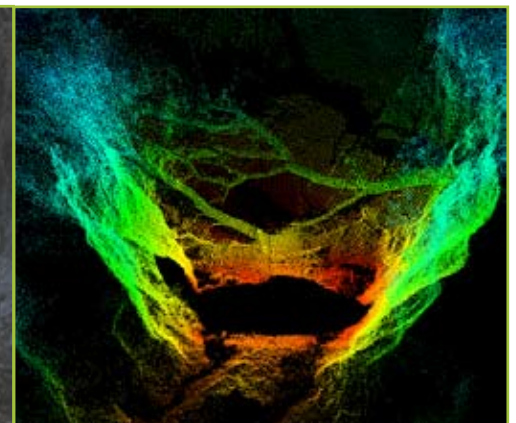


Surveying Stream and River Restoration Sites

The Maptek I-Site™ 4400LR scanner is an excellent tool for quickly and efficiently surveying stream and river restoration sites. Streams and rivers are topographically complicated features in the landscape, often with much vegetation and limited line of sight.



The I-SITE 4400 scanner being used to survey pre-construction project conditions and calculate cut and fill volumes



Downstream view of a logjam across the creek, used in a 3D hydraulic model to estimate current shear stresses on the bed and bank at Site 1

HIGHLIGHTS

- Surveying stream and river restoration sites is quick and efficient with I-Site 4400LR
- Ability to overlay photos on top of scanned points is invaluable
- Full 3D models can be created quickly

Such sites present a formidable challenge and cost using typical surveying techniques. When agencies require many surveys to estimate pre-construction, as-built, and post construction conditions, it is important to have an efficient process.

The I-Site 4400LR scanner was evaluated by surveying two stream restoration sites in the Bay Area of California, USA. One site was scanned to document pre-construction conditions to calculate volumes of cut and fill needed for construction.

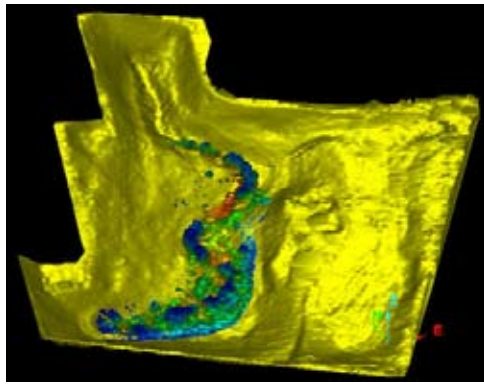
The second site was a completed restoration project that was scanned to provide an as-built baseline for future monitoring of physical changes to the streambed and to monitor the growth of planted vegetation on the site.

At each site, 8-20 scans were completed within 3-5 hours. 20 million data points were collected at one site, with 12 million at the other. A total station was used to determine the locations of the I-Site 4400LR scanner.

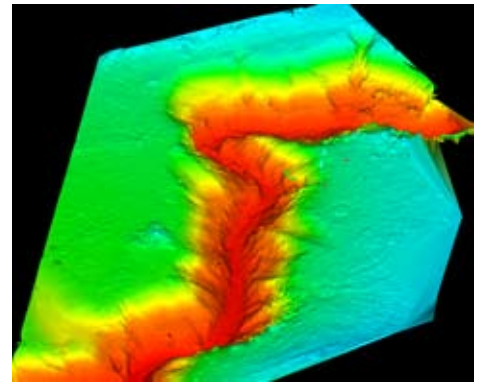
I-Site 4400LR scanner was used to survey two stream restoration sites to identify its usefulness in scanning pre-construction and as-built sites.

The I-Site 4400LR scanner's ability to overlay photos onto the scanned points proved invaluable for differentiating between ground and vegetation in these complex areas.

While on site at both restoration projects, a full 3D model was created using the quick model-building capabilities of I-Site Studio.



Difference map showing vegetation growth



The 3D surface generated from the 42 scans (about 30 million points). Vegetation and trees were filtered to generate a smoothed topographic surface

TESTIMONIAL

The I-Site 4400LR scanner and studio software are ideal for surveying stream and river restoration projects.

The I-Site system provided a significant cost advantage over traditional surveying techniques while at the same time providing far superior data.

Within an hour, a full digital elevation surface model was created with vegetation stripped off and ready to estimate cut and fill volumes. The I-Site point data later was plugged directly into a hydro-dynamic model and used to estimate shear stresses on the banks and bed. This data can be used to model slope stability over time.

Surveying topographically complex stream and river sites was quite simple using the I-Site 4400LR scanner and I-Site Studio software.

A cost saving of 75% was realised, as well as providing superior quality data when compared to traditional surveying techniques.

The added ability of the I-Site 4400LR scanner to monitor vegetation is unparalleled and, while not estimated here, likely represents a large cost saving compared to other types of manual monitoring as used by most biologists.

Using I-Site equipment resulted in a cost saving of 75% and gave superior quality data when compared to other surveying techniques.

Another useful application is recording and testing contractor compliance against design documents.

*Thanks to:
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At Site 2, looking upstream, nine months after construction, showing vegetation growth