From the Cloud to the Stream …Of Decision-Support:

Taking GIS Beyond the Map

by: Scott Gregory

WILDLANDS
ENGINEERING

Presentation Overview

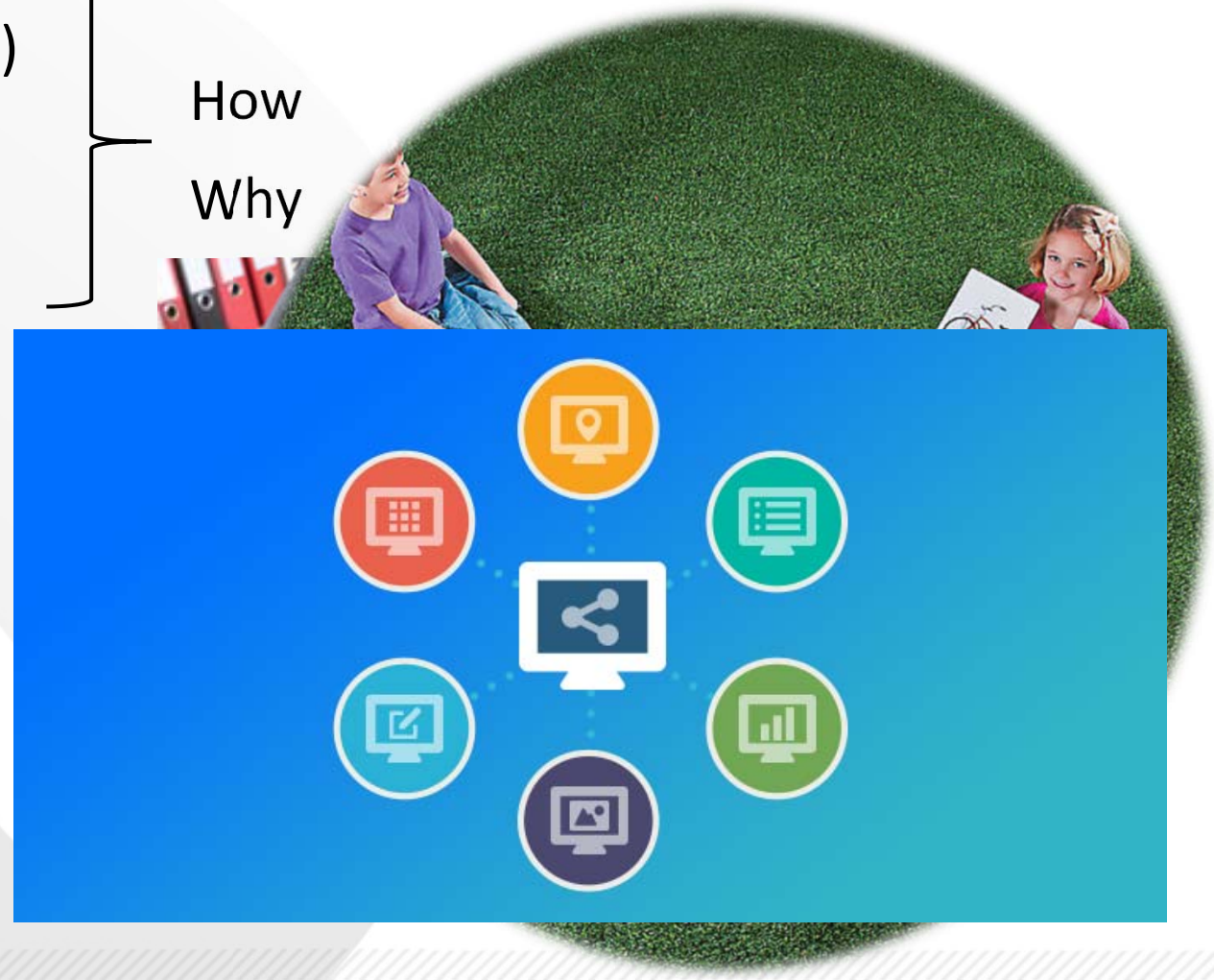
- Background
- Example Applications
- Questions

