

GIS in the Field: A Path to Increasing Efficiency

Karstin (Kari) Carmany-George
Environmental Section Manager, INDOT Greenfield District

Randy Weaver
GIS/CAD Administrator, Lochmueller Group

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Agenda

1. **Define GIS and GPS**
2. **What are ArcGIS and ArcCollector?**
3. **I-69 Section 6 Data Collection Example**
4. **Standardize Typical Field Data Collection**
5. **Beyond These Examples**



1. GIS and GPS

GIS – Geographic Information Systems

Geographic representation of data

System used to view, store, manipulate, analyze, manage, and query spatially located data.

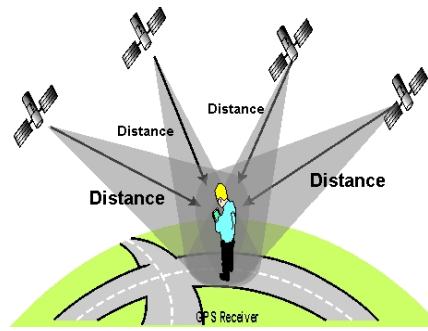


Not Just a Map!!

1. GIS and GPS

GPS – Global Positioning System

Way to determine location in the world



System used to record and display location data.



2. ArcGIS and ArcCollector

■ What is ArcGIS?

- Software created by ESRI, Inc.
- Used by the state
- Used by some counties
- Used by many consultants
- Desktop version

Works offline with locally stored information but allows access to information published on servers available through the internet



2. ArcGIS and ArcCollector

- **What is ArcGIS?**

- **Online version**

- Work through a web portal with files published online
 - Internet connection required
 - Create, use and/or share data
 - Work stored on ESRI's server or on local ArcGIS servers
 - Requires organization login



2. ArcGIS and ArcCollector

- **Organizational Accounts**
 - Purchase of ArcGIS Desktop
 - Administered by Organizational Administrator
 - Purchase Online Account



2. ArcGIS and ArcCollector

ArcGIS - Windows Internet Explorer

Convert Select

Favorites Web Slice Gallery

ArcGIS for Windows Mobil... ERIN - Business Applicatio... Main Page ArcGIS

Home Gallery Map Scene Groups My Content My Organization Karstin Garmany

Gallery

My Favorites My Organization's Featured Content Esri Featured Content

Indiana Department of Transportation Featured Content

Sort By: Title

Show

- All
- Maps
- Layers
- Scenes
- Apps
- Tools
- Files

Search the website or visit the ArcGIS Marketplace

Collector_QA - QA Locations	Collector_QA_viewer	Facility1
General Deficiencies	Indiana Gage Stations	INDOT Map
Major Projects Web Application	QA	QA_v4

Internet | Protected Mode: Off 100%



2. ArcGIS and ArcCollector

- **What is ArcCollector?**
 - **Extends ArcGIS to the field for data collection**
 - **Free App available for IOS[©], Android[©], and Windows[©]**
 - **Use ArcGIS online login to access organizations map projects**



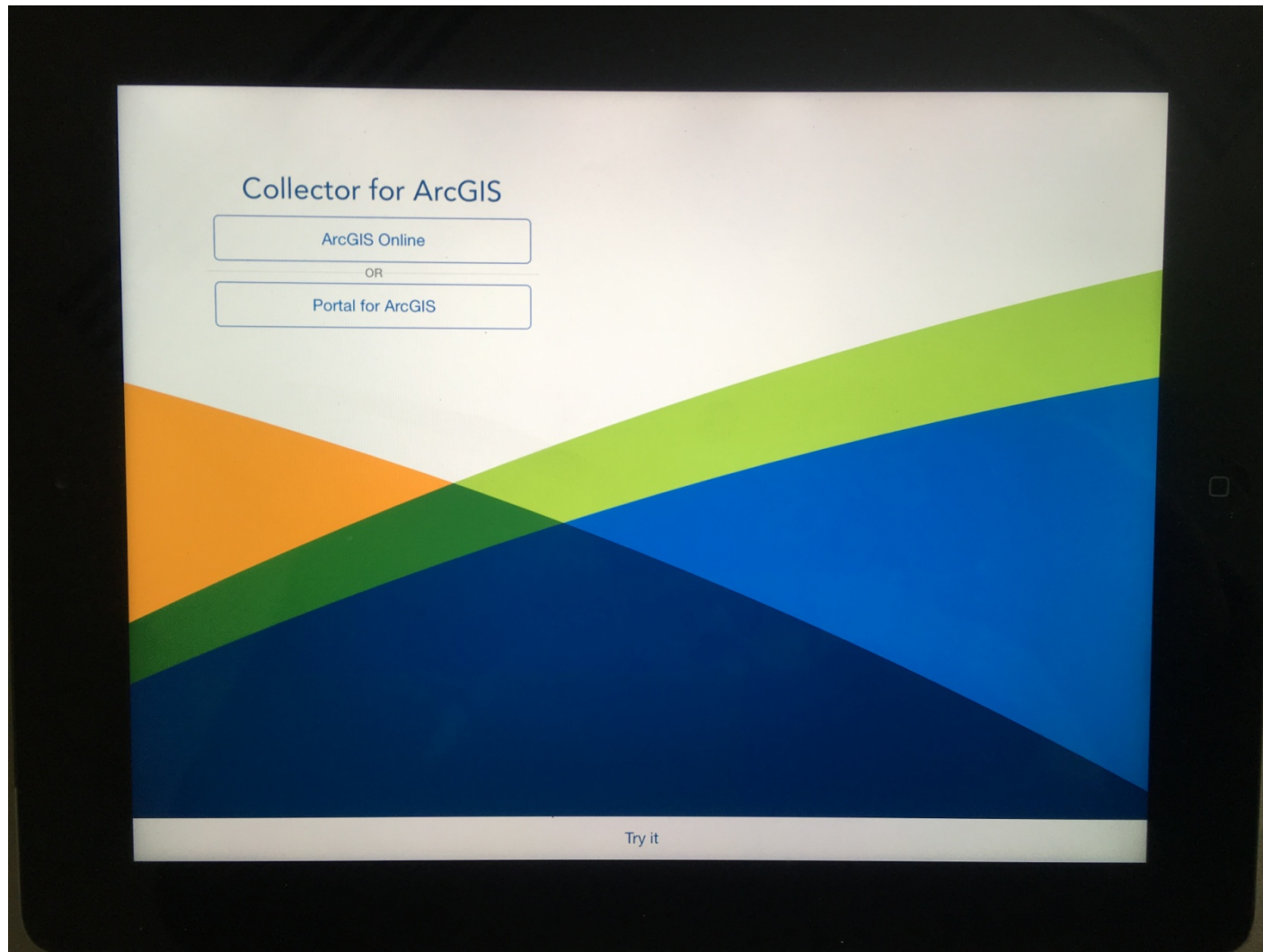
App Store



Google play



2. ArcGIS and ArcCollector



2. ArcGIS and ArcCollector

■ Advantage to ArcCollector

- Mobility
- Secure
- Real-time data storage on the cloud
- Attach photos to points on a map
- Seamless tie into ArcGIS

■ Disadvantage

- Requires advanced version of ArcGIS to manipulate collected data on the desktop, can still be viewed as read-only data with basic and standard versions



3. I-69 Section 6 Data Collection

Windshield Surveys

Goals:

1. Determine type and number of buildings within/near each reasonable alternative of I-69 Section 6
2. Identify other features of interest
Unmapped waterways, wetlands, utilities, haz mat issues

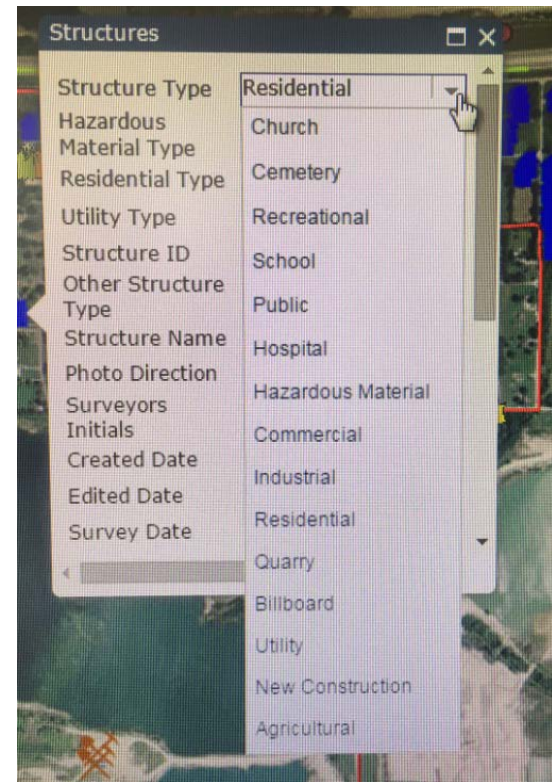


3. I-69 Section 6 Data Collection

Process

1. Create data in ArcGIS Desktop

Standardization – Data was input using pre-set domains (drop-down menus).



3. I-69 Section 6 Data Collection

Process

1. Create data in ArcGIS Desktop

1. Agricultural
2. Commercial
3. Industrial
4. Public
5. Residential
6. Church
7. Hospital
8. Recreational
9. New Construction
10. Billboard
11. Cemetery
12. Hazardous Material
13. Quarry
14. School
15. Utility



3. I-69 Section 6 Data Collection

Process

1. Create data in ArcGIS Desktop

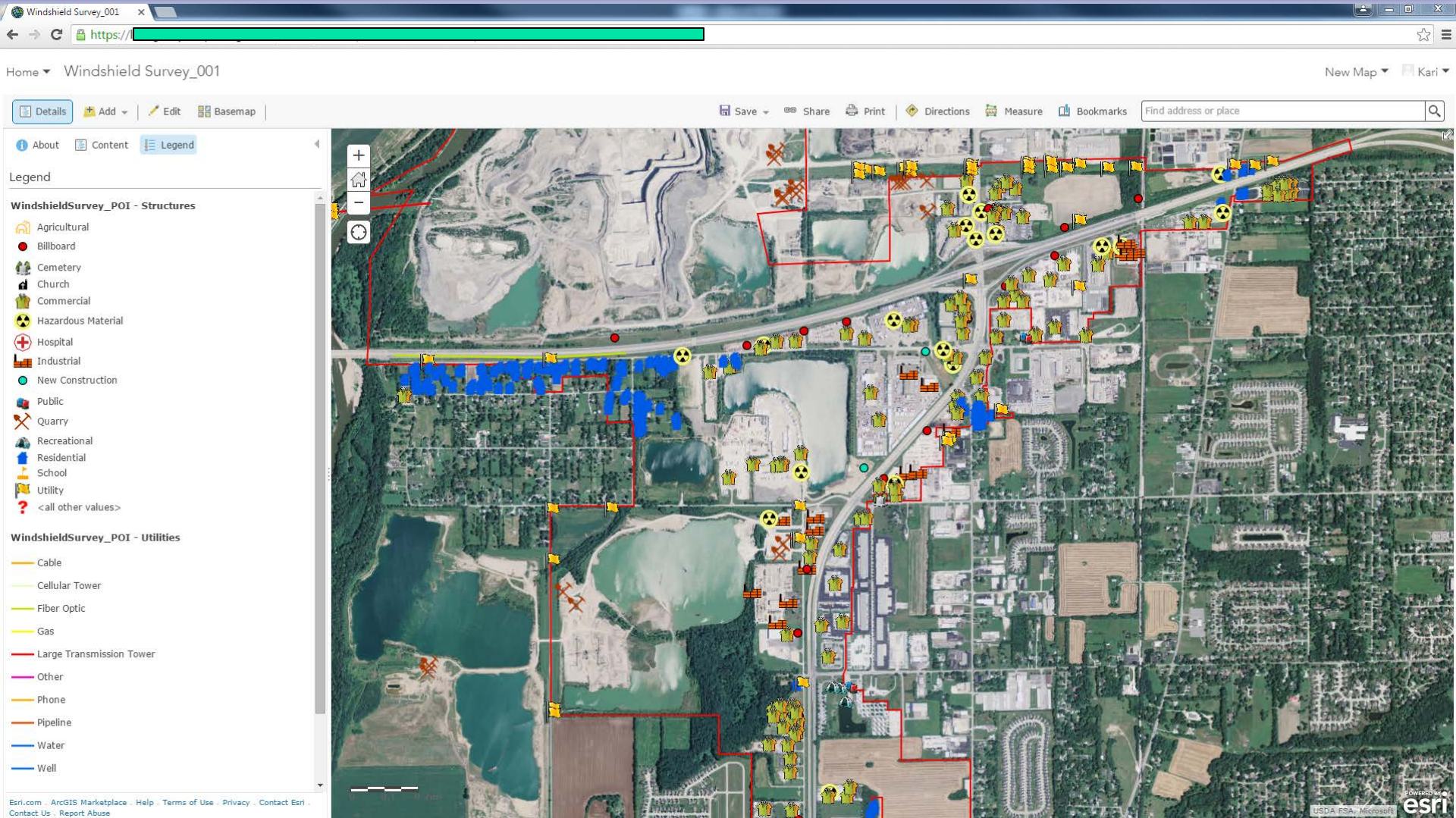
Pre-populated information:

