

# Forfeiture Data Collection

Mobile App with Collector for ArcGIS

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Allegan County GIS  
[www.allegancounty.org/gis](http://www.allegancounty.org/gis)

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## 0.1 Forfeiture Data Collection

### 0.1.1 Problem and Analysis

**Background** Treasurer department has an annual responsibility to properly document the tax forfeiture process. The LIS Department built an application in MS Access and MapInfo that consumed a daily export from BSA and was deployed to the field on a laptop. A digital camera was used for site photos and later imported into the laptop.

**Statement of Problem** Current Tax Forfeiture workflow is built on MapInfo software which has been replaced by ESRI software. The Forfeiture data collection application must be recreated in the ESRI framework.

**Analysis** Tax Forfeiture Application will facilitate:

- Mobile data collection on handheld device via Collector for ArcGIS configured with Allegan County GIS Portal (**device app**)
  - Device app will:
    - \* Synchronize with data in the office (online)
    - \* Navigate to forfeiture sites (offline)
    - \* Collect data and photos of forfeiture sites (offline)
    - \* Synchronize the collected data with data in the office (online)
- Daily form production and printing for each site visited with required data and images.

### 0.1.2 Design

**Overview** This Application utilizes Treasurer Department data to document the forfeiture process. An enterprise GIS deployment enables offline data collection by up to two users.

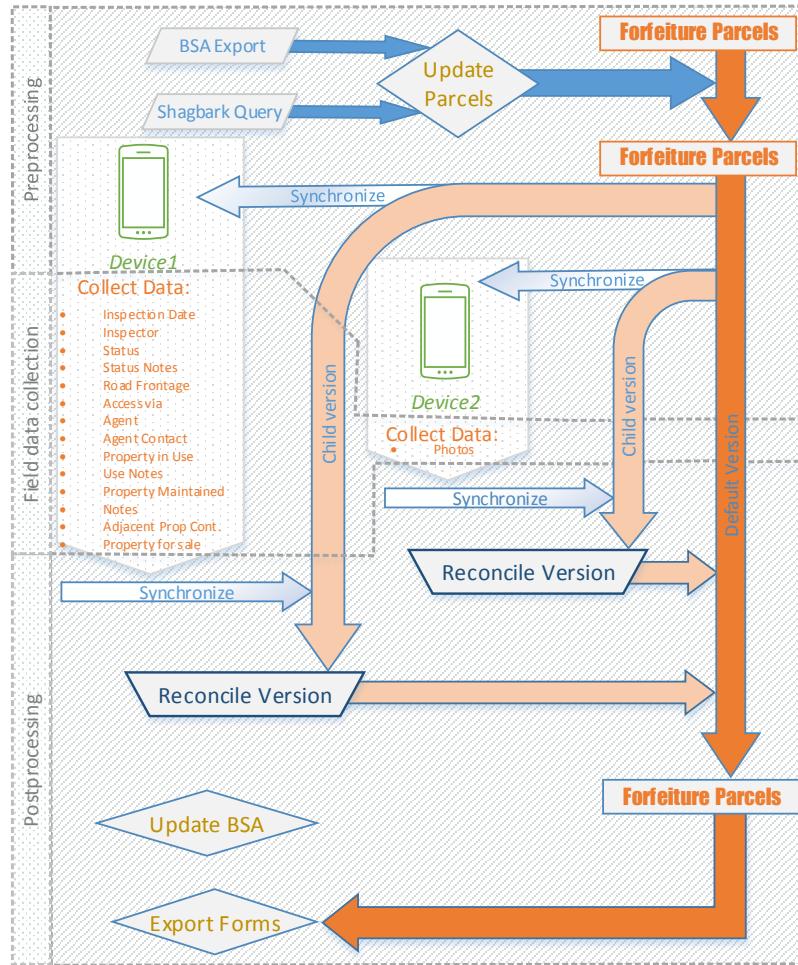


Figure 1: Project Design

There are three stages to daily workflow: Preprocessing, Field Collection, and Postprocessing. Forfeiture Parcels, is a map feature class that is processed in the office via the network and remotely via the internet.

## Workflow Summary

**Preprocessing** The data is updated to match the Treasures data in BSAforfeiture.net and synchronized to two android mobile devices.

**Field data collection** The two mobile devices are used to collect info required, one for all the attributes, the other for photos.

**Postprocessing** The mobile devices are syncronized back to the network data and a form is exported for each site visited that day.