Problem Solving

- Conditions (What)
- Time (When)
- Location (Where)

How

Why



Web GIS

- View
- Manage
- Query
- Share
- Collaborate
- Accessibility
- Dissemination
- Flexibility

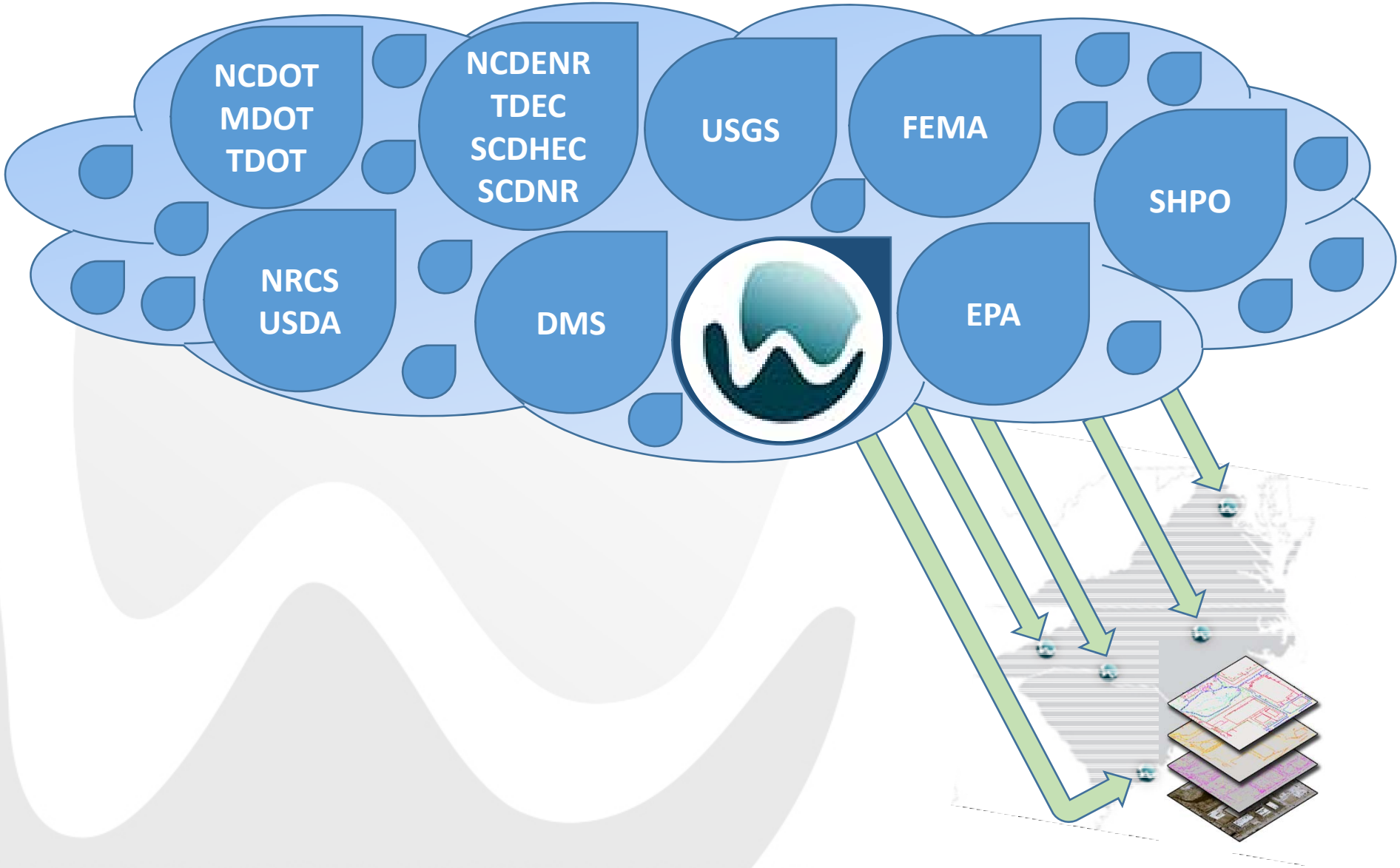
What's changed?