Structure type

- Commercial – Name of Business
- Hazardous Materials – Recorded hazard



3. I-69 Section 6 Data Collection



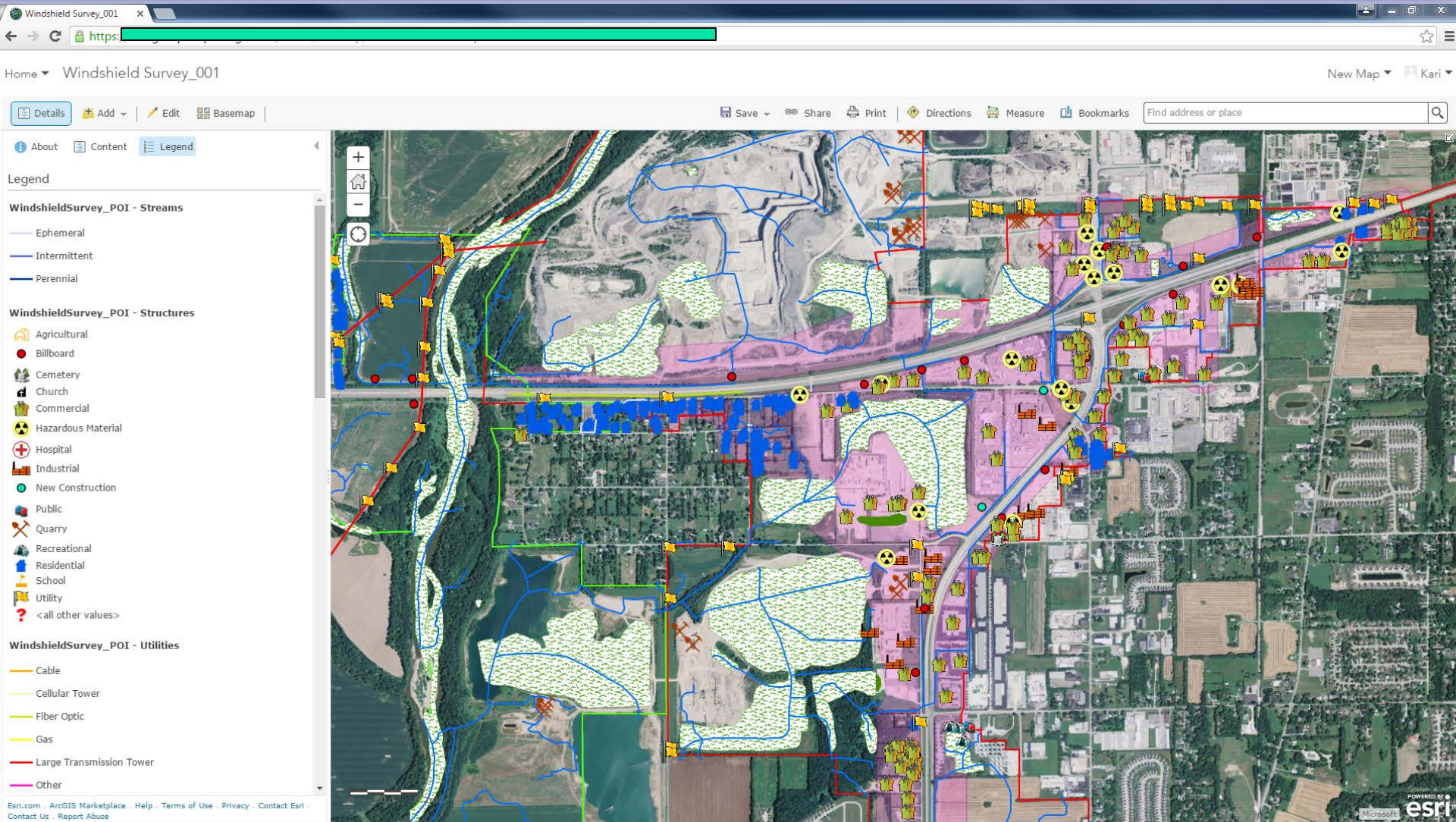
3. I-69 Section 6 Data Collection

Process

2. **Identify Other Files to View in Field**
 - Streams
 - Wetlands
 - Notice of Survey Mailing Areas



3. I-69 Section 6 Data Collection



3. I-69 Section 6 Data Collection

Process

3. Publish Layers to ArcGIS Online

- Publish out of Desktop to local server
- Add layers to ArcGIS Online via web URL to local server's feature services

4. Download ArcCollector apps

- Access ArcGIS On-line Gallery from ArcCollector

Run app on-line or off-line



3. I-69 Section 6 Data Collection

Process

5. Test Run

Identify other needs:

A. Point and line files needed for utilities

B. Business Rules

1. Take pictures of commercial, industrial, recreational properties
2. No pictures of residential properties, utilities or billboards