## Technologies Used

**BSA Data** Details of parcels in the forfeiture process are managed in BSA Delinquent Tax.net. The Treasurer office does a BSA export of the parcels in need of a site visit in the preprocessing.

**ArcGIS Desktop** Tools are designed to preprocess and postprocess forfeiture parcel data for fieldwork. The user will execute a preprocess script tool that prepares the data for field deployment. After fieldwork, a post process script tool syncronizes data from the fieldwork with the live data on the Allegan County network.

**ArcGIS Collector** A free mobile application developed and tested on Android is deployed to the field for data collection. The application is configured to work offline(without an internet or cellular connection) by syncronizing before and after fieldwork.

**ArcGIS Portal Webmaps and Apps** Live data from a publishing enterprise geodatabase(ACPub), running on SQL Server database server (acintsql01) is provided through a feature service (REST service) named TaxReversionParcels. A webmap called the Forfeiture Field Map consumes the TaxReversionParcels feature service, exposing the data to editing. The Forfeiture Field Map is configured to work in the ArcGIS Collector App. The app downloads the webmap, allowing the user to collect the necessary information on each forfeiture parcel in the field disconnected, and then to upload the changes when reconnected.

**Forfeiture Mobile Data Collection App in Action** Three parts of the daily routine:

1. Preprocessing (in the office):

- Export current forfeiture list from BSA
- Update webmap layers with results from BSA export

- Synchronize from webmap layers to field collection devices (**device app**)
2. Field data collection with device app:
    - Navigation to forfeiture sites is aided by users location shown in map
    - A Checklist of data points about the site
    - Attach photos to the site
    - Save results for synchronization in post-processing
  3. Post-processing (in the office)
    - Synchronize data and images collected in device app to webmap layers

## Data Details

**Location** The data is located in ACPUB. ACPUB is a geodatabase on ACINTSQL01.

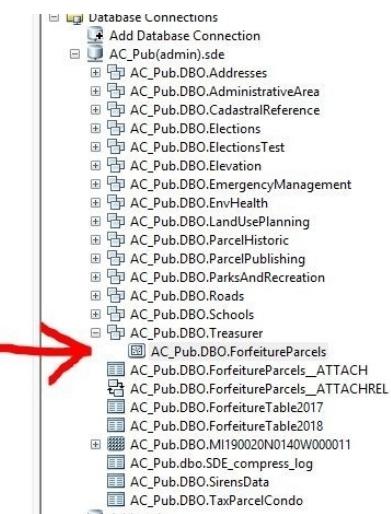


Figure 2: Live Data Location

### ForfeitureParcels Feature Class

Attribute List		
Field Name	Entry Type	Note
Property Number	Prefilled	NA
Inspection Date	Autofill or Dropdown	NA
Inspector	Dropdown	NA
Class	Prefilled	NA
Acres	Prefilled	NA
Address	Prefilled	NA
Status	Dropdown	NA
Status Notes	Open entry	120 Char limit
Road Frontage	Dropdown	Yes or No
Access via	Open entry	30 Char Limit
Agent	Open entry	30 Char Limit
Agent Contact	Open entry	30 Char Limit
Property in use	Dropdown	Yes or
Use Notes	Open entry	120 Char limit
Property Maintained	Dropdown	Yes or No
Notes	Dropdown	120 Char limit
Prop Contam	Dropdown	Yes or No
Notes	Open entry	120 Char limit
Adj Prop Contam	Dropdown	NA
Notes	Open entry	120 Char limit
Property for sale	Dropdown	Yes or No
Posted	Prefilled	in Pre and Postproc
InList	Prefilled	in Preproc
PostedInList	Prefilled	in Preproc
Print Today	Dropdown	Yes or No

Table 1: Dataset Details

**Webmap Details** The Forfeiture Field Map can be accessed on PC through the Allegan County GIS Portal. The map is made up of a basemap and a feature layer.

The screenshot shows the 'Forfeiture Field Map' item details page. At the top, there's a blue header bar with the title 'Forfeiture Field Map' and a 'Edit' button. Below the header are two tabs: 'Overview' (which is selected) and 'Settings'. The main content area starts with an 'Edit Thumbnail' section showing a circular logo for Allegan County, Michigan, with a bird in flight. To the right of the thumbnail, the description reads: 'Map for field data collection in annual tax forfeiture processing' by 'bmey531' (Last Modified: August 21, 2018). There's also a 'Web Map' link and a 'Add to Favorites' button. Below this is a 'Description' section with a placeholder 'Add an in-depth description of the item.' Under 'Layers', it lists 'TaxReversionParcels' and 'World\_Street\_Map'. In the 'Access and Use Constraints' section, there's a note about special restrictions and disclaimers.

