

American Water Streamlines Operations with Collector for ArcGIS | Q & A

Q: Regarding high accuracy - we are using the EOS Arrow Gold to collect water infrastructure. The height captures are in meters and do not match with our survey capture of the same points when converted to feet. Are there resources to 1) understand this difference, 2) will this be rectified in future Collector versions? Are there current options? Thanks!

A: This article provides guidance that will help answer your questions:<http://www.resourcesupplyllc.com/csu-monterey-bay-tackles-high-accuracy-rtk-and-elevations-with-Collector/>

Q: Randy: How many data Collector units do you have?

A: In terms of GPS Units, we currently have 32 Arrow 200s and 1 Arrow Gold paired with LTE enabled iPad Mini 4's. Additionally, we have roughly 250 users with access to Collector for ArcGIS on their smart phones.

Q: Randy: Our data is only put in by using the as-builts, do you guys have a set put in by the as-builts and a data set that is GPS?

A: No, we don't keep two datasets. We utilize the GPS points to draw the project into our production GIS system. Doing so gives the field instant access to the asset locations, while we wait for the final as-built drawings. When we receive the as-builts, we then review the data we entered via GPS Point, and make any additional adjustments if necessary.

Q: Will a recording of this be available? This is really great info!

A: Yes, it is being recorded and will be posted on [Meetup](#) and [GeoNet](#).

Q: Randy: Do your GPS features get published to your SDE geodatabases for desktop GIS editing in ArcMap or are they just hosted feature service for use in ArcGIS Online?

A: Currently our GPS data are hosted feature services, and we bring them into ArcMap for editing.

Q: Randy: Is your data hosted or stored in Enterprise geodatabase? If so, how do you QA/QC your data before entering SDE database?

A: Our GPS data is not currently stored in an Enterprise geodatabase. We collect and store our data in a hosted feature service in ArcGIS Online. Editors pay attention to the GPS metadata stored within the GPS features to determine whether to use or remove a data point.

Q: Randy: Are you able to concurrently collect data from multiple Collector devices? I thought you need an SDE and versioning to do concurrent collection. Are you only using AGOL or is your AGOL referencing an SDE?

A: We are collecting from 33 different GPS units with unique ArcGIS Online accounts at any given time. ArcGIS online provides multiple options for collecting data; you can use an SDE dataset with versioning, or you can use a hosted feature service. We use a hosted feature service, and it manages the versioning without the need for SDE.

Q: Randy: Are there any plans to locate all existing assets?

A: Absolutely. We are currently working towards this goal.

Q: Randy: So, If your Online map service is tied directly to a server that is on premises, then any and all GPS data is stored on the server thru the online (Collector) app?

A: Yes. You can configure collection that way. You just need ensure that you can access that server through your IT's firewall.

Q: Randy: When you say plant mapping, are you talking about vertical assets, such as process piping? Can you elaborate on that?

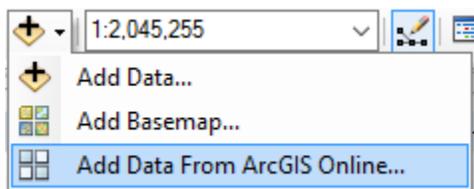
A: When I mentioned plant mapping, I was referring to a project to tie well, tank, and other plant asset statistic records to a map accessible via the collector application. We intend to work on vertical assets in the future; we're just not ready for that quite yet.

Q: Randy: Who is creating the trigger features?

A: Our project inspector, who is also GPS'ing the project, is creating the trigger feature.

Q: Randy: How do you preserve the data? I meet with people who want to be able to manage their online information with live information, instead of downloading a copy once a week.

A: I use an ArcGIS Online hosted feature service as our (live) master dataset, and download a copy every week or so as a backup. You can bring the hosted feature service directly into ArcMap or ArcGIS Pro and use it as if it were local data.



Q: Randy: Do you integrate your field collection data with your GIS process and Engineering with CAD data?

A: Yes. We use our field collection data as one data source along with CAD data and old record drawings. All pieces of information work together to help us provide accurate mapping information for the field.

Q: Randy: What process are you using to review the info (data) you are receiving from maintenance personnel (i.e. Accidental Point collection, points that don't match with existing info)?

A: Any time we see a questionable point, we contact the person responsible for the data collection for more information.

Q: Randy: How many GIS staff members are involved with editing the as-built information?

A: We currently have four GIS personnel (including myself), two of which edit the majority of our as-built information.

Q: Randy: I heard 3 minutes for RTK solution. Is this a top limit related to IN network? I noticed it only took 10 seconds or so, which is normal for us here in NJ too. Plus, no point averaging need is big time saver with RTK.

