

Using ArcGIS Online for IDDE Inspections

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Today's Presentation

This session will cover the use of ESRI's ArcGIS online mapping and GeoForm as well as Microsoft OneDrive Cloud Storage products for smartphones and tablets in the field. From setting up your ArcGIS online map and GeoForm to creating a fillable word document, this presentation will show participants how mobile GIS apps and cloud storage can be used to capture data and get it to the decision makers in a timely manner.



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Outline of Today's Presentation

- Setting up AGOL - Data and Map
 - get data into AGOL cloud
 - create maps with data
- Creating the GeoForm
 - customizable for your need
- Microsoft OneDrive
 - cloud storage
 - Inspection Form
- IDDE Inspection process
 - Previous and coming year
- Conclusion



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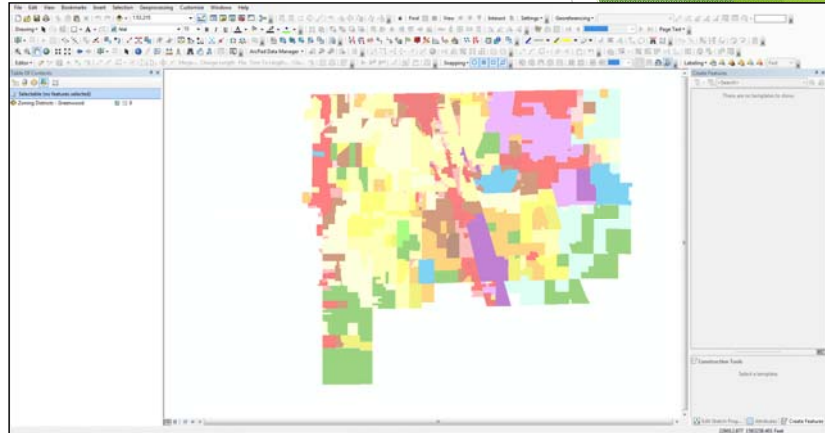
Setting up AGOL - Data and Map

- This actually begins with your desktop GIS
- Prepare or get access to the following data
 - Storm data
 - Especially Outfalls
 - Create/Update Domains (drop down boxes)
 - Helps with data consistency
 - Pictures are nice
 - Location Data
 - Parcels, address points, subdivisions, commercial, contours, etc.
 - Editing Layer(s)
 - Create way for users to create/edit data in the field
 - This is also needed to create a GeoForm

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Setting up AGOL - Data and Map

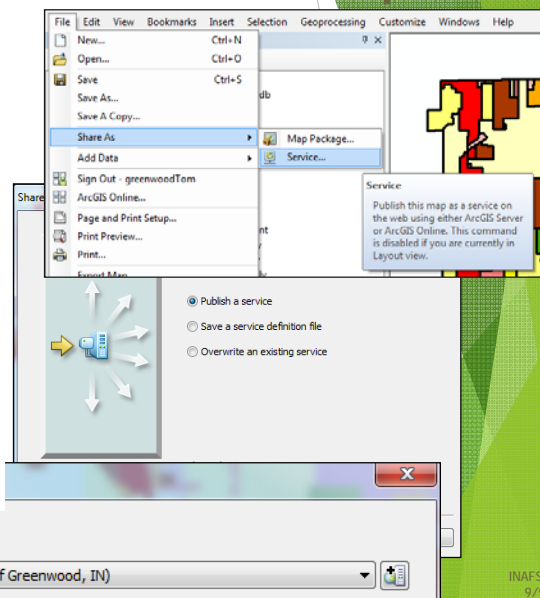
- Time to upload data to AGOL - Steps for uploading
 - On your desktop GIS set symbology to the desired color(s)/symbol(s)



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Setting up AGOL - Data and Map

- Go to File, log in to Online account (if not already logged in), and Share As>Service
- Select 'Publish a Service' to name the Service
 - make sure that 'Choose a Connection' is set to your Online account
 - this is also where you can connect to Arc Server if you have that available



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Setting up AGOL - Service Editor

The screenshot shows the 'Parameters' and 'Capabilities' sections of the AGOL Service Editor. In the 'Parameters' section, the 'Anti-aliasing' dropdown is set to 'Best' and 'Text Anti-aliasing' is set to 'Force'. The 'Maximum number of records returned by the server' is set to 1000. In the 'Capabilities' section, 'Tiled Mapping' is unchecked and 'Feature Access' is checked.