3. I-69 Section 6 Data Collection

Process

6. Collect Data

Run app online or offline

Online = Leave on cellular data

- Live updates to ArcGIS server

- Don't need to download AOI

- Sucks battery life—2-3 hrs on full charge

- Slows down the collection process

Offline = Turn off cellular data

- Save battery life (relative term)—4-5.5 hours on full charge

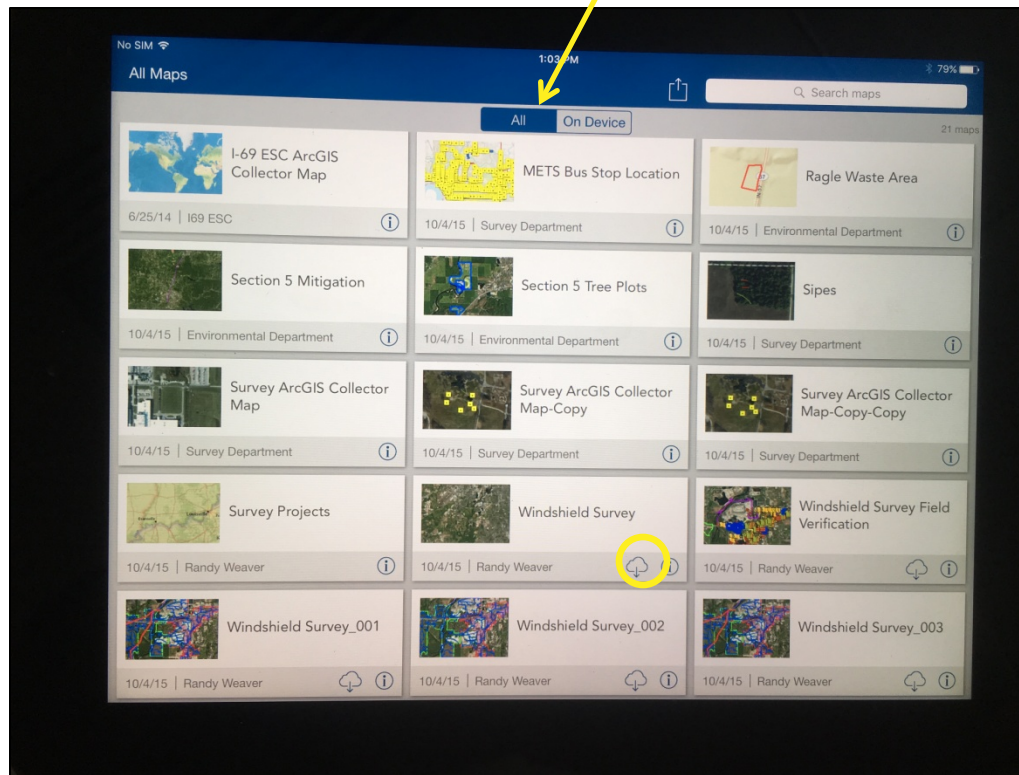
- Limited to pre-downloaded AOI



3. I-69 Section 6 Data Collection

Process

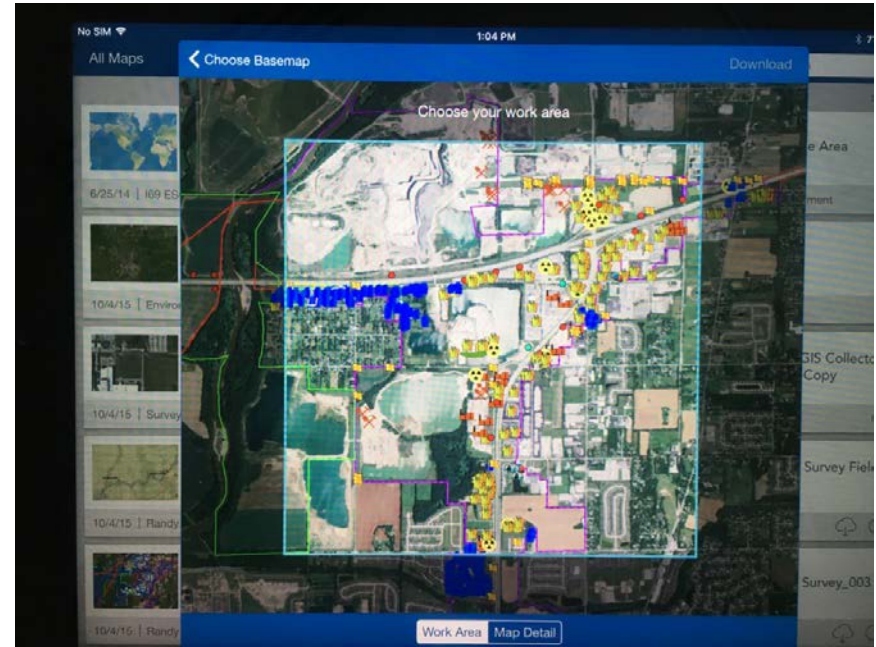
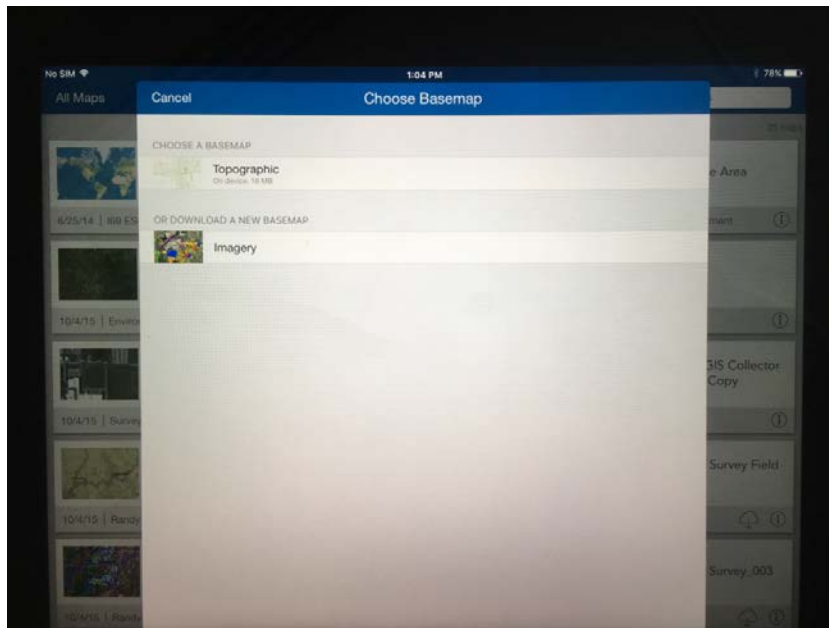
6. Collect Data



3. I-69 Section 6 Data Collection

Process

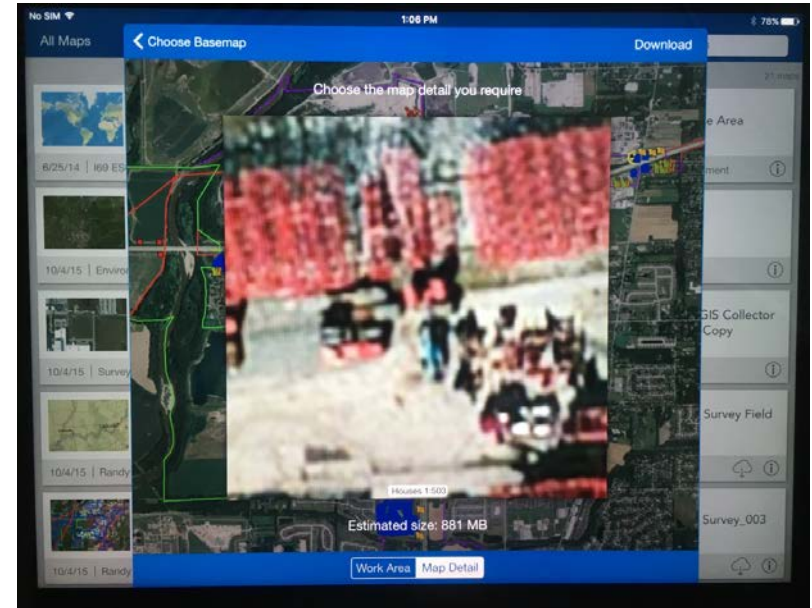
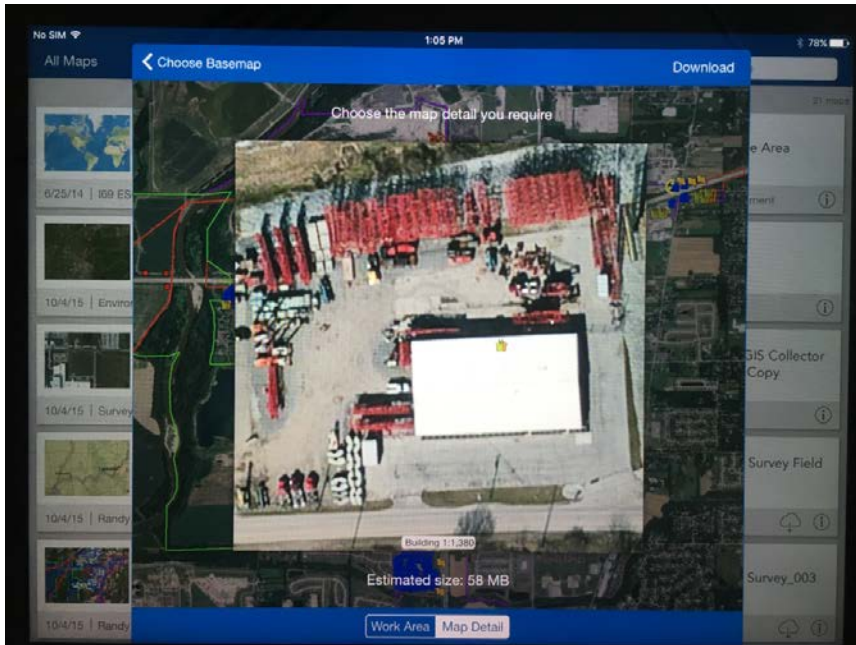
6. Collect Data



