



Using GPS, Esri Collector and ArcGIS Online to obtain accurate asset locations.

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Agenda

1. Overview of Sacramento Suburban Water District

2. The Project

- a) Problem Statement
- b) Conceptual Design
- c) Solution Development
- d) Implementation



SACRAMENTO SUBURBAN WATER DISTRICT

- ❑ Location: Sacramento, CA
- ❑ Population Served: approx. 180,000
- ❑ Staff: ~ 70 full time
- ❑ 709 Miles of Mains
- ❑ 91 Production Wells
- ❑ ~ 20,000 Valves
- ❑ ~ 6000 Fire Hydrants
- ❑ ~ 10,000 Fittings
- ❑ Over 47,000 Service Connections
- ❑ 2018 Annual budget: O&M \$22,000,000
CIP \$20,000,000

Problem Statement

- Locating buried/overlaid infrastructure.
- ~80k assets to locate
- Current base map not geospatially accurate
- Textual location information (DIMS)



Conceptual Design

- Centimeter grade accuracy required
- Standard out of box tools
- Real-time updates to location data
- Uses existing GIS asset data
- Ease of use



Solution

- GPS Equipment Acquisition
- Collection Process Development
 - ArcGIS On-Line
 - Existing Assets
 - New Assets
- GPS X/Y Coordinates Storage Process Development
 - ArcGIS On-Line
 - SDE Geodatabase
- Getting Back to. . . .
 - Esri Collector

GPS Equipment Acquisition

➤ Competitive Selection

- Wanted the best options to choose from

➤ Demonstrations

- Wanted to see the units in action, under various conditions

➤ Field Trials

- Wanted to see how the units performed in locations within our district that we had an idea could be problematic



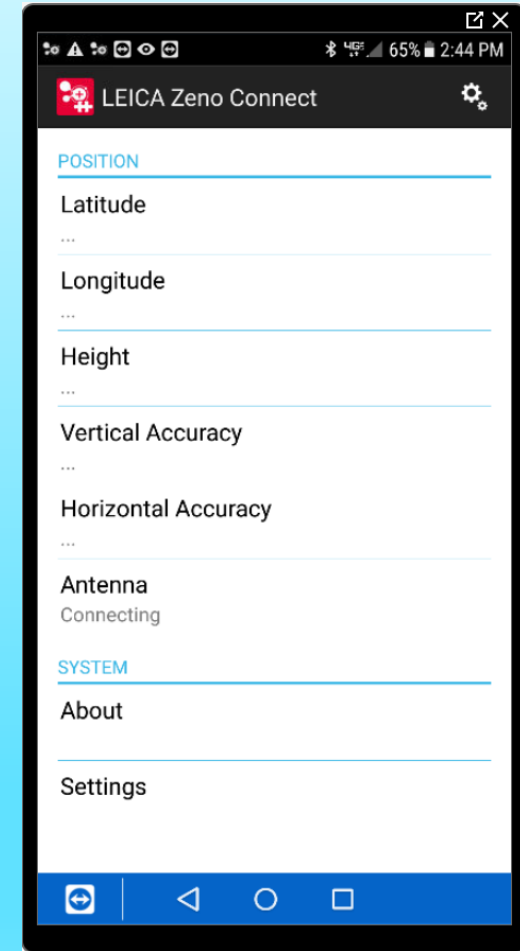
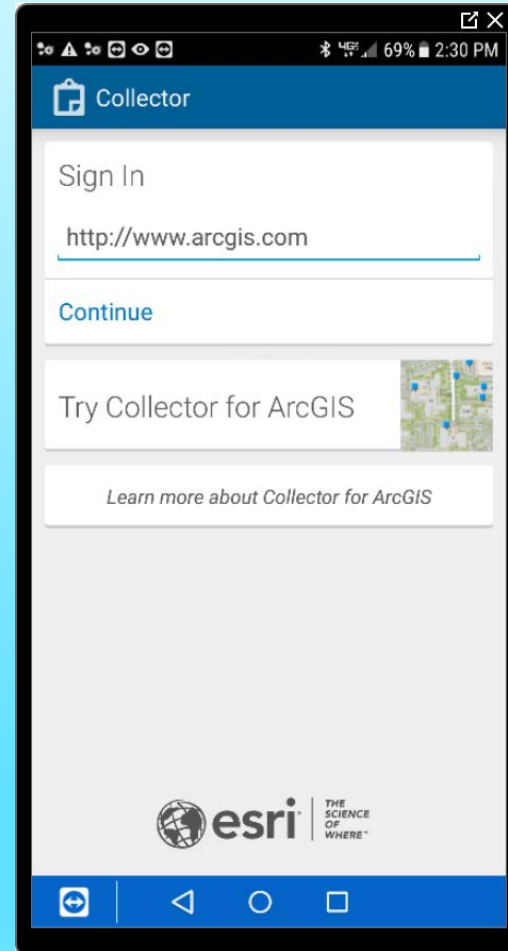
Collection Process Development – ArcGIS Online (AGOL)