Figure 3: Web Map Details

**Feature Layer Details** The webmap consists of a basemap and a feature layer, TaxReversionParcels. TaxReversionParcels has been configured for offline use.

The screenshot shows the 'TaxReversionParcels' item details page. The layout is similar to Figure 3, with a blue header bar, 'Overview' tab selected, and a detailed description section. The description includes a thumbnail of a map with red parcels, the author 'bmey531', and the last modified date 'August 20, 2018'. It also identifies the layer as a 'Feature Layer'. Below the description are sections for 'Layers' (listing 'Tax Reversion Parcels') and 'Access and Use Constraints' (with a note about special restrictions).

Figure 4: Layer Details

**Basemap Details** A tiled basemap service is used. The infoserv user credentials are used for sharing. The url for the shared service is:

[https://tiledbasemaps.arcgis.com/arcgis/rest/services/World\\_Street\\_Map/MapServer](https://tiledbasemaps.arcgis.com/arcgis/rest/services/World_Street_Map/MapServer)

The screenshot shows the 'World Street Map (for Export)' service page on ArcGIS Online. At the top, there's a navigation bar with 'ArcGIS', 'Pricing', 'Map', 'Scene', 'Help', and a 'Sign In' button. Below the title, there's a map thumbnail and a brief description: 'This layer presents highway-level data for the world and street-level data for many areas around the world. This layer is designed to support export of basemap tiles for offline use ArcGIS Online Subscription required.' Below this, it says 'Created On: 15.03.2013 Updated: Aug 15, 2018 View Count: 39,772'. There are two buttons: 'Tile Layer by Esri' and 'Authentify'. To the right, there are three buttons: 'Open in Map Viewer', 'Open in Scene Viewer', and 'Open in ArcGIS Desktop'. Below these buttons, there's a 'Details' section with a 'Source: Map Service' link, a size of 'Size: 1 kb', and a five-star rating. There are also social sharing icons for Facebook, Twitter, and LinkedIn. Under 'Owner', it lists 'Esri' and 'Merged by: esri'. Finally, under 'Tags', it lists 'World, Global, Europe, North America, United States, Southern Africa, Asia, South America, Australia, streets, street map, tile package, basemap, map, roads, transportation, landmarks, parks, community, community basemap, map, AFA250, base, current, esri\_basemap, general availability, export'.

Figure 5: Basemap Source Description

## unplaced images

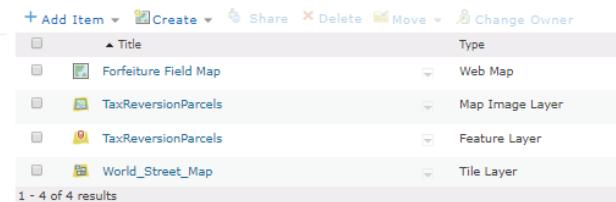


Figure 6: Portal Contents

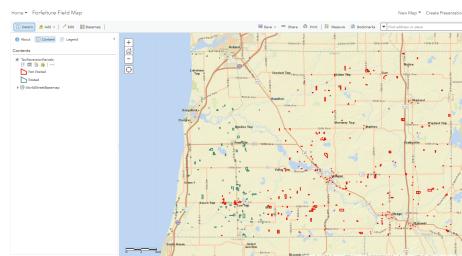


Figure 7: Field Map on PC

### **0.1.3 Hard Copy Record**

screenshots: arcmap map arcmap tools portal screenshots sql server mgt screen  
shots phone screenshots

#### **ArcGIS Server**

**xx**

## **0.1.4 User Manual**

### **Administrative Tasks**

#### **Annual Setup**

**Setup Users in ArcGIS** Users that will run Pre and Post processing scripts must be created and given privileges on ACPub Treasurer Feature Data Set.

**Setup Users in Portal for ArcGIS** Users that will use the Collector for ArcGIS must have profiles added to and managed in the Allegan County GIS Portal site.