A: I have experienced the same 10 seconds in Indiana. Most of our RTK connections occur within 30 seconds. I just used 3 minutes as a VERY conservative estimation to cover the rare edge cases.

Q: Randy: Our field crews have low confidence in the ability to collect data offline out in the field. How did you overcome the challenge of proving that offline data can be captured accurately and in a reasonable amount of time?

A: We currently don't collect data offline; we use RTK over a cellular data network. Our data gets pushed over the internet through collector to a hosted feature service. The key to proving the accuracy and timeliness of any workflow is to establish a good testing environment and include your field crews in the testing. Be sure to take into consideration their comments. My experience is that if you implement a workflow that is easier for field crews to use, they will be more comfortable with change.

Q: Randy: Do you leave the GPS as-built points in your maps, or remove them after the GIS has been updated with actual as-builts?

A: We currently leave the GPS as-built points in our maps. Until we develop a local storage solution to support photos, we will keep our data available for our staff to access.

Q: Randy: I run out of credits with maps on ArcGIS online ... how do you manage your maps online?

A: We typically use our maps as just that, maps. We currently avoid providing ArcGIS Online hosted analysis tools to preserve credits.

Q: Randy: Does this eliminate the need to have a place to upload and store features collected in the field to then be added to ArcGIS? This is how we currently operate with our Trimble GPS unit.

A: Yes. If you use RTK (which eliminates the need for post-processing), data collected in the field is uploaded directly to the hosted feature service. You can access the hosted feature service directly in ArcMap or ArcGIS Pro, without the need for manually transferring files.

Q: Randy: Do you offer training to the people you're asking to use these applications? There's so many applications out there. How do you provide instructions?

A: We do train the end users. We created some how-to documentation and included a PDF of the documentation on each iPad.

Q: Randy: Are the GPS points collected through EOS of the same accuracy as your previously used Trimble receiver?

A: In theory, the points should be of similar accuracy. Because of the newer hardware, combined with reducing improper collection techniques (we now mount the antenna to a monopole with level), we are experiencing greater accuracy with the EOS equipment.

Q: Randy: What's the general cost of the arrow unit?

A: You can obtain an Arrow 200 unit for approximately \$7000. This price doesn't include the pole or smart device.

Q: Randy: Regarding photo attachments on collected GPS reference points: When it comes time to post the as-built to GIS, do you copy the photo attachments from the GPS reference point to the actual GIS asset during the as-built posting process?

A: We currently do not. We are working on a local storage option to provide a hyperlink to the photos collected during the GPS process. In the meantime, we will leave the collected GPS points accessible as a layer so that our employees can view the images.

Q: Randy: How many samples are obtained for each point that needs to be recorded in the database. Just one, or several samples.

A: We currently collect just one. If you are interested in multiple samples, collector now includes a GPS Averaging feature to reduce the need to retain multiple points.

Q: Randy: Is there an alternative to As-Built mapping for the engineering aspect of the work you demonstrated?

A: We think that proper GPS collection can potentially replace As-Built mapping. The key to doing so is establishing confidence in the technology within the business.

Q: Randy: Do you have problems with tree cover, even in the winter? We've experienced getting enough satellites for survey grade accuracy in treed areas.

A: Tree cover definitely has an impact on signal, but so far, it hasn't prevented us from collecting data. We just make sure to set expectations that when collecting with heavy tree cover we need to be patient and willing to accept points with slightly lower accuracy readings. Obviously, what is acceptable is based on the data's intended use.

Q: Randy: How do handle emergency situations where no cell service is available?

A: We currently use an old water utility mobile map application installed on everyone's Windows PC. We hope to utilize Collector for ArcGIS or Explorer for ArcGIS in the future, but we need them to cache maps without creating child versions on our local ArcGIS server. If using a hosted feature service, this isn't an issue.

Q: What iPad mini memory is required?

A: You should be fine with an iPad Mini with 32gb or greater. I try to stay clear of 16gb to leave room for future applications and media.

Q: Randy: Do you integrate your data into Arc GIS Pro from Arc GIS Online?

A: Unfortunately, No. Our production systems use geometric network rules that currently aren't supported in Pro. When we migrate to the Utility network, we will look into integration.

Q: Randy: Does your organization utilize ArcGIS online only, or is there a need to use ArcGIS for desktop in any instances? Do you have any advice for utility departments looking at switching to this platform?

A: Indiana American Water uses ArcGIS Online in conjunction with ArcGIS for desktop. Our day-to-day editing is conducted in ArcGIS for desktop, while ArcGIS Online is used as a tool to share, collect, and display data across multiple platforms. My advice would be to use both systems in conjunction with one another, and not "switch". Editing and Analysis are much better in the desktop environment, while ArcGIS online makes consuming data much easier for the end user. I hope this helps!