3. I-69 Section 6 Data Collection

Process

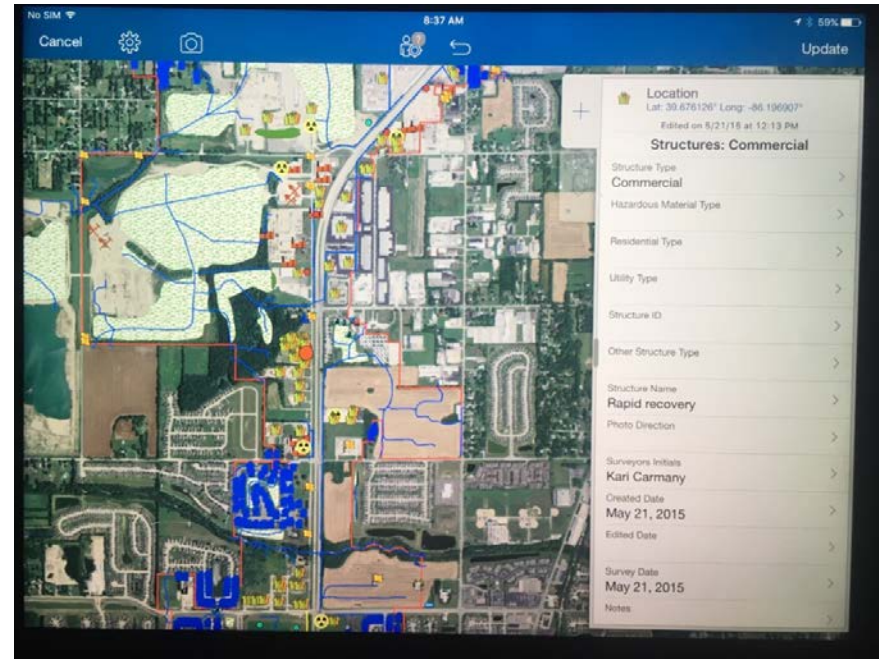
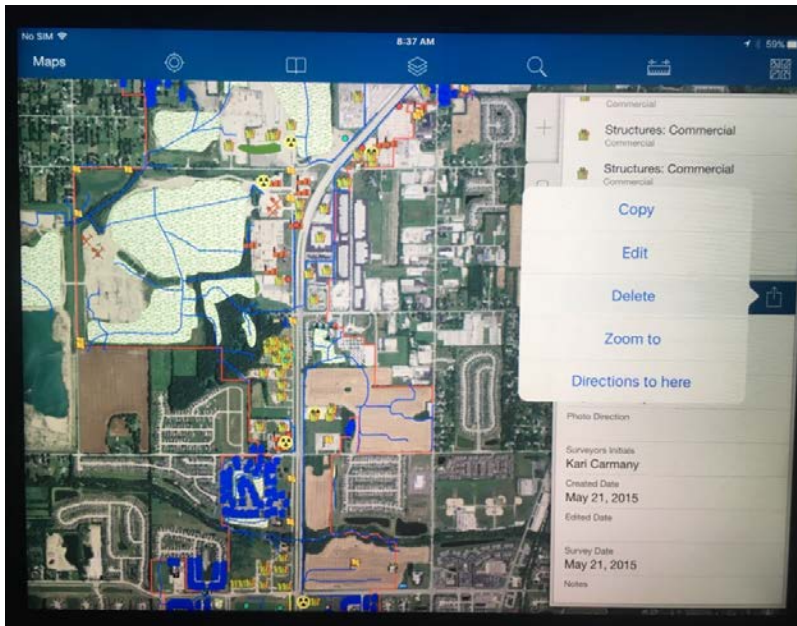
6. Collect Data



3. I-69 Section 6 Data Collection

Process

6. Collect Data



3. I-69 Section 6 Data Collection

Process

6. Collect Data

Additional Needs:

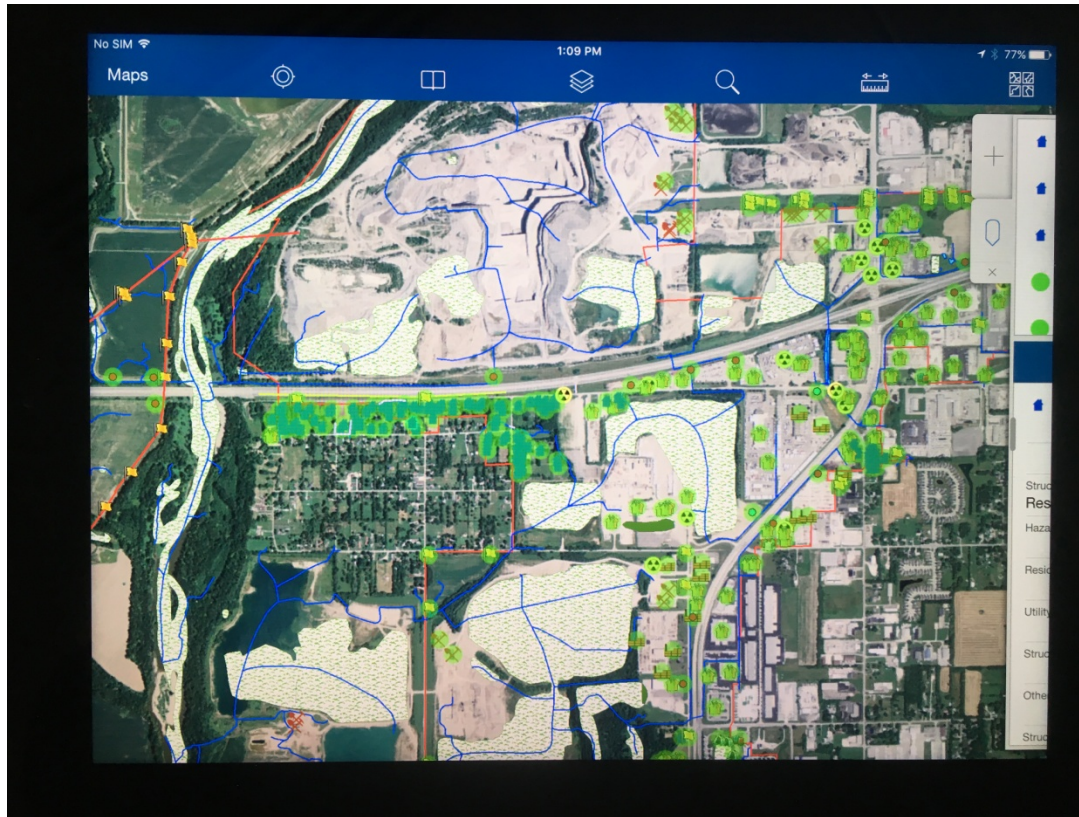
Visual way to indicate points have been field verified



3. I-69 Section 6 Data Collection

Process

6. Collect Data



3. I-69 Section 6 Data Collection

The screenshot displays a GIS application interface for data collection. The main map area shows an aerial view with various features overlaid, including structures, utilities, and hazardous materials. A photo viewer window is open, showing a photograph of a building with a truck in front. A legend on the left side lists various features and their corresponding colors and symbols. A pop-up window provides details for a selected feature.

Legend

WindshieldSurvey_Features_Verified - Verified

- No
- Yes

WindshieldSurvey_POI - Structures

- Agricultural
- Billboard
- Cemetery
- Church
- Commercial
- Hazardous Material
- Hospital
- Industrial
- New Construction
- Public
- Quarry
- Recreational
- Residential
- School
- Utility
- <all other values>

WindshieldSurvey_POI - Utilities

- Cable
- Cellular Tower
- Fiber Optic
- Gas
- Large Transmission Tower
- Other
- Phone

Photo1 (2) - Windows Photo Viewer

File Print E-mail Burn Open

1 of 4

Structure Name: wdg
Photo Direction: 180
Surveyors Initials: Kari Carmany
Created Date:
Edited Date:
Survey Date: May 21, 2015

Notes:
Confirmed in Field: Yes

Attachments:
Photo1.jpg

Edited on 6/1/15 at 3:11 PM
Zoom to Get Directions Edit



3. I-69 Section 6 Data Collection

Process

6. Collect Data

Additional Needs:

Stand alone picture point file



3. I-69 Section 6 Data Collection

The screenshot displays a web-based GIS application interface. The main map shows an aerial view of a residential development with a red boundary line. A pop-up window titled '(1 of 2)' provides details for a specific photo location, including the ID 'PHOTODIRECTION 330', 'NOTES', and an attachment 'Photo1.jpg'. On the left, a 'Photo1 (3) - Windows Photo Viewer' window is open, showing a photograph of a sign that reads 'GOVERNORS POINTE'. The application includes a search bar at the top right, a legend on the left, and various toolbars for map navigation and data management.