#### **Schema Change Procedure**

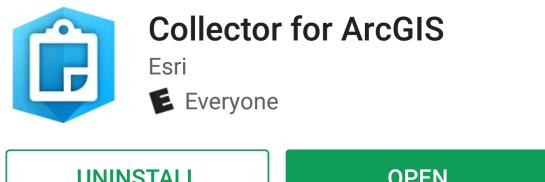
#### **Form Edits Procedure**

## Collection Device Setup

### Collector Application Setup Details

#### Install Collector for ArcGIS

- Available from the Google Play Store



Accurate Data Collection Made Easy

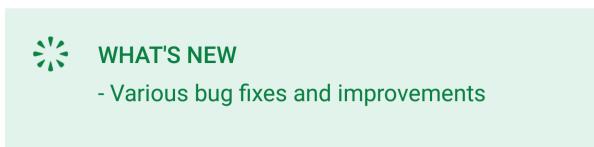


Figure 8: Download the App

## Configure Collector

for Organization Website, Type:

[https://gis.allegancounty.org/  
portal\\_webadaptor](https://gis.allegancounty.org/portal_webadaptor)

then:

Press Continue

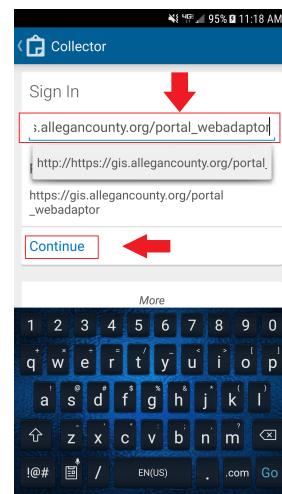


Figure 9: Collector Connection

Enter Credentials

then:

Press SIGN IN

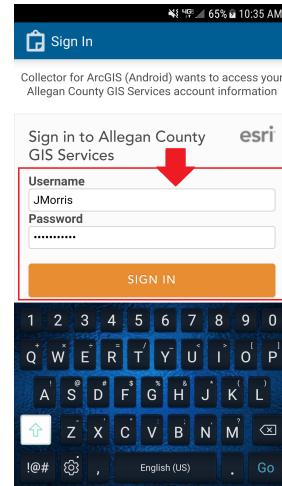


Figure 10: Enter Credentials

## Download the Forfeiture Field Map

The Download option indicates it is not on the device but is available for offline use.

Press Download

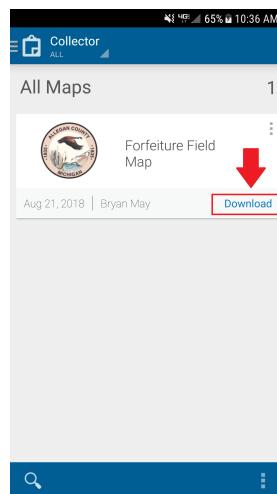


Figure 11: Collector Maps Menu

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Specify work area to download and press map detail

Note that a larger area takes longer to download but the basemap only needs to be downloaded once.

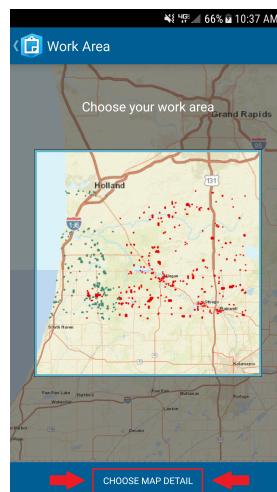


Figure 12: Choose Work Area (large)

## Choose Map Detail

Zoom into the level of detail desired.

Press Download

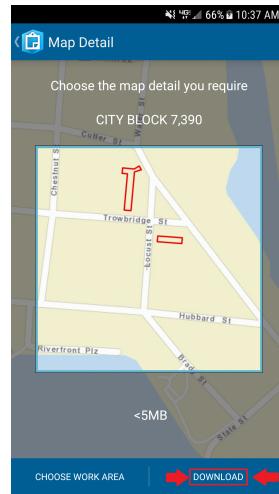


Figure 13: Choose Map Detail

---

This area is ready for field data collection.