➤ Parameters - leave default

➤ Capabilities - turn off Tiled Mapping/ turn on Feature Access

The screenshot shows the 'Feature Access' section of the AGOL Service Editor. The 'REST URL' field contains the text: 'The REST URL will be defined once the service is published'. Under 'Operations allowed', the checkboxes for 'Create', 'Delete', 'Query', and 'Update' are checked, while 'Sync' is unchecked.

- Turn on operations depending on function of layer
- Update is especially needed if plan on editing

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Setting up AGOL - Service Editor

The screenshot shows the 'Item Description' and 'Sharing' sections of the AGOL Service Editor. In the 'Item Description' section, the 'Summary (required)' is 'Greenwood Zoning as of end of July 2014', and the 'Tags (required)' are 'GIS, Greenwood, zoning'. In the 'Sharing' section, 'My Content', 'City of Greenwood, IN', and 'Everyone (public)' are checked under 'Share your service with'. Under 'Members of these groups', 'City of Greenwood Maps' is selected.

- Item Description
- fill out accordingly
- Summary and Tags required
- Description optional but useful

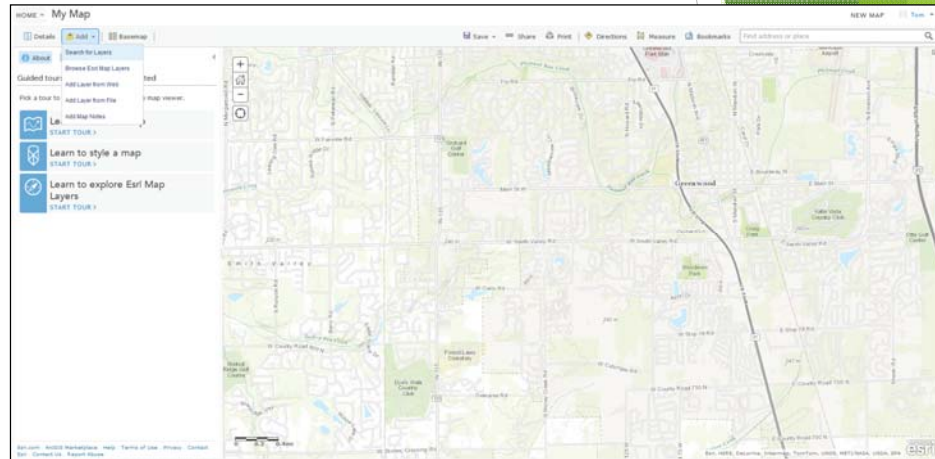
- Sharing - Everyone (public/private)
- Depends on your organization needs

➤ Lastly preview (if desired) before Publishing

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Setting up an AGOL Map

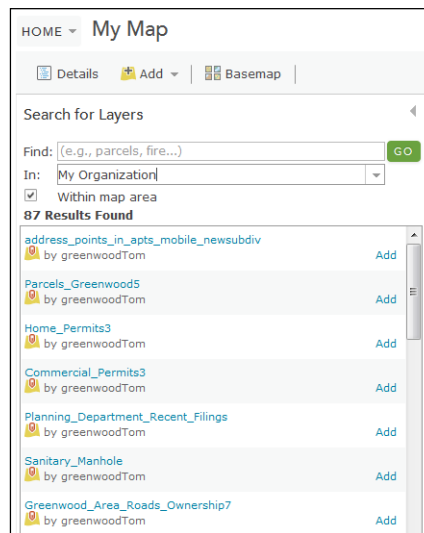
- Open a new map and use 'Add' button
 - Various types of data available
 - I use the 'Search for Layers' option



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Setting up an AGOL Map

- Search for Layers from My Organization or A GIS Server
 - Can also add data from
 - other users who've made their data public
 - ESRI map layers