4. Standardize Data Collection

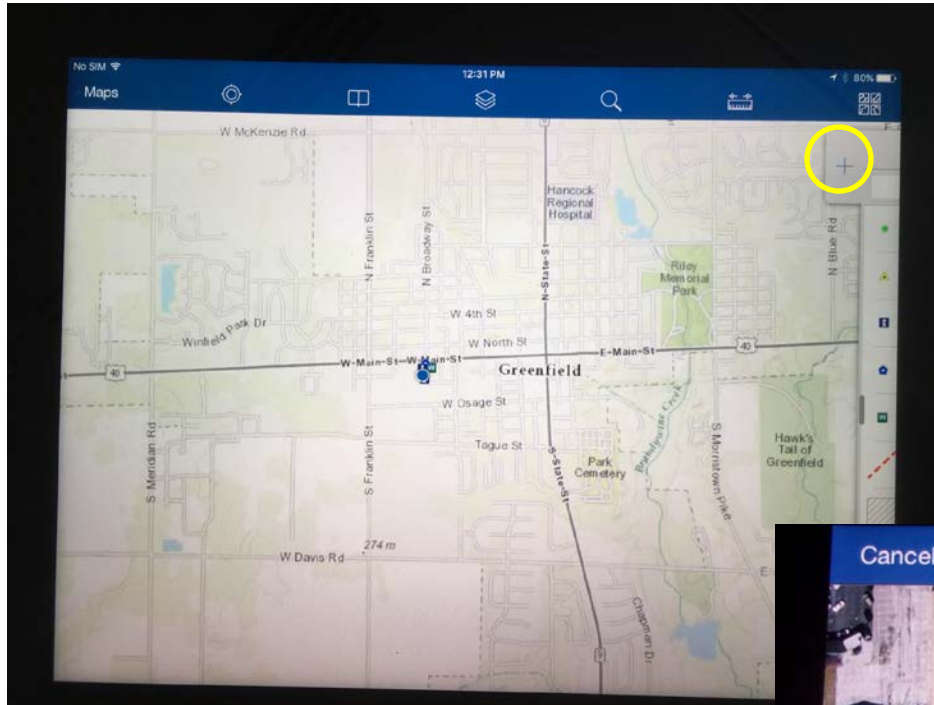
Applying the same concept to everyday data collection needs

Why?:

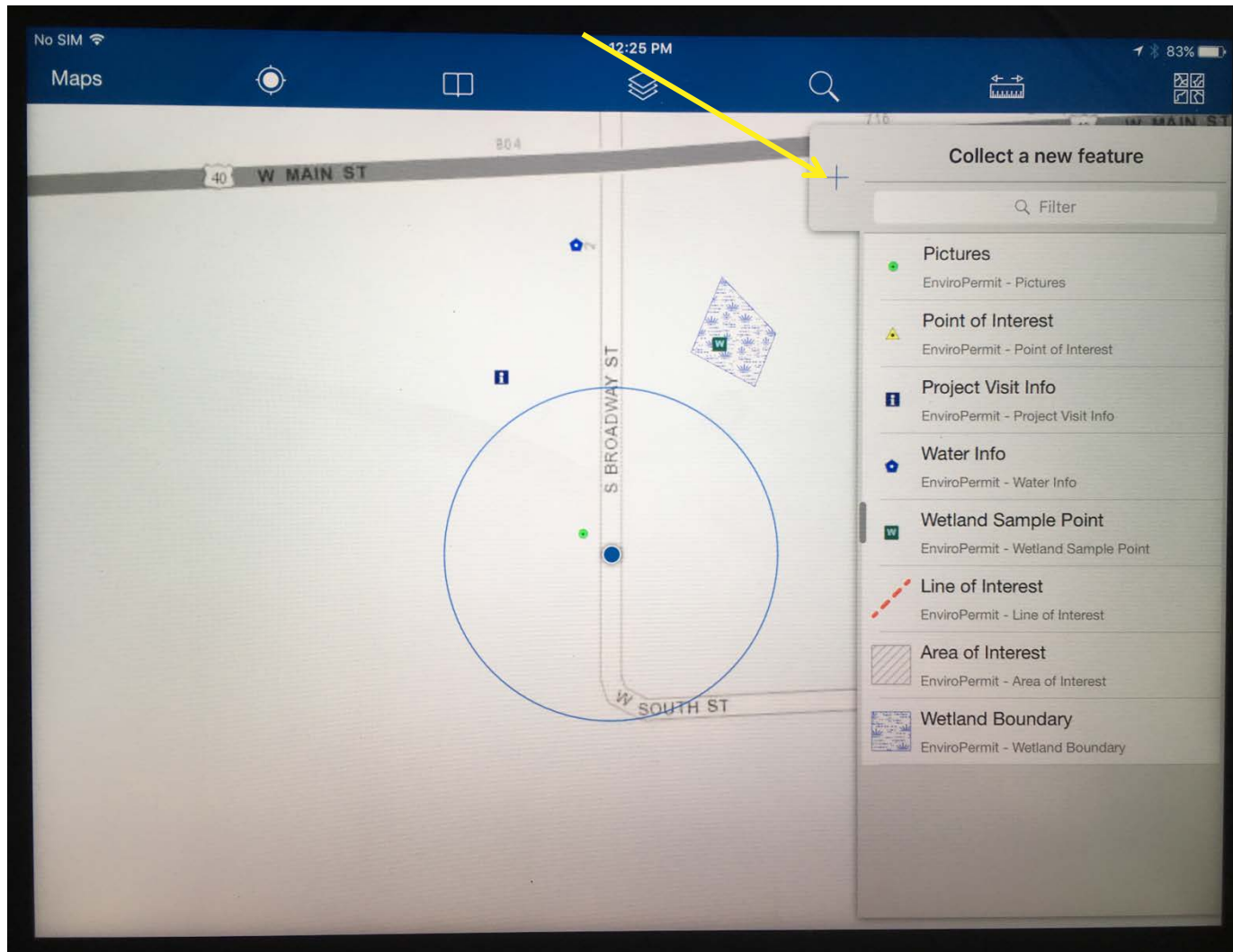
- Standardize method, type, and storage of data collection
- Real-time server back-up
- Share data real-time
- Paperless, readable, organized notes
- Ensure collection of all relevant data