- Increased data availability
- Increased data accessibility

Proliferation of Web GIS

The amount of data is growing exponentially, doubling every two years. However, more data by itself does not necessarily mean more value. For data to be valuable, it needs to be curated and made easily accessible.

Web Mapping Services



Example Applications

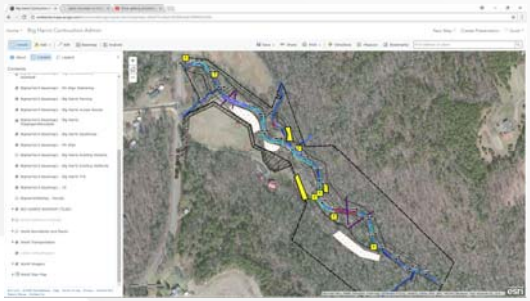
- Watershed Planning
- Field Design Verification
- Stakeholder Coordination
- Construction Management
- Public Relations
- Research & Development

Ideal Project Types

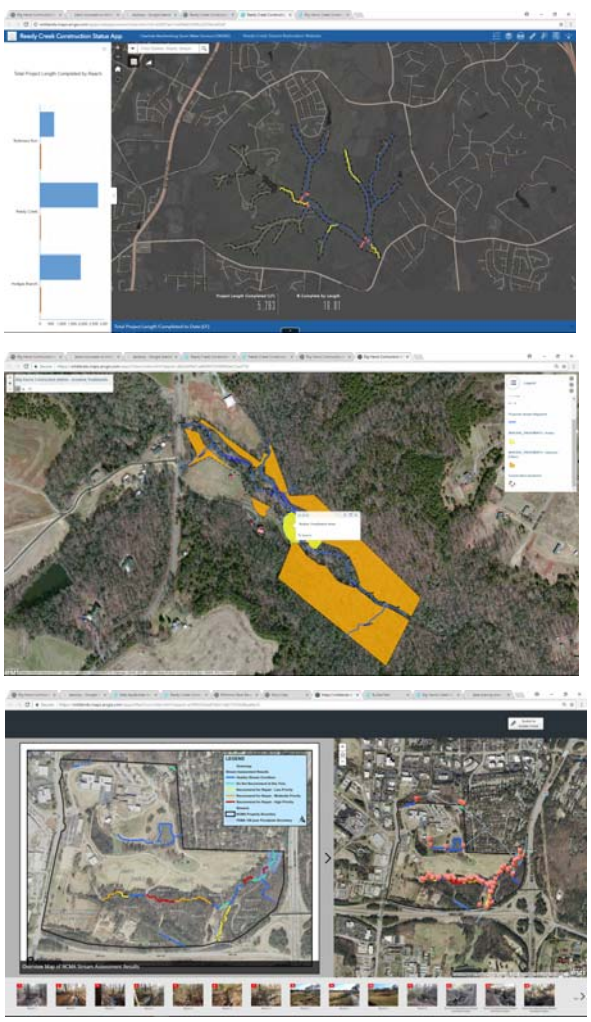
- Medium to large scale projects *(with longer data lifecycles)*
- DMS (Mitigation) projects
- Projects with multiple stakeholders
- High profile projects
  - Public relations component → Public-facing app