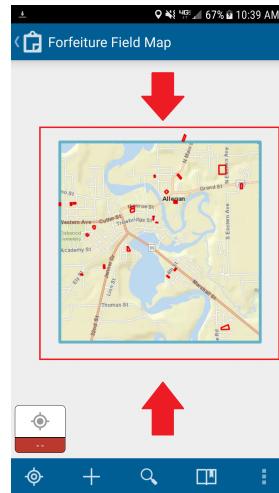


Figure 14: Map on Device

## Open Camera Application Setup Details

### Install Open Camera

- Available from the Google Play Store

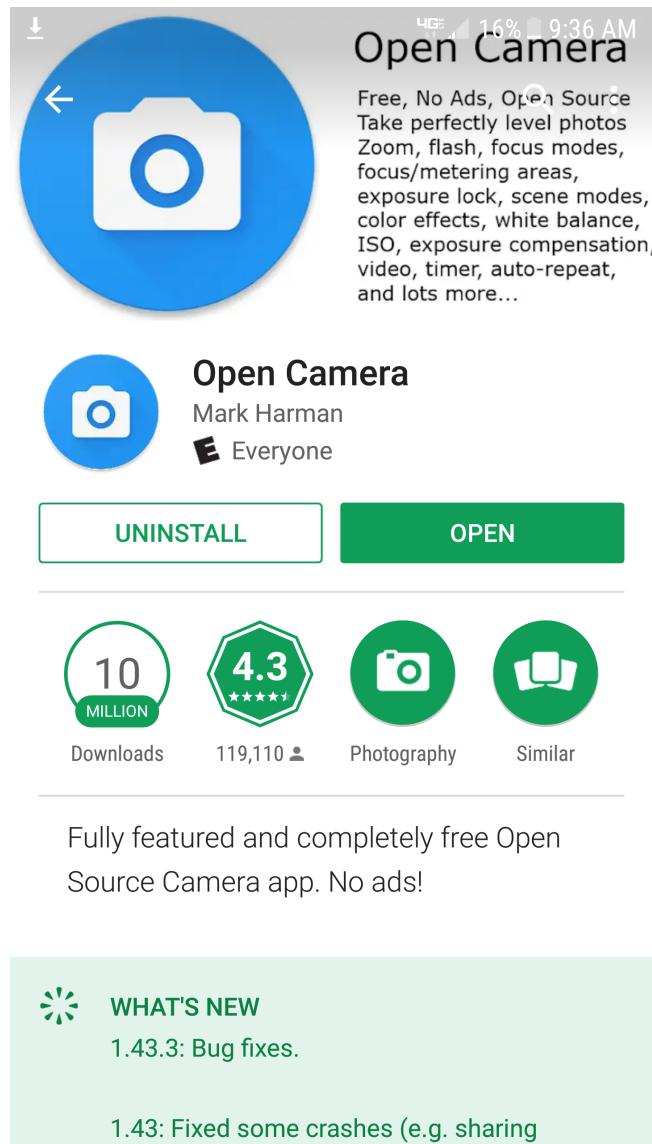


Figure 15: Open Camera from Google Play Store

## Configure Open Camera

In the Open Camera Application:

Press the gear shaped **Settings** button  
to go into the settings menu

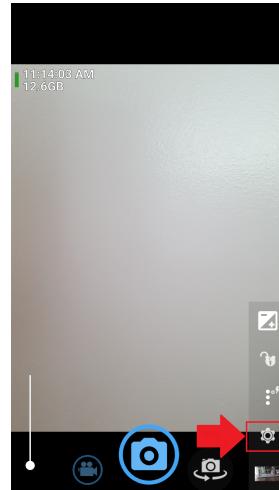


Figure 16: Find Settings Menu

---

Press the **Photo Settings** button

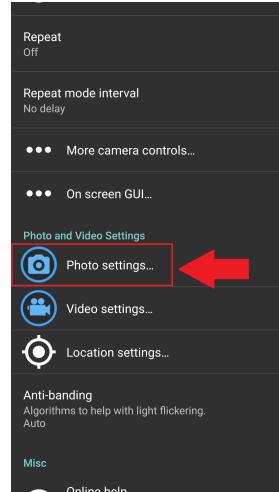
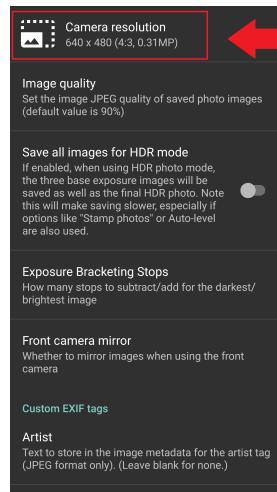


Figure 17: Setting Screen

## Set Photo Resolution

In photo settings:



Press the Camera resolution button

Figure 18: Photo Settings Menu

Select **640 x 480**

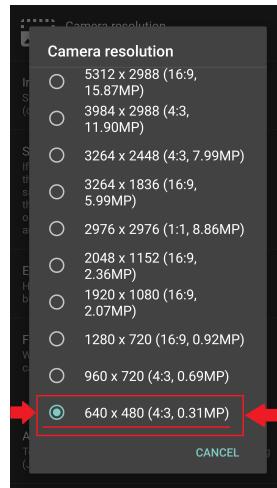


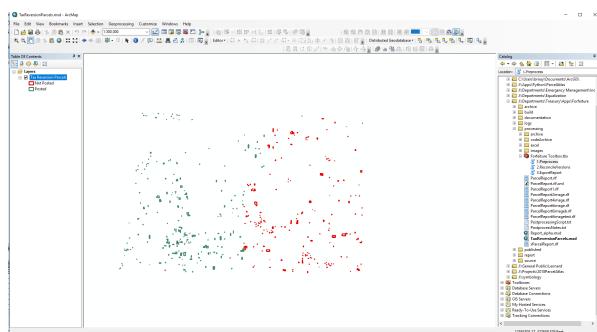
Figure 19: Camera Resolution Setting

## Daily Preprocessing Routine

**Execute Preprocessing Script** A tool in ArcGIS that:

- Exports current forfeiture list from BSA
- Updates webmap layers with results from BSA export

In Catalog:



Open the toolbox

Open tool 1

Figure 20: Processing Tools

## Synchronize the Forfeiture Field Map

Note the date and time:

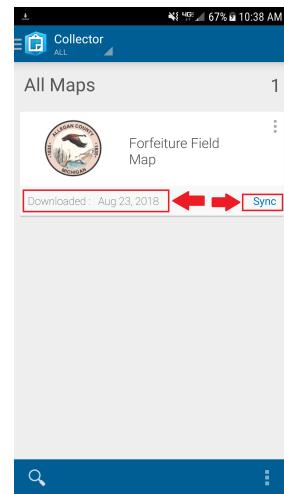
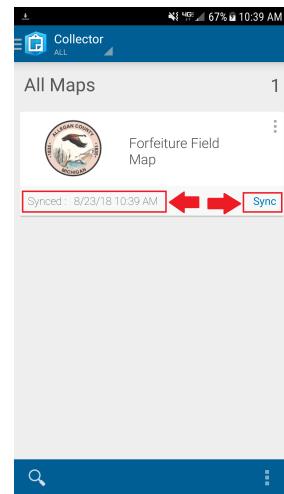


Figure 21: Map Downloaded

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Note the date and time



Map is now synchronized

Figure 22: Map Synchronized

## **Forfeiture Data Collection**

**Forfeiture Parcels Data Details** Attributes are of four entry types:

- prefilled
- autofill
- dropdown
- text box

For each site visited, select the desired parcel, push the edit button and collect attributes. If the boxes are autofill, select from dropdown or typed.

**Device 1 Field Operation** Device one data collection interface, used to add data to all of the boxes

In the Forfeiture Field Map, for each site visited:

Select the desired parcel



Figure 23: Select Parcel

---

Push the edit button

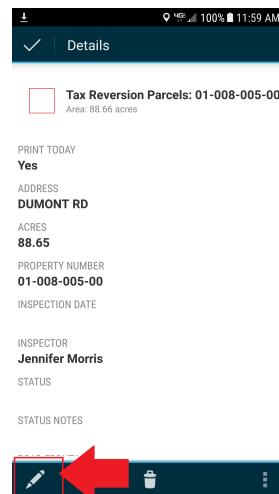


Figure 24: Parcel Details

Class prefilled Acres prefilled

## Device 1 Field Operation Cont.

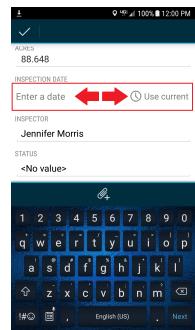
Select Yes for Print Today



Figure 25: Print Today Yes or No

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Select Use Current or enter any date



