex, Gloucester, Isle of Wight, King and Queen, James City, Mathews, Suffolk and Surry, and Williamsburg. Total Area – 2,575 square miles
- USGS LiDAR Specification Version 13 and Dewberry's acquisition parameters
- Hydro-flattening and breaklines, with an emphasis on the need for standard definitions of breakline features and the potential of using existing photogrammetric data such as the VBMP breaklines
- Bare-earth digital elevation models (DEM)
- The differences among engineering, cartographic and breakline-enhanced contours
- LiDAR fusion with multi-spectral orthos
- LiDAR application to coastal sea-level rise analysis

### FEMA Flood Mapping

Jon Janowicz (FEMA) spoke about the use and need for elevation data for the National Flood Insurance program in Virginia. FEMA's Map Modernization program for Virginia has all but four counties at the effective or preliminary DFIRM stage. Next for Virginia is the Risk MAP program which seeks to resolve data gaps, increase public awareness and understanding, promote mitigation planning, provide an enhanced digital platform, and align risk analysis program to develop synergies. Near term opportunities for Virginia include a topographic data inventory for Virginia and a potential for investment in improving elevation data quality in priority areas. Jon mentioned that metadata and accuracy documentation is a significant issue in the inventory of elevation data.

Jon mentioned that the use of LiDAR in Virginia Beach was very valuable in map modernization. After the meeting Bob Pearsall mentioned by email that use of LiDAR in Montgomery County resulted in 120 properties being removed from the floodplain and a big cost savings to residents.

### FIAT Charter and Next Steps

During the Charter discussion, the group expressed consensus on the business objective for the FIAT, accepting the business objective agreed to in the 2007 LiDAR summit, which is:

*Compile or acquire statewide elevation data that is of sufficient design, accuracy, and resolution to meet the business needs of the broadest possible stakeholder group in the Commonwealth of Virginia. These stakeholders include local, state, and federal government agencies, non-profit and non-governmental organizations, private sector businesses, and private citizens.*

The group agreed to focus on the following four areas for future activities (*identify tasks and timeframes to include schedule and any deliverables, where feasible*):

- Conduct an inventory of existing LiDAR in Virginia
- Begin to identify standards
- Identify any best practices
- Education/Communication

**Inventory:** Establish a subcommittee to conduct the inventory. Get metadata for existing Elevation data. Conduct a suitability assessment using the rating categories established in the standards (see below).

**Standards:** Dewberry suggested that we begin with the acceptance criteria that they are using on the USGS project. These could be used to define acceptable methods or standards in dealing with issues that come up when reviewing data. The challenge will be to broaden these enough so that they are not just LiDAR focused.

These criteria could be used to identify acceptable methods to meet the needs of various rating categories, such as for FEMA usage, USGS usage (National Map), State usage, Local usage, etc. Establish a subcommittee of interested and willing volunteers and then bring the results to the larger group for concurrence

**Best Practices:** Out of the inventory, and perhaps from other sources such as vendors, identify best practices that follow the rating categories.

**Education/Communication:** It was identified that this FIAT, perhaps through a subcommittee, needs to devote some effort on a communication plan or other methods to convey the meaning to a larger lay audience. Objective would be for both decision maker level of understanding as well as general public. This subcommittee will coordinate this effort with the Education FIAT that is just getting underway. The outputs from each subgroup will be brought to the larger group for concurrence.

#### Visualizing and Using LiDAR Data

Rick Vincent (Sanborn) introduced Torin Haskell (QCoherent) who demonstrated techniques for analyzing and visualizing LiDAR point clouds directly from LAS files using LP360 software, which can be used as an ArcGIS extension or as a standalone application. Rick also gave a brief update on the Eastern Shore LiDAR acquisition project.

#### National Elevation Dataset

Gayla Evan (USGS) presented the policies and procedures used by USGS to update the seamless National Elevation Dataset in its 1, 1/3 and 1/9 arc-second resolutions. Gayla focused on data quality issues including proper hydro-flattening, LiDAR data artifacts and misclassifications, presenting many illustrative examples. She also discussed data access to bare-earth DEM data through the NED website

Jordan Menig (USGS) presented the mission and uses of the CLICK LiDAR point cloud coordination site and data clearinghouse/viewer. Jordan mentioned that while the combination of NED and CLICK provide data access to both bare-earth DEM and LiDAR point cloud data, other elevation data such as contours, mass points and breaklines, are “orphaned” in the sense that a seamless data clearinghouse is currently not available.

A few closing comments were made by participants and the meeting was adjourned at 3 pm.

*Notes made by John Scrivani, VGIN Contact for the Elevation FIAT  
May 21, 2010*