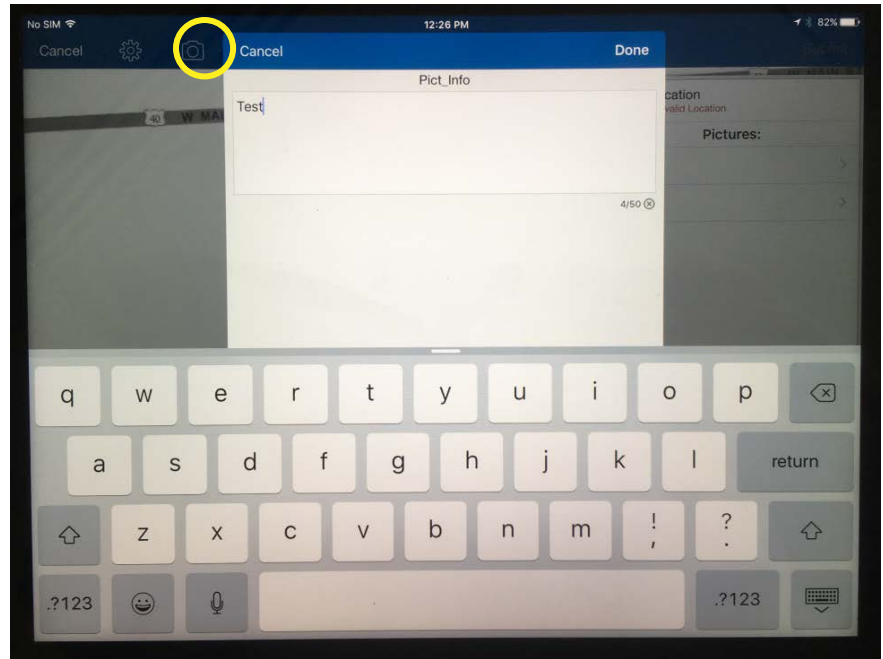
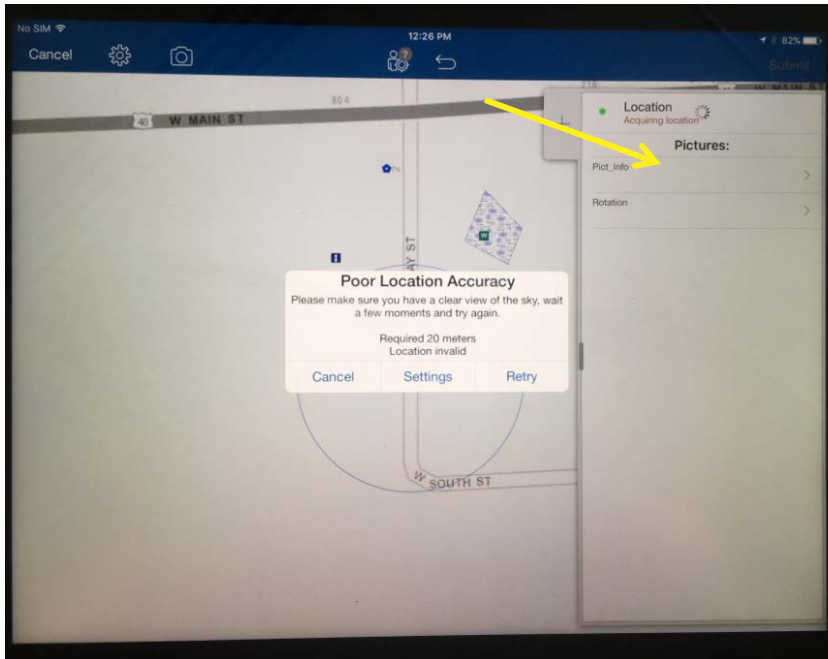
4. Standardize Other Data Collection



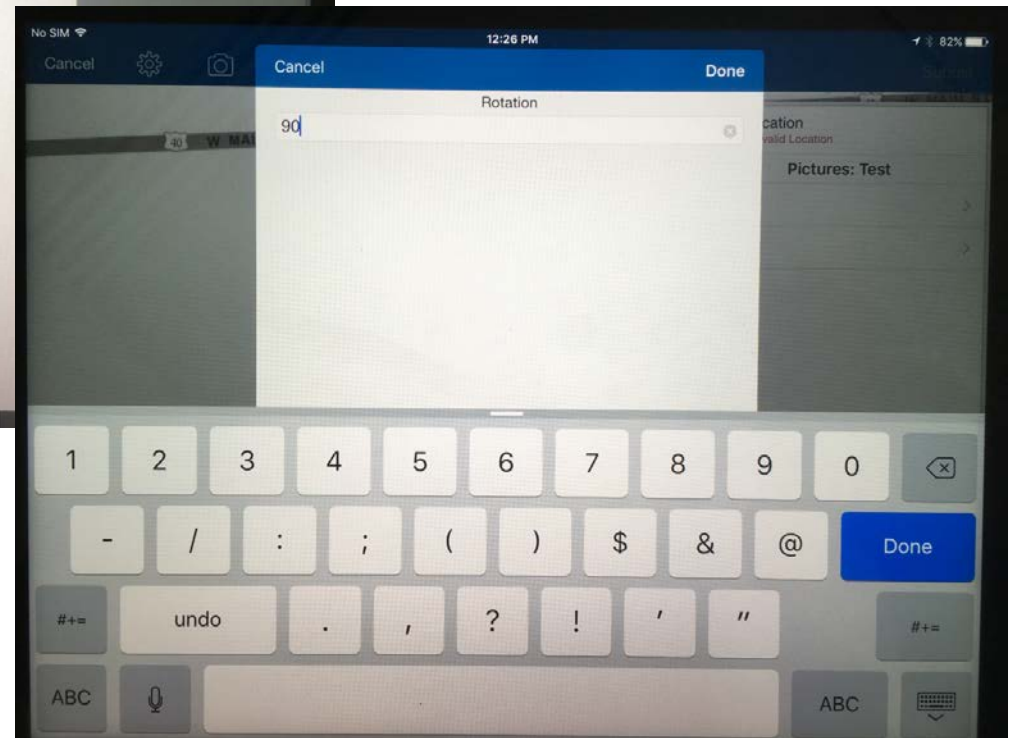
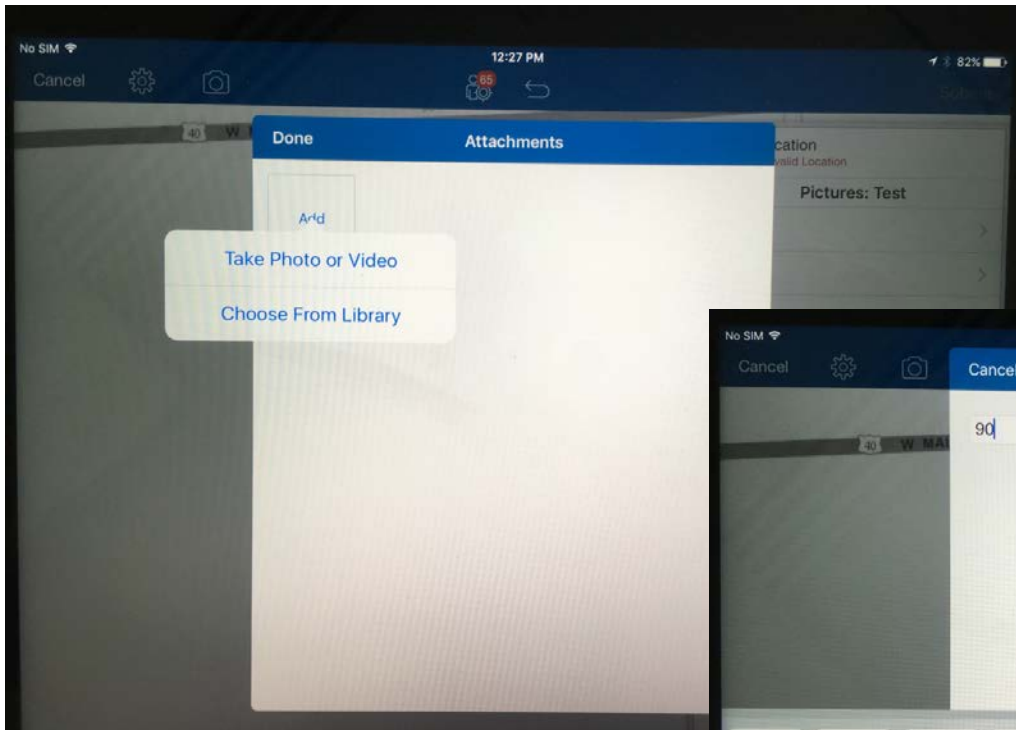
4. Standardize Other Data Collection



4. Standardize Other Data Collection



4. Standardize Other Data Collection



4. Standardize Other Data Collection

The screenshot displays the ArcMap interface for a project titled "Template - Red Flag Investigation Map". The main map area shows an aerial view of a building complex with a yellow arrow pointing to a specific building. A blue diamond-shaped feature is visible on the map, and a popup window titled "Taylor" is open over it. The popup window contains a photo of an office interior and a metadata table.