Select Inspector From Drop-down

## Device 1 Field Operation Cont.

Select Occupied or Not Occupied

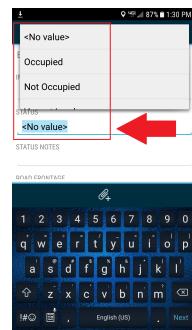


Figure 28: Status

Enter status notes up to 120 characters

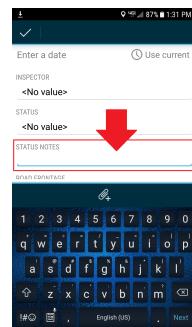
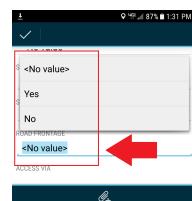


Figure 29: Status Notes



Select Yes or No for Road  
Frontage

## Device 1 Field Operation Cont.

Enter road used for access

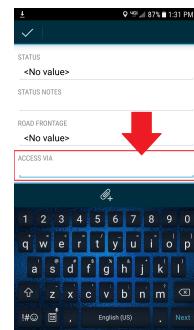
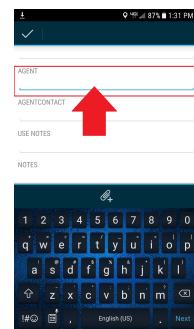


Figure 31: Access Via

Enter Agent Name



Enter Agent Contact Info

## Device 1 Field Operation Cont.

Enter Use Notes up to 120 characters

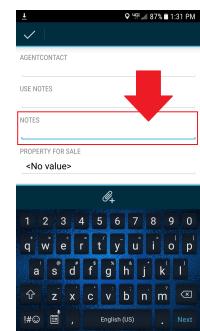


Figure 34: Use Notes

Enter Notes up to 120 characters

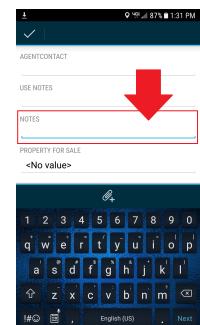
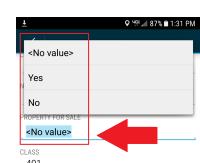


Figure 35: Notes



Enter property for sale yes  
or no

## Device 1 Field Operation Cont.

Property in Use Yes or No

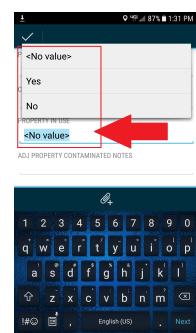


Figure 37: Property in Use

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Adjacent Property Contaminated Notes up to 120 characters

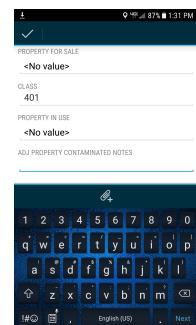
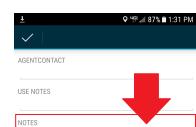


Figure 38: Adjacent Property Contaminated Notes



Property Contaminated yes  
or no prefilled

## Device 1 Field Operation Cont.

Enter notes up to 120 characters

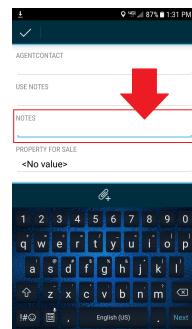


Figure 40: Notes up to 120 characters

Adjacent Property Contaminated yes or no pre-filled

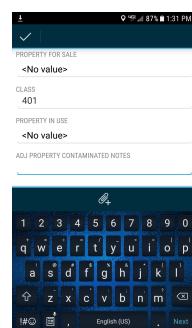
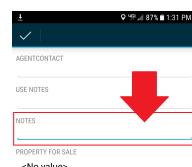


Figure 41: Adjacent Property Contaminated



Enter Property Contaminated notes up to 120 characters

## Device 1 Field Operation Cont.

Property Maintained Yes  
or No

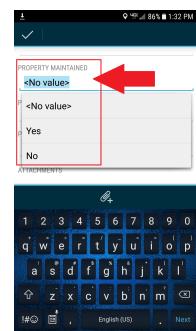


Figure 43: Property Maintained

---

Picture Comments up to  
120 characters

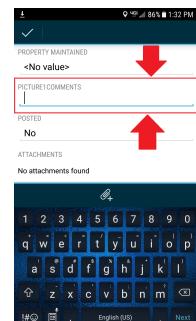
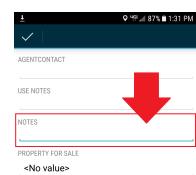


Figure 44: Picture Comments



Placeholder

## Device 2 Field Operation

In the Forfeiture Field Map, for each site visited, a photo or photos can be added from the Open Camera Application.

