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TurnPoint Geomatics Uses Esri GIS at Rancho Mission Viejo

BY MARC GOLDMAN

Jerry Lopez, PLS, is founder and president of TurnPoint Geomatics, a land surveying and construction management support services company supporting land development. Based in Murrieta, Calif., (halfway between Los Angeles and San Diego) TurnPoint has, since its 2019 inception, been very focused on applying progressive geospatial technology to high-profile projects, notably the Rancho Mission Viejo (RMV) land development called The Ranch Plan of nearly 23,000 acres (containing 17,000 acres permanent open space and 6,000 developed acres) of some of the most prized and untouched land in Southern California. Lopez has been involved with this project since 2006 and expects to stay involved through 2035.

At RMV's Ranch Plan project in particular, Lopez incorporated Esri GIS technology into land-development and survey operations to an unprecedented degree, creating a sophisticated site-specific GIS that serves as an effective "front-end" for all stakeholders. The beneficiaries include contractors and subcontractors looking to layout and verify work (and get paid), owners and salespeople creating presentations, and Lopez himself or TurnPoint staff using the as-built survey information from multiple daily drone flights.

It's possibly the most advanced and functional GIS ever created specifically for a land (and nature preserve) development, and recently Lopez sat down with Esri to show off what he's created and answer a few questions.

Marc Goldman: Jerry, I'm obviously going to ask you about your use of Esri solutions, but first, I want to hear more about the "Heritage Tree" you helped move for this project. Was this one of the largest trees ever moved?

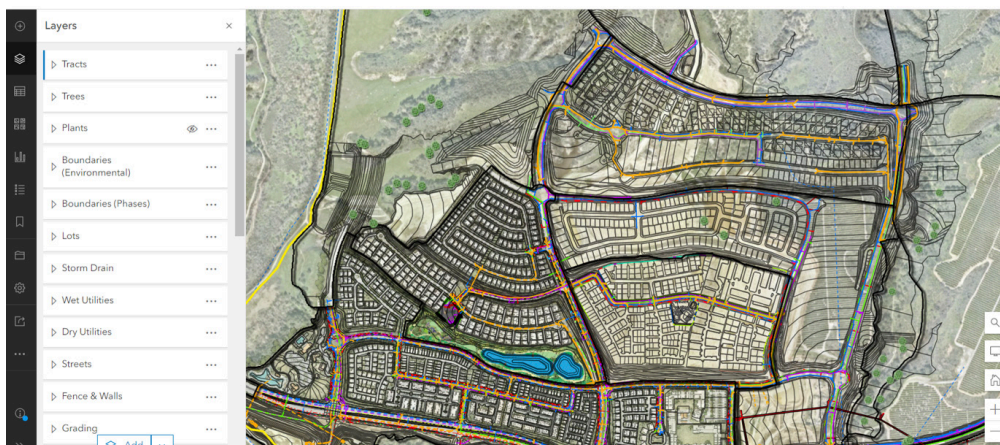
Jerry Lopez: I love talking about this. The owner of Rancho Mission as part of their responsible land planning insists on relocating existing oak trees that fall within the land-development areas that would otherwise get demolished. We think the "Heritage Tree" is the third-largest tree ever moved: 50 feet tall by 100 feet wide, and we're quite sure it was the longest move—by far. About a mile and a half, compared to just 10 feet or so for other moves we know about.

There's a strong GIS component to this move. The process starts with a detailed environmental study where we collected the tree locations and a lot of attribute data used to evaluate tree health. And, of course, it makes a lot of sense for that data to be

brought into a GIS rather than a simple topo map—it makes evaluation of candidates for "boxing" and moving much easier.

Then there was the logistics of the move—grading, area takeoffs, quality control, construction inspection, safety monitor, things like that. Typically, this stuff is done in CAD or even paper-based forms, but here we utilized Esri for everything, and it helped a lot.

This tree is doing beautifully, by the way, and was placed as a focal point in a sports park. A massive undertaking, and well worth it.