How It Works

Collector App
or
Custom Web App



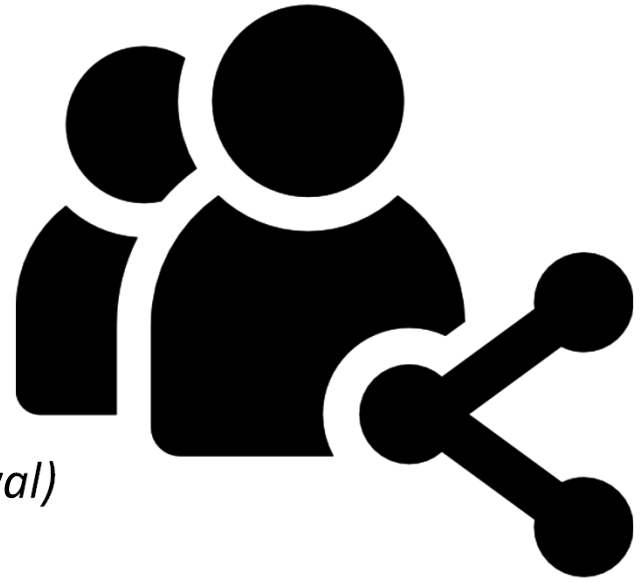
AGOL Web Map



Web Application

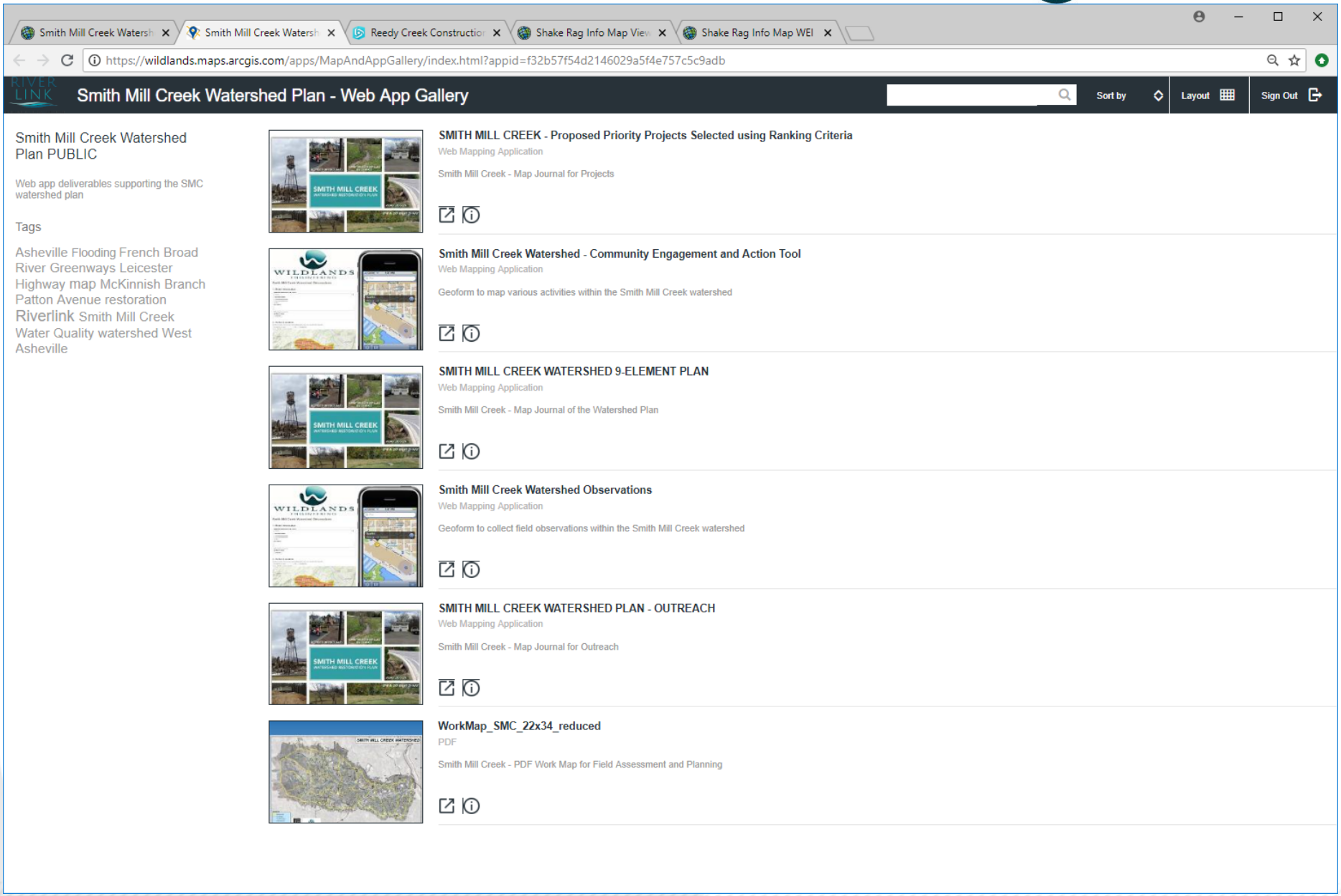
Sharing and Dissemination

- Internal *(Wildlands Staff)*
- Clients
- Contractors
  - Punchlists
  - Tracking/Mapping Tasks *(Invasive Removal)*
- Public *(for Public Relations)*



Watershed Planning

Smith Mill Creek



Smith Mill Creek

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Smith Mill Creek Watershed - Community Engagement and Action Tool

Welcome! The purpose of this geoform is to
awareness of upcoming and ongoing water