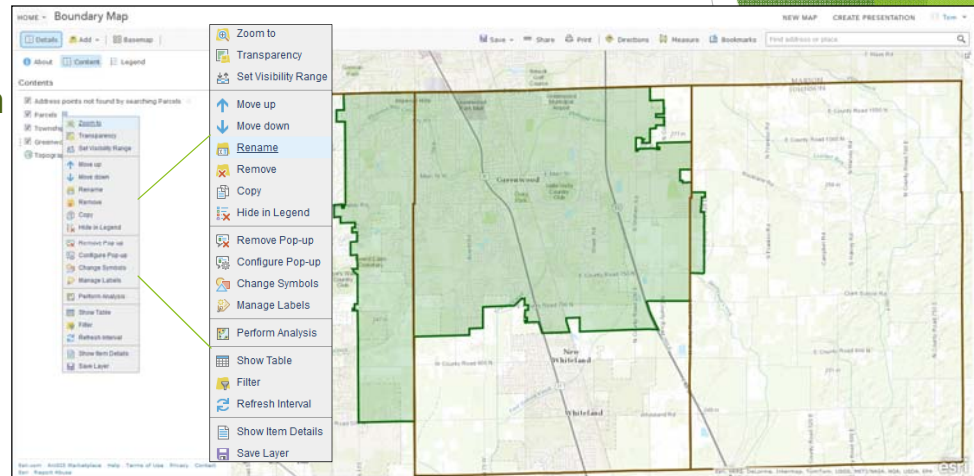


My Organization |
My Organization
A GIS server
ArcGIS Online
Living Atlas Layers

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Setting up an AGOL Map

- After I add layers then I configure each layer and 'design' the map
- Can save configurations for individual layers to be used in other maps



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Setting up an AGOL Map

- Once the map is 'designed' it is time to Share
 - My maps are shared to everyone as I don't have enough users in my groups
- Decide if want to embed or make web application
 - I've only made web application maps

Share

Choose who can view this map.
Your map is currently shared with these people.

Everyone (public)

City of Greenwood, IN

Members of these groups:

City of Greenwood Maps

Link to this map

[Facebook](#) [Twitter](#)

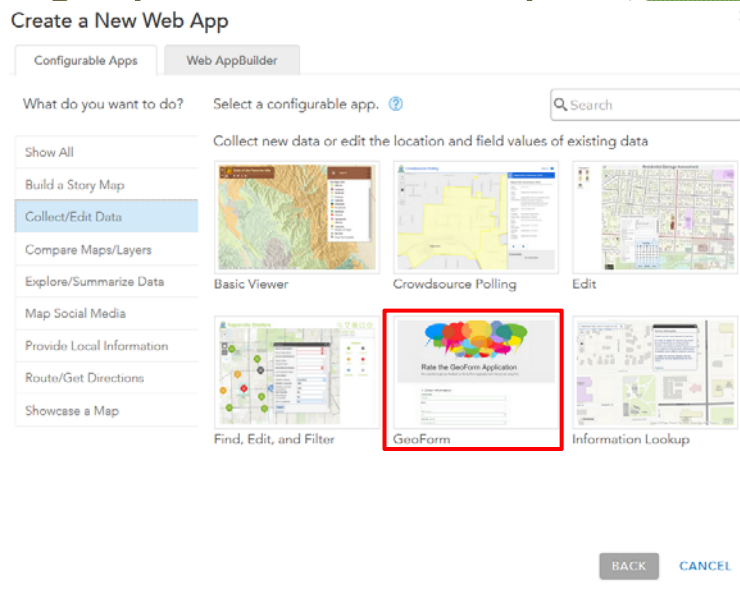
Embed this map

[CLOSE](#)

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Setting up an AGOL Map

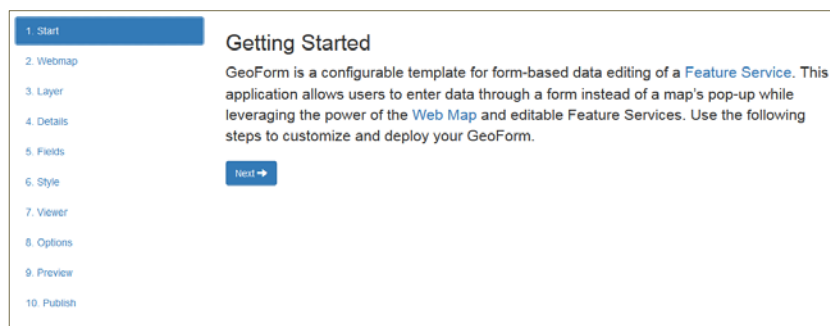
- Many types Web App's to create
- We will now discuss designing and publishing a GeoForm