Maps such as this have become essential for the weekly construction meetings highlighting existing utilities and easements, proposed grading, and property lines.

Marc Goldman: So that's an exceptional use for a unique purpose. How does the GIS help with your more day-to-day work on the site?

Jerry Lopez: One use that has been constant is that the developers are pretty adamant about how the measurement methods are used to pay out to contractors—they want to be certain the work is correct, and the right amount is being billed. It's our job to provide that certainty.

One of the ways we do that is through frequent drone flights for topography, as-builts, orthomosaics, you name it—sometimes we fly the whole site two or three times a day. And it's very effective to bring that high-resolution, precisely registered imagery into the GIS, where we can use it for inspection and billing. Say a contractor submits a bill for 50 lineal feet of pipe laid in a month—we use recent drone imagery to verify that amount of pipe was installed, in the right place, and we can confidently approve that payment immediately.

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We primarily use GIS for this. I believe it handles high-resolution imagery better than CAD tools. We can take civil files in there and leave the imagery in its native state. These are huge files—gigabytes—and we can zoom in very closely and tell whether things are getting built correctly.

Marc Goldman: Do you use GIS even for traditionally survey-intensive tasks?

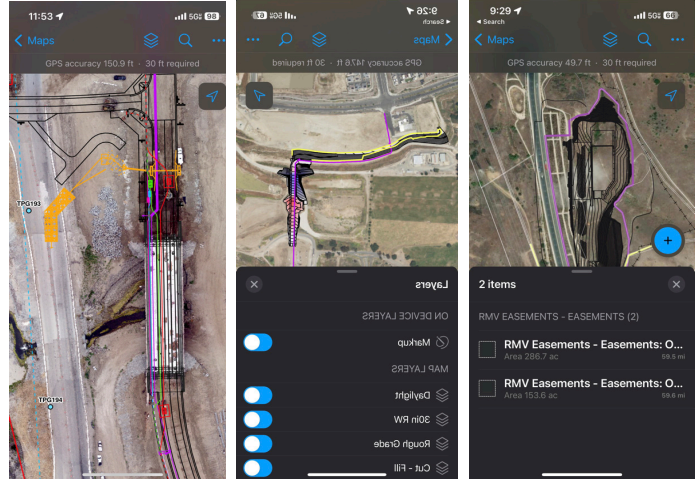
Jerry Lopez: Yes. The control network is a good example. It's always important, especially for construction layout, and we must keep tabs on it. Sometimes, it almost seems like our control points are targets for contractors, and we're always losing them.

We've found that GIS is the best way to manage this. Our survey crew uses the GIS app in the field to find and restore control points and enter all the information about it right there. So, if any of our field staff have to go out and do some field work, they always know the status of the control point and have a visual map of its location.

Field maps empower construction teams with their logistics planning by helping them understand where items are in the field without needing survey witness stakes.

Marc Goldman: Why is the GIS an improvement over, say, a CAD front end?

Jerry Lopez: It's less clunky. Just this morning we had our Friday construction meeting, and it was the strong preference of everyone involved to use ArcGIS online for presenting and planning. When we started the ranch plan, years ago, we'd be working from a big screen and a CAD platform, trying to manage and view the CAD layers including existing utilities, proposed utilities, imagery, topo and many others simultaneously—and it didn't work.



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We've learned that ArcGIS online and Esri tools are the best way to manage the multiple layers of data and imagery that we've assembled here. For us, it's so much better and easier; I can't imagine going back.

For more information, go to www.esri.com/aec.



Marc Goldman is AEC Industry Leader, Business Developer and Product Strategist at Esri, a student pilot, and geospatial industry expert on BIM, GIS and Digital Twins.

Big Move for a Big Tree

Rancho Mission Viejo spends millions of dollars to relocate existing oak trees that fall within the land-development areas that would otherwise get demolished. The trees are relocated to areas where they will serve as focal points within the community.

A short video of extraordinary efforts to relocate a "legacy tree" from a land-development project site to a new home in a sports park can be viewed at bit.ly/4441jSD or by scanning the accompanying QR code.

