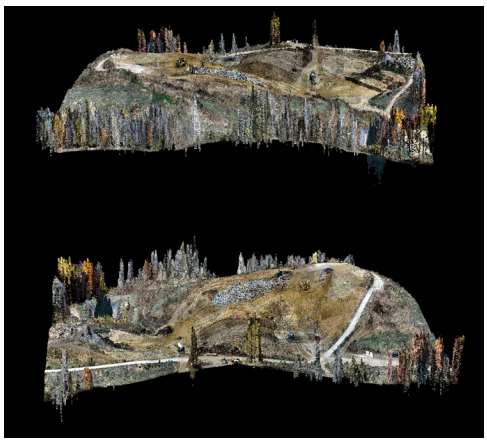
BARKER LEMAR
ENGINEERING CONSULTANTS

AERIAL UAV MAPPING

Sample aerial photo

Aeroview staff readying launch



Sample point cloud imagery

LiDAR uses radar to map objects, creating thousands or millions of points of data. This mapping technology has been in use for many years. The ability to do this from unmanned aerial vehicles (UAV) with accuracy has changed the cost and speed at which mapping can be conducted without interrupting facility operations. In addition, new technology allows rapid and realistic 3-D modeling.

Barker Lemar can team with any of several UAV service providers to ensure appropriate site and method preparations are completed to meet the unique data needs of landfills. We recently teamed with AeroView Services, based in southeast Iowa, to perform a trial project. They are licensed by the FAA to operate a Trimble UX5 UAV for mapping purposes and is the first company in the United States to employ this particular UAV technology commercially. They use a UAV-based LiDAR system that not only records the coordinates of each point, but also records the color of each point in the point cloud. This allows rapid and realistic 3-D modeling of the site, including buildings, trees, ground surface, etc. in lieu of outdated publically available aerial imagery. Models can be viewed using free software (Quick Terrain Reader). Resulting modeling can then be used for presentations, aerial inspections, and more. The UAV is capable of generating point clouds on at 2 cm intervals with sub-inch accuracy horizontally and vertically.

In the trial conducted in October 2015, Barker Lemar and AeroView performed a survey on the same day at a landfill in order to calculate remaining airspace and waste density for the site. After a comparison of the ground survey and the aerial survey, the volumes calculated were within 2%. The trial demonstrated that airspace analysis and site mapping can accurately be performed using AeroView's UAV system.

LiDAR does have some limitations. Therefore, caution must be used when planning, designing, or analyzing data, and sometimes a ground-based survey is necessary to obtain the necessary accuracy. Depending on the facility's characteristics, a combination of aerial color LiDAR and ground-based surveys may be needed to obtain the necessary information.

Deliverables are formatted to be compatible with engineering and CAD software. Additional fees would be necessary for analysis of the data for volumetrics (waste or soil), updating of existing topographic maps, setting of survey control, etc.

Please contact Dan Jensen to discuss project opportunities:
djensen@barkerlemar.com | 515.256.8814