Choose from one of the following types of c
then proceeding to complete the remainder

- **Interested Stakeholder** - I am intere
- **Report a Problem** - I want to report a
- **Watershed Event** - I want to request
the watershed and surrounding comm

1. Select Form

Interested Stakeholder

2. Enter Information

Enter brief description of your interest

May we contact you? (required)

- No
- Yes

Enter contact info

Attachment

Select File

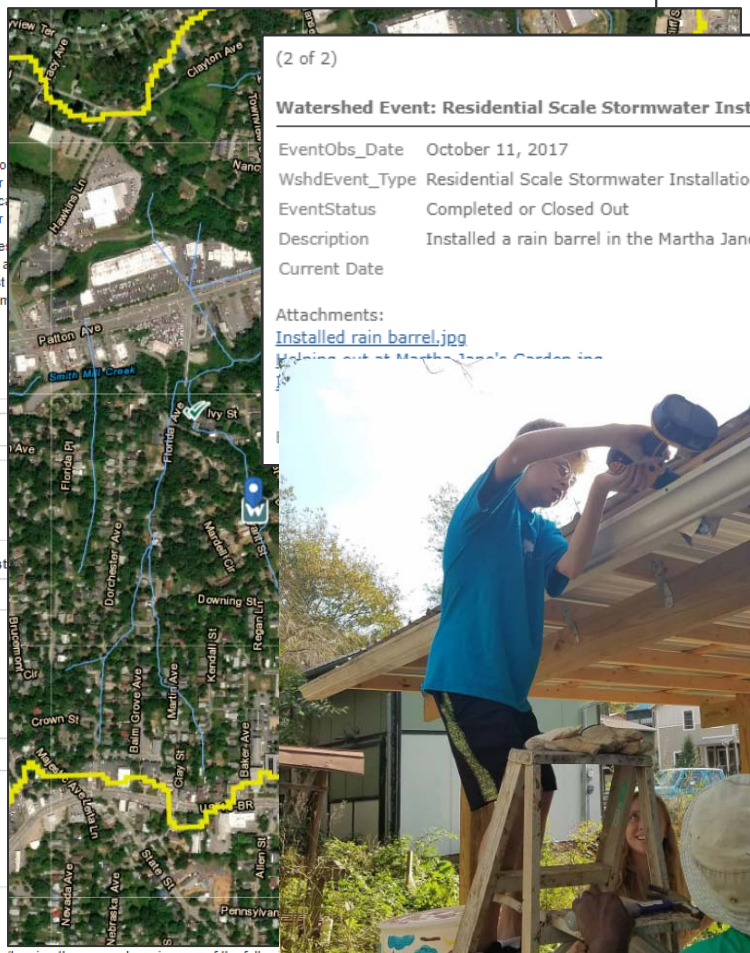
3. Select Location

Specify the location for this entry by clicking/tapping the map or by using one of the follow