➤ Requirements

- Device Independent (IOS, Android, Windows OS)
- Standard Tools IE., adding and updating GIS features
- Ease of Access/Use – ability to set up process so all users are able to start use quickly

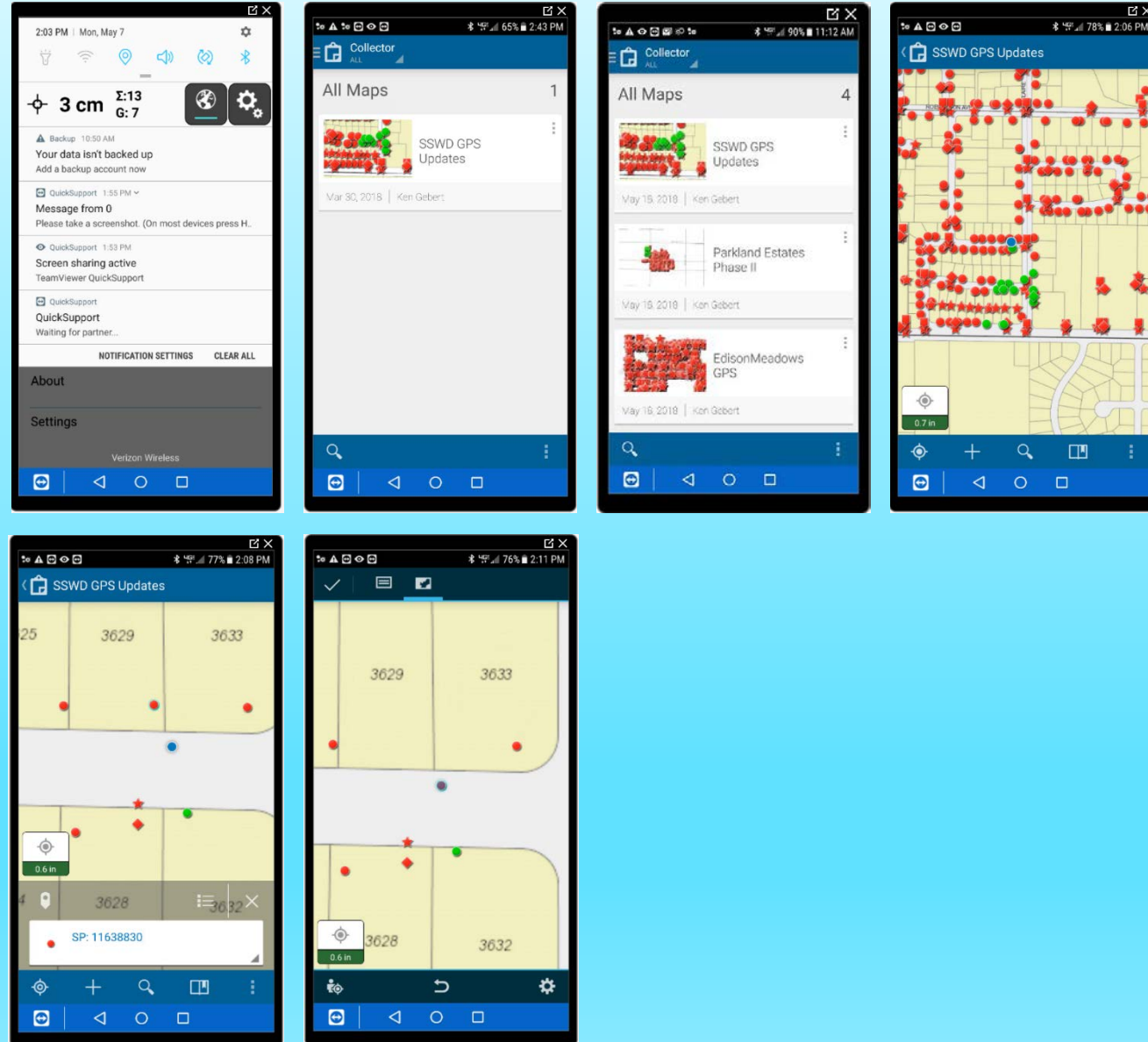
➤ Platform

- Esri AGOL
- Esri Collector
- Leica Zeno Connect



Collection Process Development – Existing Assets

- Real-Time Update
- No Post-Processing
- Ease of Use
- Project Specific Maps
- Staff Access
- Contractor Access