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Setting up an AGOL GeoForm

- Esri provides a nice 'wizard' to walk you through setting up a GeoForm
- 10 steps
 - Some steps are more involved than others
- Does allow for customization on how you want form to look/feel



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Setting up an AGOL GeoForm

- Begin by selecting a Webmap
- Can choose any map in your arsenal
- One prerequisite is that you must have a layer(s) that you can edit
- Use step 3 to select the layer(s) you want to use the GeoForm to edit
 - I've never used more than 1 layer at a time to edit in a GeoForm

The screenshot shows two overlapping panels from the AGOL GeoForm setup interface. The left panel is titled 'Select Editable Layer(s)' and shows a sidebar with steps 1 through 6. Step 3, 'Layer', is selected. The main area shows a text input field containing 'OutfallInspectionGeoForm' and navigation buttons for 'Previous', 'Preview', and 'Next'. The right panel is titled 'Select a Webmap' and shows a sidebar with steps 1 through 10. Step 2, 'Webmap', is selected. The main area shows a thumbnail of a map with yellow markers, a text input field with the text 'The selected webmap is Outfall Inspection Edits GeoForm. To select a different webmap please click on 'Choose Webmap' button', and navigation buttons for 'Choose Webmap', 'Previous', 'Preview', and 'Next'.

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Setting up an AGOL GeoForm

- Now you get the chance in step 4 to start customizing the GeoForm
- Header size
- Title - same as Webmap or new name
- Logo or not
- Instructions and Details
- Insert link(s), picture(s), table, etc
- Nice way to give instructions to a user who isn't in the form normally
- Can even customize buttons for submission and viewing entries

The screenshot shows the 'Form Details' step in the AGOL GeoForm setup interface. The sidebar on the left shows steps 1 through 10, with step 4, 'Details', selected. The main area is titled 'Form Details' and contains several sections: 'Header Size' with radio buttons for 'Small Header' and 'Large Header' (selected), a text input field for 'Title' containing 'My Form', and a 'Logo Image' section with a text input field containing 'http://www.mylogo.com/logo.png'. Below this is a 'Form Instructions & Details' section with a rich text editor containing a toolbar and a large text area. At the bottom, there is a 'Submit Button Text (Optional)' section with a text input field containing 'Submit Entry'.

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Setting up an AGOL GeoForm

Select Form Fields

5. Fields

Here you can select which fields will be visible to your GeoForm audience, edit the Labels they will see, and add a short Description to help with data entry.

- Can be configured numerous ways
- Depends on the kind of data

The screenshot shows the 'Configure Field' interface for a field named 'INSPECTDATE'. It includes sections for 'Help Text (optional)', 'Hint (optional)', and 'Placeholder text for the field'. The 'Display As' section is expanded to show options: Date Picker, Text, Email, URL, and Text Area. The 'Date Settings' section includes checkboxes for 'Hide this date field', 'Prevent past dates', 'Prevent future dates', and 'Set this field with the current date and time'. Three inset boxes show different 'Display As' configurations: one with 'Select Menu' and 'Filter Select', another with 'Radio Button', and a third with 'Text' and 'Checkbox'.

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Setting up an AGOL GeoForm

- Choose a Style / Theme
- If you're feeling adventurous you can get an even more customized form
 - I have not done this

The screenshot shows the 'Configure Viewer' interface. On the left is a navigation menu with items: 1. Start, 2. Webmap, 3. Layer, 4. Details, 5. Fields, 6. Style, 7. Viewer (highlighted), 8. Options, 9. Preview, 10. Publish. The main area is titled 'Configure Viewer' and contains a 'Disable Viewer' checkbox and a description: 'You can configure the GeoForm to disable/enable the viewer'. Below this is a section 'OutfallInspectionGeoForm Display Field' with a list of fields: Facility Identifier, OBJECTID, Facility Identifier, Average Discharge, Discharge Identifier, Discharge Type, Peak Discharge, Permitted, Permit Identifier, Install Date, Location Description, and Rotation.