Q: With regard to caching, when will Collector be updated to NOT create a child version on the server for each caching request? This is a showstopper for our ArcGIS Server because it creates hundreds of versions, so we leave caching disabled. This does not affect users that use Esri hosted services, but we keep collection edit layers in-house.

A: When collecting and updating features stored within an enterprise geodatabase and offline map use is required, you can either use a versioned transaction model or non-versioned archiving. If you version your data, the feature service itself will create versions when maps are taken offline (Collector does not control this). Here is the documentation for how feature services work with offline data. Please note that there are advanced options when publishing. Please check to see if you published with the "Create a version for each" option. If it is checked, you will create a child version every time a map is downloaded. You may be better off using the "Create a version for each user" instead. Using this option it will only create a version for each named user. Please also look at the following scripts as a means to automate the reconcile and post process.

Q: When will Collector be integrated with TruPulse laser rangefinders to enable offset auto population the way ArcPad can?

A: We have this capability in our backlog and it will follow with the Aurora Project where Collector will be receiving a refresh in its user experience. Look to mid-late 2018 for this capability to exist within Collector.

Q: Can you connect an external laser rangefinder, similar to how Arcpad does?

A: Collector does not support the use of laser rangefinders at this time. Please see the answer above for timing.

Q: When can we expect to see the move to Trimble Catalyst?

A: Catalyst will be supported in the next release of Collector. It is currently planned for September of this year. If you already have a Catalyst antenna and are interested in joining our active beta program (we have a build of Collector in beta supporting Catalyst now), please email Collector4ArcGIS@esri.com.

Q: Regarding high accuracy - we are using the EOS Arrow Gold to collect water infrastructure. The height captures are in meters and do not match with our survey capture of the same points when converted to feet. Are there resources to 1) understand this difference, 2) will this be rectified in future Collector versions? Are there current options? Thanks!

A: Collector does not support the capture and storage of the z-value in a z-enabled feature layer today. This is coming in a future release. However today we capture the HAE value into a field and [provide scripts](#) for how you can apply a vertical transformation and generate a z-enabled feature layer with MSL elevations.

This article provides guidance that will help answer your questions:

<http://www.resourcesupplyllc.com/csu-monterey-bay-tackles-high-accuracy-rtk-and-elevations-with-Collector/>

Q: Are you planning to add the ability to collect a z (elevation) value on Collector when connected to a Trimble GPS?

A: Yes, we are! This is a part of our Aurora Project where Collector is being refreshed on a new underlying architecture (mid-2018 release). We are also planning to support vertical datum transformations. For now, you will need to use the process described in the previous question above.

Q: Can you collect elevation data with the arrow 200 and Collector?

A: Yes. As described above, today you need to capture elevation as an attribute value but in a future release we will be able to store it on the geometry itself.

Q: Are z capabilities coming to Collector?

A: Yes. Please see above.

Q: Are there plans to update Collector settings to add a transformation setting for vertical transformation from WGS to NAVD 88?

A: Yes. This is coming with the Aurora Project in 2018.

Q: Will a recording of this be available? This is really great info!

A: Yes, it is being recorded and will be posted on [Meetup](#) and [GeoNet](#).

Q: Does AGOL handle a multi editing environment?

A: Yes. Both the Hosted Feature Layers that you create and manage inside of ArcGIS Online and the Feature Layers that you publish to your GIS Server support multi-user editing. The primary difference is that Hosted Feature Layers do not support a versioned transaction model. It is a

"last-one-in wins" approach. If you have the potential for conflicts where 2 people may be updating the same features, I would recommend that you use a versioned transaction model so you can manage conflicts.

Q: Can you explain how to add pictures to Collector point?

A: Our [documentation](#) describes how you can add photos to features in Collector. Please note that photos are stored as "attachments" in your GIS data and related to features (so that you can create many of them for each feature). There are several ways to enable attachments on your data either [before](#) you publish it or [after](#).

Q: Does uploading/storing maps to ArcGIS Online use credits?

A: If you store data in Hosted Web Layers then yes it does. This FAQ describes how Collector can consume [credits](#).

Q: Will a way to create new domains ever be available without pushing a new file to ArcGIS Online?

A: Yes. This is planned in the backlog of ArcGIS Online. You can also use the [Solution Deployment Tool](#) within ArcGIS Pro to do this today.

Q: What if 2 people are mapping assets in the same area - can one edit cancel the other out?