Collection Process Development – New Assets

- Create New Point Features
- Flagged for Update

The image displays three sequential screenshots of a mobile application interface for collecting new features. The first screenshot shows a list of feature types under the heading "Collect a new feature". The second screenshot shows the details for a specific feature, "SP: 11638829", including its location and various attributes. The third screenshot shows the form for entering additional details, including dates and status.

Screenshot 1: Collect a new feature

Filter

- <Null> IN_GPS
- <Null> CP_GPS
- <Null> MH_GPS
- <Null> HY_GPS
- <Null> FI_GPS
- <Null> VA_GPS
- <Null> SP_GPS
- <Null> IN_GPS

Screenshot 2: SP: 11638829

long:-121.37890434 lat:38.61934048

LAYER

COLOR

TEXT
METER

ACCTNO
0031890

ADDRESS
3625 Darlene Av

SERNO
11638829

SIZE

Screenshot 3: Form fields

INSTALLDATE
Enter a date Use current

CONDITION

CONDITIONDATE
Enter a date Use current

INSTALL YEAR

ROUTE_ID

CHANGEDATE
Enter a date Use current

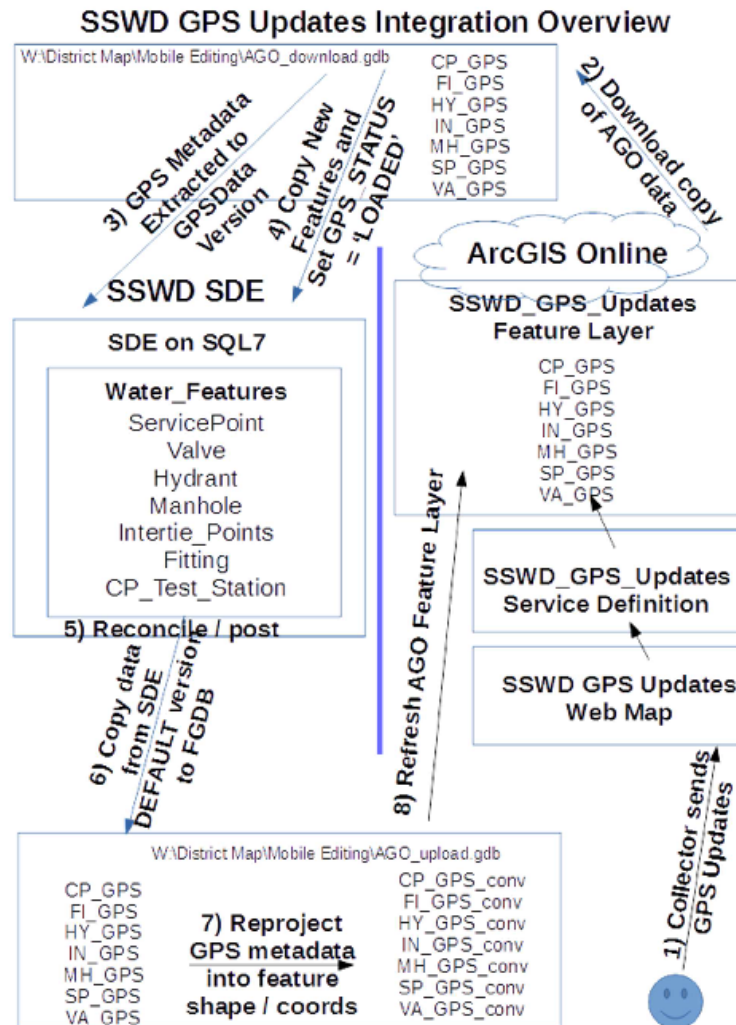
GPS_STATUS
NEW

GPS X/Y Coordinates Storage Process Development - AGOL

- Feature Classes
- Environment Setup
- Real-time Updating Location Coordinates
- GPS Meta Data



GPS X/Y Coordinates Storage Process Development - AGOL



ArcGIS Online Maps

- One full district map for SSWD staff use
- Project maps for contractors which only allow them to work on the features inclusive to their project(s)

Categories

No Categories Yet

Categories allow members to organize items consistently and provide a simple way to browse content in the organization.