Table of Contents (Left Panel):

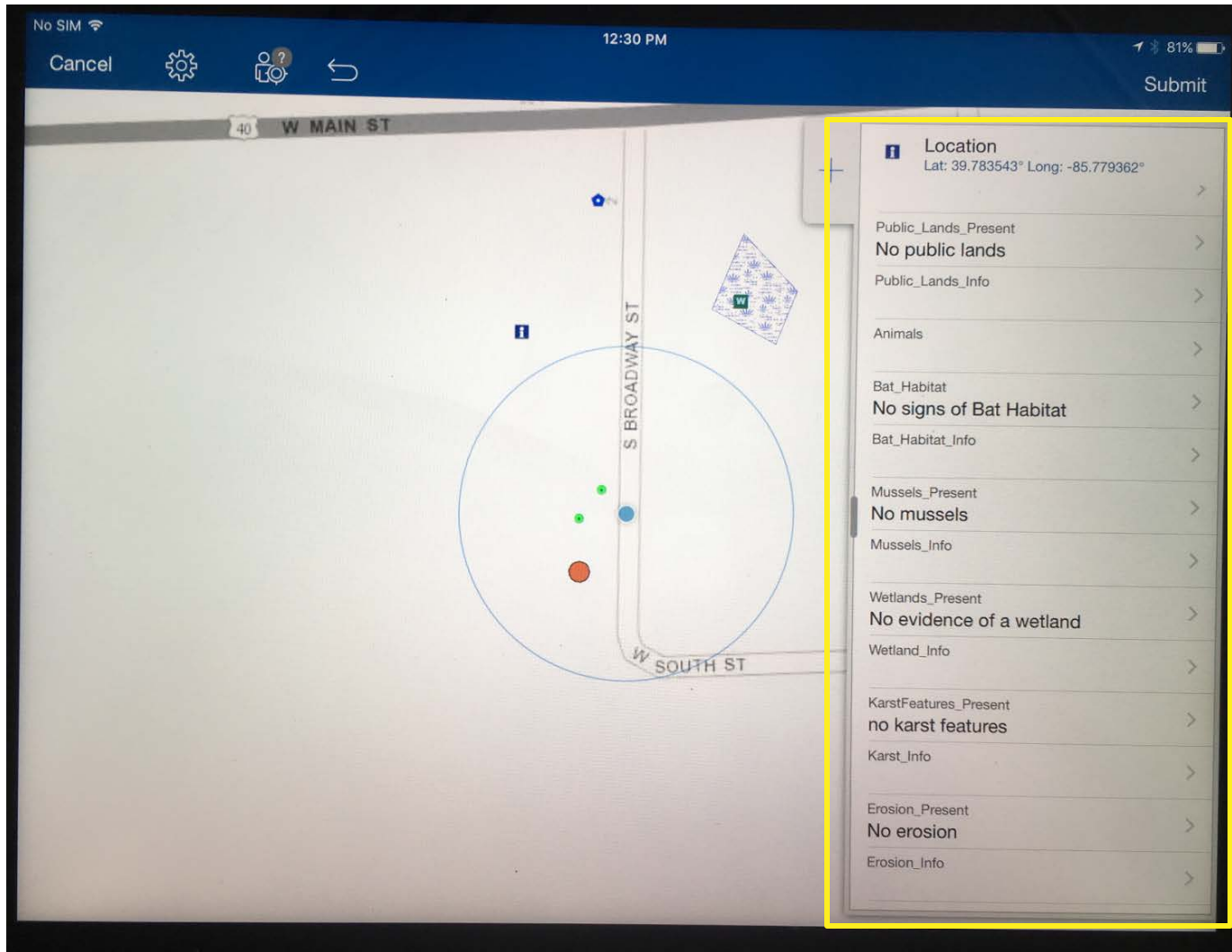
- SDE.DEFAULT (sde)
- Wetland Sample Point
- Water Info
- Project Visit Info
- Pictures
- Wetland Boundary
- DOTGIS.ENV_Pictures_ATTACH
- \\Indotge4\gisdata\DataExchange\Greenfield\
- NEPA_Projects
- All_Projects
- DOTGIS.OES (sde)
- SPMS
- SDE.DEFAULT (gisrap01pw)
- Religious Facility
- Airport
- Airport

Metadata Table (Taylor popup):

Taylor	
Pict_Info	Taylor
Rotation	0
SHAPE	Point
GLOBALID	{C037B928-CC69-4C4D-B7E5-F0218E9C334F}
CREATED_USER	Esri_Anonymous
CREATED_DATE	2/18/2016 4:24:14 PM
LAST_EDITED_USER	Esri_Anonymous
LAST_EDITED_DATE	2/18/2016 4:24:14 PM

Bottom Status Bar: 604505.794 4404508.684 Meters

4. Standardize Data Collection



4. Standardize Data Collection

Types of Environmental Data Collected

1. **Wetland Sample Points – sub-meter**
2. **Wetland Boundaries – sub-meter**
3. **Photos Points – 3-5 meters**
4. **Stream Information – 3-5 meters**
5. **Environmental Project Information – 3-5 meters**

Site and surrounding property description, flora and fauna in the project area, hazmat, karst, parks, schools, hospitals, unique features, site photos, etc.



4. Standardize Data Collection

Types of Environmental Data

6. Generic Data Collection File

Environmental Point of Interest

Environmental Line of Interest

Environmental Polygon of Interest



5. Beyond These Examples

Other Applications

Utilities

- Pictures
- Preliminary Locations of Utilities
- Marking Approx. Locals Field Confirmed Locates

Greenfield Utility Coordinator:

“For the utility side, I can see coordinators using this application for field verification of utilities, placing pole numbers on objects, placing One Call Information on the drawing, placing attributes such as company, size of line, type of line (phone, electric, gas, etc), general notes that will be automatically added to the file. This will eliminate the possibility of losing information between the field and the office.”



5. Beyond These Examples

Other Applications

Railroads

- Pictures
- Inspection Data Collection for Crossings
- Create layer with data set for this purpose



Questions?



Contacts

Karstin (Kari) Carmany-George
INDOT, Greenfield District
Environmental Section Manager
317-467-3467

kcarmanygeorge2@indot.in.gov

Randy Weaver
Lochmueller Group
GIS/CAD Administrator
317-334-6868

Rweaver@lochgroup.com