The screenshot shows the 'Select Form Theme' interface. It prompts the user to 'Style your GeoForm using the themes below based on your preference'. A dropdown menu shows 'Basic Bootstrap (Default)'. A list of themes includes: Bootstrap, Cartelam, Cosmo, Cyborg, Darkly, Flatly, Journal, Lumen, Paper, Readable, Sandstone, Simplex, Slate, Spacelab, Superhero, United, and Yell. A 'Cyborg' theme preview is shown with the text 'Cyborg - get back and electro blue'. A 'Hello, world!' preview is also visible. A 'Back to top' link is at the bottom.

- Make it so people can see a map of submissions collected with the GeoForm

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Setting up an AGOL GeoForm

1. Start
2. Webmap
3. Layer
4. Details
5. Fields
6. Style
7. Viewer
8. Options
9. Preview
10. Publish

Options

Enable offline support This is a new option; very encouraging
Store submissions when there is no network connection and submit them when a connection is restored.

Show Layer
You can configure the GeoForm to Show/Hide Layer. This option only applies to a single layer setup.

Social media sharing buttons
Social media buttons allow your audience to easily share your GeoForm once they have made a submission.

Default Map Extent
The map will reset to the default extent in your web map after submission - this can be disabled at any time.

Locate On Load Nice to have map open to current location
You can configure the GeoForm to use the current location on page load.

Show Basemap Toggle
You can configure the GeoForm to Show/Hide the Basemap Toggle.

Basemap Toggle

Topographic

- Streets
- Imagery
- Imagery with Labels
- Terrain with Labels
- Topographic
- Light Gray Canvas
- Dark Gray Canvas
- Oceans
- National Geographic
- OpenStreetMap
- Dark Gray Canvas
- Light Gray Canvas
- Streets

Basemap Toggle

Topographic

Default Basemap

Imagery with Labels

Push pin

Blue

- Blue
- Brown
- Green
- Grey
- Orange
- Purple
- Red
- Yellow

Choose from a variety of colors for the map pushpin, it should be different from the map symbology to help the user put their submission on the map.

Select Location By

My Location

Search

Latitude & Longitude Coordinates

USNG Coordinates

MGRS Coordinates

UTM Coordinates

Allow users to select a location using these methods.

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Setting up an AGOL GeoForm

- Now you preview your form
- See how it looks/flows
- Able to go back to previous steps and change what you didn't like and preview again

Preview Application

Flow Floatables Severity

- 1 - Few/slight; origin not obvious
- 2 - Some; indications of origin (e.g., possible suds or oil sheen)
- 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Outfall Physical Indicators

- Yes
- No

Flow Outfall Damage

- Corrosion
- Peeling Paint
- Spalling, Cracking or Chipping

Flow Outfall Stains/Deposits

- Flow Line
- Oily
- Paint
- Other

Flow Outfall Abnormal Vegetation

- Excessive
- Inhibited

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Setting up an AGOL GeoForm

Save Application

If you are finished customizing your GeoForm, save the application and begin sharing with your audience. You can always return to this builder and continue customizing it based on feedback.

[← Previous](#)
[Save and Exit](#)
[Save](#)

- Once you've hit the 'Save and Exit' button you can still return to the design/configure steps if you want to make changes

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Finished AGOL GeoForm

Outfall Inspection Edits GeoForm

1. Enter Information

Facility Identifier

Inspect Date

Inspector

SubWatershed
 Driftwood
 Upper White

Submerged in Water
 No
 Partially
 Fully

Submerged with Sediment
 No
 Partially
 Fully

Flow Present
 Yes
 No

Flow Volume - Liter

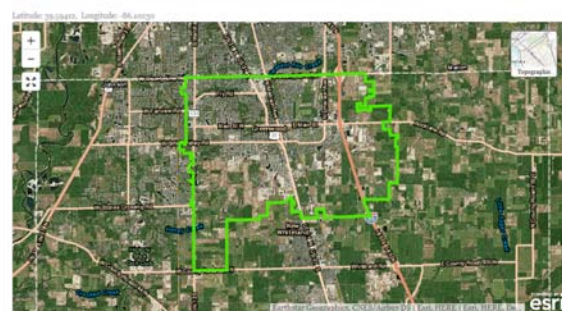
- Let's take a look at this form

2. Select Location

Specify the location for this entry by clicking/tapping the map or by using one of the following options.