A: If you are using Hosted Feature Layers within ArcGIS Online or if you are using a non-versioned archive transaction model with data published to your GIS Server then yes, it is a "last-one-in-wins" approach. Collector will support editing of versioned data as well.

Q: When can we see a release of Trimble Catalyst in Collector?

A: Catalyst will be supported in the next release of Collector. It is currently planned for September of this year. If you already have a Catalyst antenna and are interested in joining our active beta program (we have a build of Collector in beta supporting Catalyst now), please email Collector4ArcGIS@esri.com.

Q: Can a Trimble GeoX 6000 be used with Collector the same way as an Arrow 200?

A: It is possible to use a Trimble Geo as an external GPS receiver. It requires that you Bluetooth pair the receiver to an Android device and that the [Geo supports export of positions to NMEA](#). I would recommend contacting your Trimble dealer to also see about upgrade paths to an R1 or R2 receiver and/or potentially to a Catalyst antenna.

Q: Any suggestions for how to apply the same information to multiple points? For example, often within a park site, there will typically be multiple of the same sprinkler heads within a plant bedding or area in the park. Collecting each location is great but inputting the same information could be tedious.

A: Take a look at the [Continuous Collect setting](#). With the setting turned on you have several options available to streamline repetitive feature collection.

Q: Do all layers in Collector need to be editable or can non-editable layers be included in the map?

A: To take maps offline, at least 1 layer needs to be editable. You can disable editing on all other layers if you like. These layers can be downloaded to your device, tapped on to receive popup details and searched against as well.

Q: Would it be possible to use Collector in a Trimble handheld so there is no need for an extra piece of hardware?

A: I would recommend that you speak with your Trimble dealer for options. There are several external receivers (R1, R2 and Catalyst) but they also have handheld Android receivers and Windows 10 receivers capable of running Collector for ArcGIS.

Q: I'm using Collector for census mapping within the organization. However, the downloading of data is a challenge due to the file size. Do you have any advice?

A: When encountering challenges due to file size it is almost always a combination of the size of the basemap and the bandwidth of your wireless network. You can create basemaps with ArcMap and ArcGIS Pro and copy them to your mobile device. This [blog](#) describes the basic process but please refer to the [basemap documentation](#) on our website for more details. If the device is running Windows 10 or Android, this is very straightforward. If it is an iOS device, this requires iTunes or a similar app. If you do not have a desktop running ArcMap or ArcGIS Pro, check out our Esri Labs app called [TilePackageKreator](#).

Q: I use Cal VRS instead of Trimble RTX and have Collector connected to the Trimble R2 receiver and I can't collect elevation data with Collector. I would appreciate any help, comments?

A: Please see the discussion above regarding the capture of elevation data. With an RTK connection, you will need to post-process the elevation values as we capture them using HAE. This [article](#) describes the process very well.

Q: Clarification: Is the Boolean logic type of customizable form going to be available in Collector / ArcGIS Online? Or is it specific to Survey 123?

A: Yes it will be available within Collector, ArcGIS Online web apps and ArcGIS Pro moving forward. The logic for the platform will be founded upon [Arcade](#) and will be integrated into the forms experience throughout the platform.

Q: Does the inability for Collector to label features pose any issues?

A: It can be challenging as labeling adds context when visualizing maps. Until Collector supports labeling, you will need to tap on features to gain the additional context. Labeling is coming through the Aurora Project.

Q: What iPad mini memory is required?

A: Collector system requirements can be found [here](#). We do not require a certain amount of memory but do recommend that you keep at least 20 – 30 percent of the memory free to make sure that apps run efficiently on your device.

Q: What would be the cost to get started with an iPad and the EOS tool with the high accuracy GPS?

A: There are a lot of variables to consider (what iPad to purchase, what EOS GNSS receiver to pick, do you need additional named users within ArcGIS Online). Luckily iPads and Named Users have a fixed price and this is very easy to choose from. Determining the Eos receiver is going to depend upon your accuracy requirements. If you want to use RTK or PPP corrected positions to gain sub-foot accuracy then that will have additional costs as well. I would recommend you start by talking with Eos Positioning to see what receiver fits best to your needs.

Q: Any recommendations for editing that needs snapping? (e.g. geometric network datasets with specific topology requirements)

A: At this point, Collector does not support snapping. In addition, it will treat layers that participate in a geometric network as simple features and not apply the rules contained within your logical network. My recommendation would be to not enable the editing of geometry on layers that participate in a network dataset. Instead capture data into other layers if possible and then use a QA/QC process to merge edits and enforce topological consistency using ArcMap. In the future we are looking to support editing of the Utility Network within Collector, but this will not be available for some time.