Select a parcel from the map



Figure 46: Select Parcel

---

Push Attachment Button

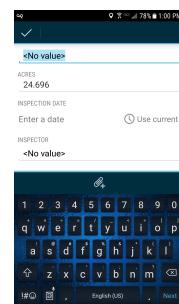


Figure 47: Push Attachment Button

Select Gallery

## Device 2 Field Operation Cont.

Navigate to the Open Camera Folder

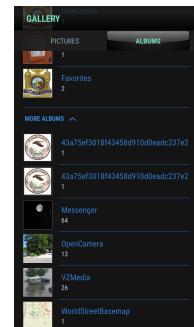


Figure 49: Open Camera Folder

---

From within the Open Camera Folder, Select the appropriate image

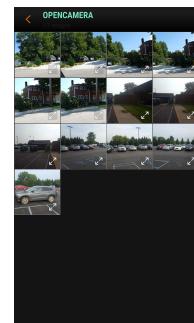
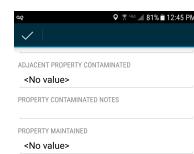


Figure 50: In the Open Camera Folder



Press the check button to  
save the image to the par-  
cel

**Daily Postprocessing Routine** Back at the office

**Synchronize Webmap** In Collector for ArcGIS, push the sync button on the Forfeiture Field Map

**Execute Postprocessing Script** A tool in ArcGIS that:

- Reconciles geodatabase versions
- Generates forms for each site visited

### **0.1.5 Software**

#### **ESRI Licensed Products**

**ArcDesktop** Users of this application need a license to ArcGIS Standard level.

**Enterprise ArcGIS Deployment** This app uses ArcGIS Server and ArcGIS Portal.

**Collector for ArcGIS** Developed and tested on Android(7.0). Collector is available at the Google Play Store.

#### **Other Software**

##### **Open Camera for Android**

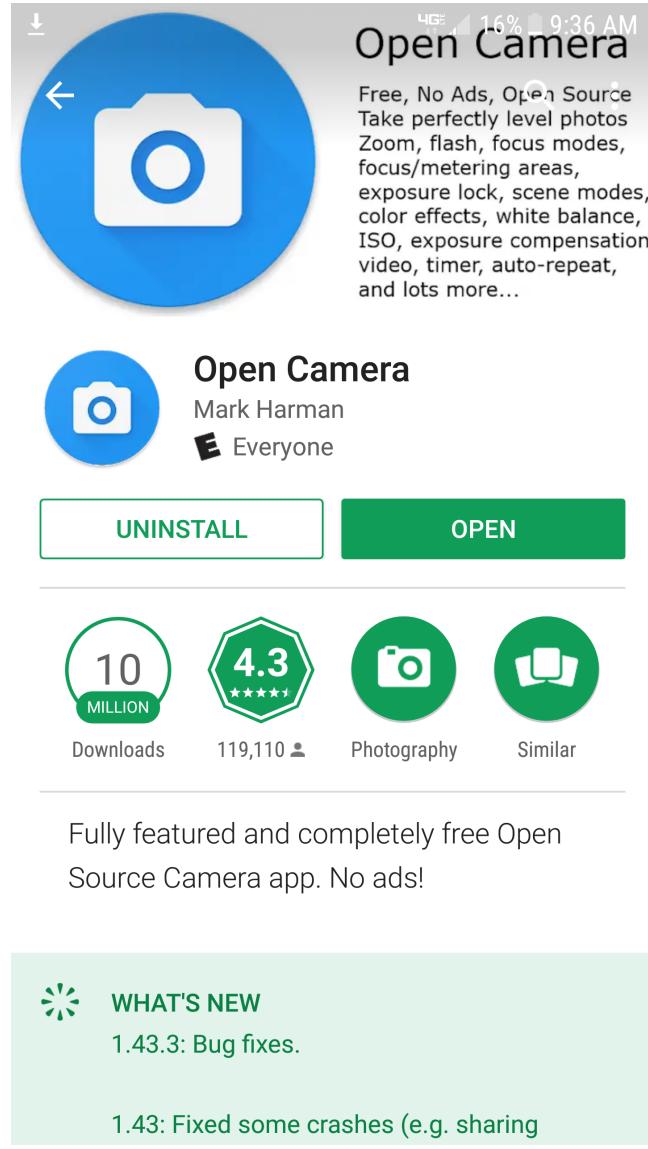


Figure 52: Open Camera from Google Play Store