Search Lat/Long

Find address or place



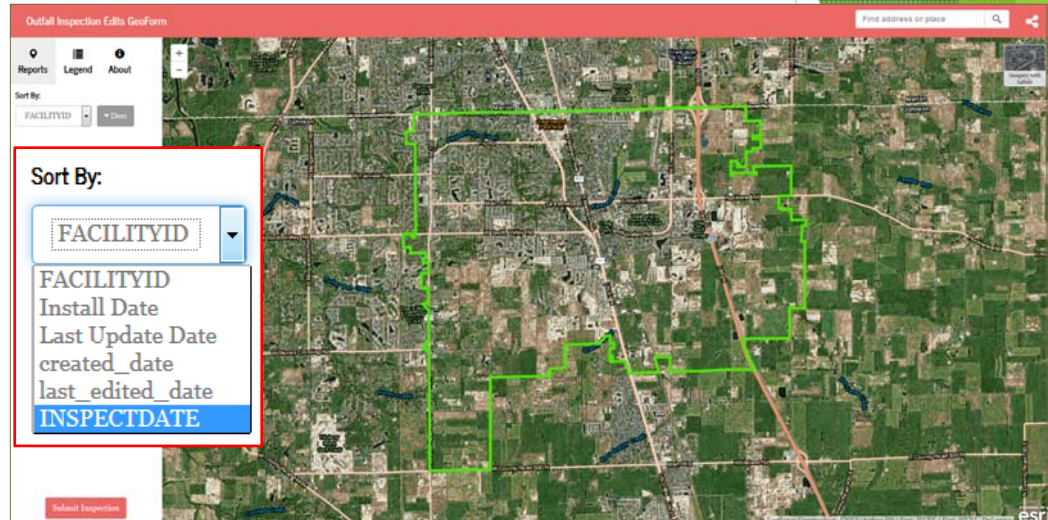
3. Complete Form

Add this information to the map.

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Finished AGOL GeoForm

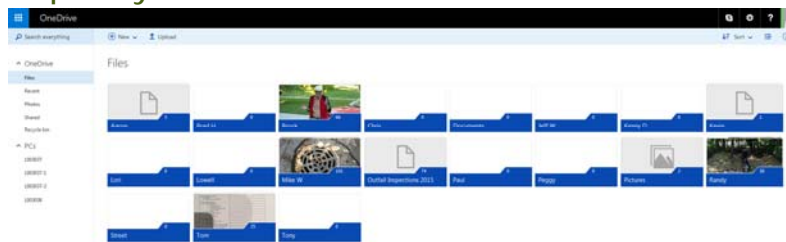
- This map is used to show all locations that you populated with the GeoForm



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Microsoft OneDrive

- OneDrive is free online storage (5GB) that comes with your Microsoft account
- It's like an extra hard drive that's available from any of the devices you use
 - The 2 statements above are straight from Microsoft website
- Our IT Dept set us up with an account that is shared by CDS & Storm Depts
- The storage capacity we have is 50 GB for \$1.99/month



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Microsoft OneDrive

Advantages to OneDrive

- Access your files from anywhere
 - Phone, laptop, tablet, desktop
- All participants have access to everyone's folders
- Able to share inspection results immediately to all interested parties
 - You can share folder(s) or documents with anyone, even people not on account
- Close collaboration with Office
 - Able to save Word, Excel, PowerPoint files directly into OneDrive

Disadvantages to OneDrive

- Privacy concerns
 - All participants have access to everyone's folders

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Outfall/IDDE Form

- Stormwater Dept found this form as a PDF
- Can view PDFs on an iPad but require advanced license to fill out
- You are able to fill out Word documents on an iPad
- Since OneDrive works so well with Word documents we decided to use that to our advantage
- I converted the PDF to Word