Set up organization categories

Item Type

Maps

Layers

Scenes

Apps

Tools

Files

> Location





























































> Date Modified

> Date Created

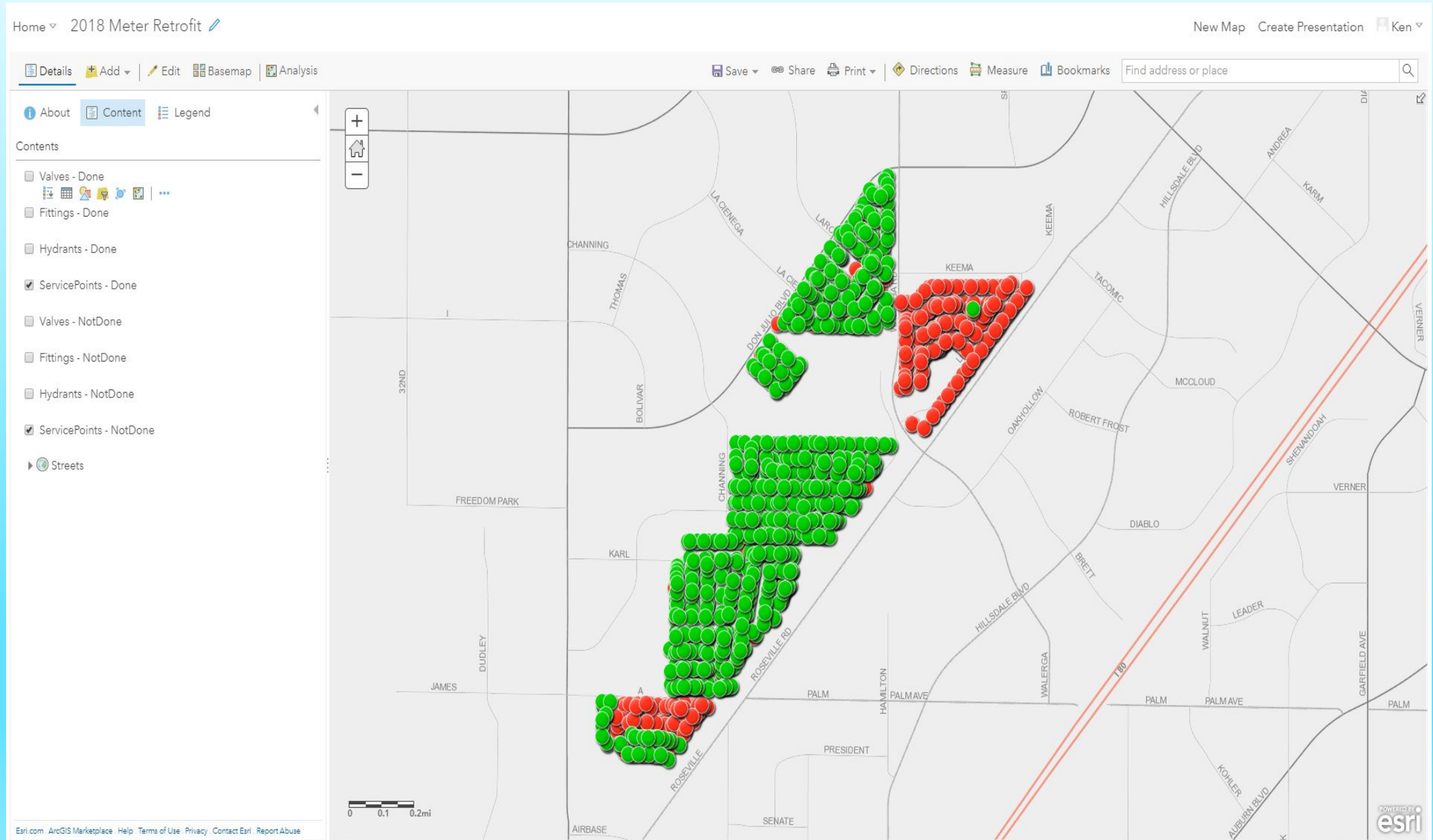
> Tags

> Shared

> Status

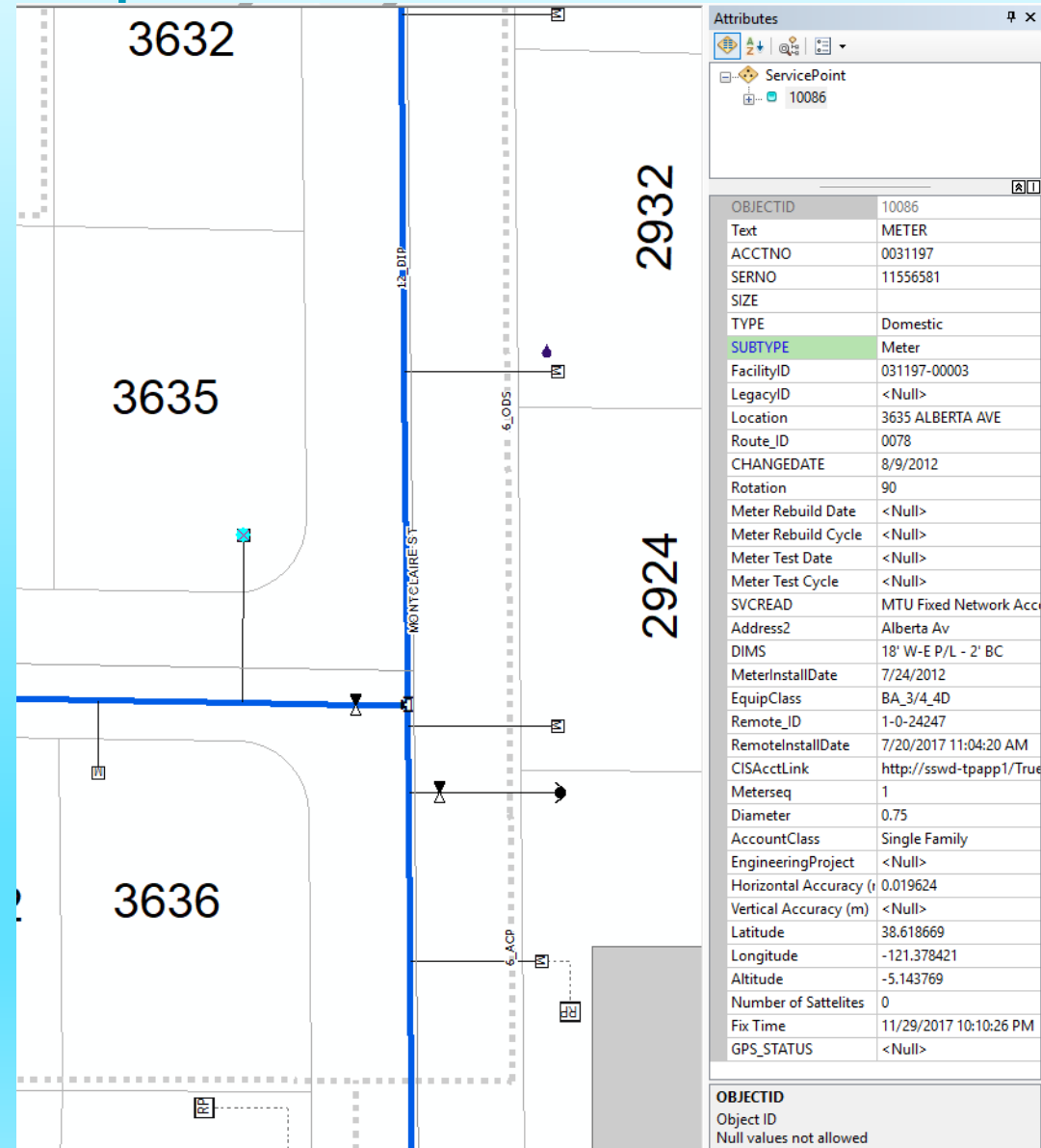
Title	Modified	Owner	View Count
 SSWD_GPS_Updates	  ... May 31, 2019	SSWDSync	185
 SSWD_GPS_Updates	  ... May 31, 2019	SSWDSync	52
 JonasGPS	  ... May 31, 2019	SSWDSync	24
 JonasGPS	  ... May 31, 2019	SSWDSync	9
 Service Point Edit Test	  ... May 31, 2019	SSWDSync	20
 Service Point Edit Test	  ... May 31, 2019	SSWDSync	10
 EdisonMeadowsGPS	  ... Apr 12, 2019	SSWDSync	68
 EdisonMeadowsGPS	  ... Apr 12, 2019	SSWDSync	20
 JonasGPS	  ... Mar 25, 2019	SSWDSync	3
 2019 Meter Retrofit	  ... Mar 25, 2019	SSWDSync	4
 2018 Meter Retrofit	  ... Mar 22, 2019	SSWDSync	1K
 2018_Meter_Retrofit	  ... Mar 15, 2019	SSWDSync	137
 2018_Meter_Retrofit	  ... Mar 15, 2019	SSWDSync	35
 Parkland_Estates_Phase_II	  ... Feb 1, 2019	SSWDSync	115
 Parkland_Estates_Phase_II	  ... Feb 1, 2019	SSWDSync	22
 Plover	  ... Dec 14, 2018	SSWDSync	42
 Plover	  ... Dec 14, 2018	SSWDSync	4
 Plover	  ... Nov 15, 2018	SSWDSync	41
 SSWD GPS Updates	  ... Aug 22, 2018	kgebert_sswd	883
 EdisonMeadows GPS	  ... Aug 16, 2018	kgebert_sswd	215

ArcGIS Online Maps



GPS X/Y Coordinates Storage Process Development - Geodatabase

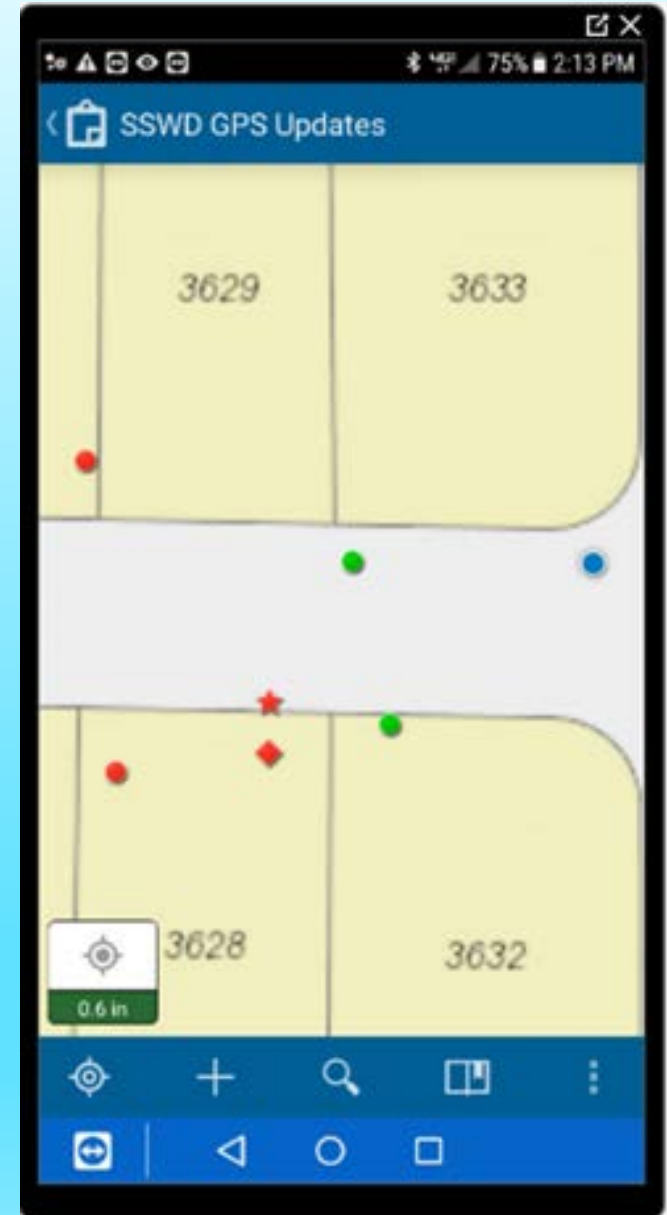
- Location Coordinate Storage
- Attribute Fields
- Coordinate System
- State Plane vs Lat/Lon
- Storing Multiple Coordinates



Getting Back To....

➤ Esri Collector

- Best current option
- Fairly easy to use
- Will look for a better way as we get GPS locations for our assets



PROGRESS

- ❑ Valves – 2053 / 27,131
- ❑ Fire Hydrants – 743 / 7112
- ❑ Fittings – 1445 / 10,250
- ❑ Service Connections – 6794 / 46,584
- ❑ Cathodic Protection Stations – 33 / 92

QUESTIONS