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET					
Section 1: Background Data					
Submittal: <input type="checkbox"/> Detention <input type="checkbox"/> Upper/White	Outfall ID: _____				
Tide/Date:	Time (Military): _____				
Investigator:	Form completed by: _____				
Temperature (F): _____	Rainfall (in.) Last 24 hours: _____	Last 48 hours: _____			
Latitude: _____	Longitude: _____	GPS Unit: _____	GPS LOG #: _____		
Camera: _____	Photo #: _____				
Land Use in Drainage Area (Check all that apply):					
<input type="checkbox"/> Industrial	<input type="checkbox"/> Open Space				
<input type="checkbox"/> Ultra-Urban Residential	<input type="checkbox"/> Institutional				
<input type="checkbox"/> Suburban Residential	Other: _____				
<input type="checkbox"/> Commercial	Known Industries: _____				
Notes (e.g., origin of outfall, if known): _____					
Section 2: Outfall Description					
LOCATION	MATERIAL	SHAPE	DIMENSIONS (IN.)	SUBMERGED	
<input type="checkbox"/> Close Pipe	<input type="checkbox"/> PVC <input type="checkbox"/> HDPE	<input type="checkbox"/> Circular <input type="checkbox"/> Irregular	Diameter/Dimension: _____	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully	
	<input type="checkbox"/> Steel <input type="checkbox"/> Other: _____	<input type="checkbox"/> Box <input type="checkbox"/> Triplet <input type="checkbox"/> Other: _____		With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully	
<input type="checkbox"/> Open Drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> rip-rap <input type="checkbox"/> Other: _____	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other: _____	Depth: _____	Top Width: _____	Bottom Width: _____
In-Stream (applicable when collecting samples)					
Flow Present?	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, Skip to Section 3				
Flow Description (if present)	Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial <input type="checkbox"/>				

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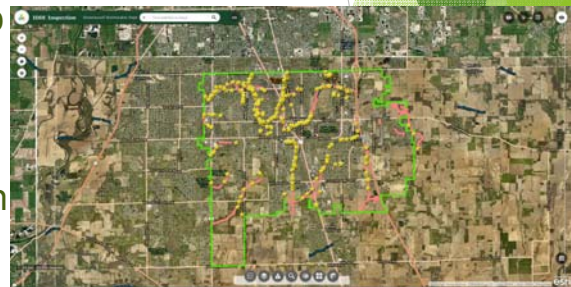
IDDE Inspection

- First year our Stormwater Dept did any IDDE Inspections was last year
 - Previous years were done by other depts
- Get notification through our help desk ticket system
- Inspectors used online Storm map to locate Outfalls and obtain info information for form
 - ID, Watershed, Storm Network
 - Would use GeoForm to add a point if Outfall had not been previously mapped
- Go to location and assess situation
- Open OneDrive open empty form
 - Fill out form and add pictures
- Save filled out form in OneDrive
- This allows Superintendent to be notified immediately after assessment
 - You can also send copy of report to involved party(s)
- If water sampling is required then the results can be added to the form at a later time

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IDDE Inspection

- This year we are doing things a little different
- I've created a map that will allow the inspectors to update Outfall directly
- Added all pertinent fields from inspection form into the layer
 - Still can add pictures
- we can add a 'new' Outfall with this map
- Less steps to get inspection data tied to location
- Still able to easily produce reports/info about an inspection
- Still available to Superintendent as soon as asset is entered



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Conclusions

Today we've discussed the following

- Setting up AGOL - uploading data and creating a map
- Creating a GeoForm
- Microsoft OneDrive
- IDDE Inspection process using all 3 tools above
- All of these tools are either FREE or included with your Esri desktop package
- Certainly not ideal to use 3 separate tools to perform inspection
- When you have no or little money available then this works to show the decision makers what can work
- Hopefully get them to find money to make the process run smoother



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QUESTIONS??

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[@TomMaggard](https://twitter.com/TomMaggard)



http://www.cityofhouston.org/2017_08/



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<http://www.habitat.org/garden/diagnosing/notes/field-notes/canard-images/foam-foam.jpg>



<http://www.greenwoodin.com/About/AboutUs/AboutUs.html>



http://www.cityofhouston.org/2017_08/

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