Search

Find address or place

Locate Me



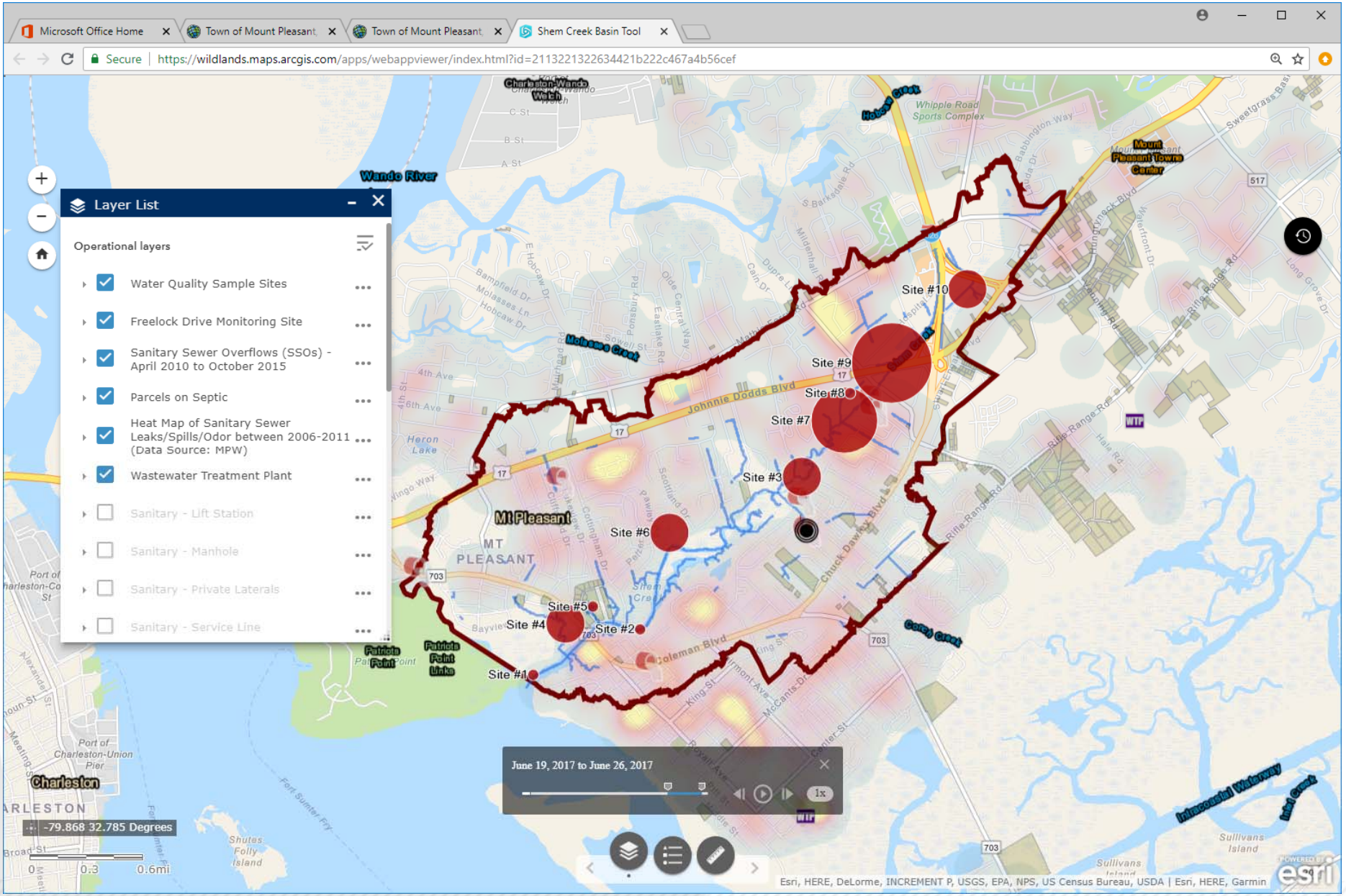
(2 of 2)

Watershed Event: Residential Scale Stormwater Installation (e.g. Rain Garden)

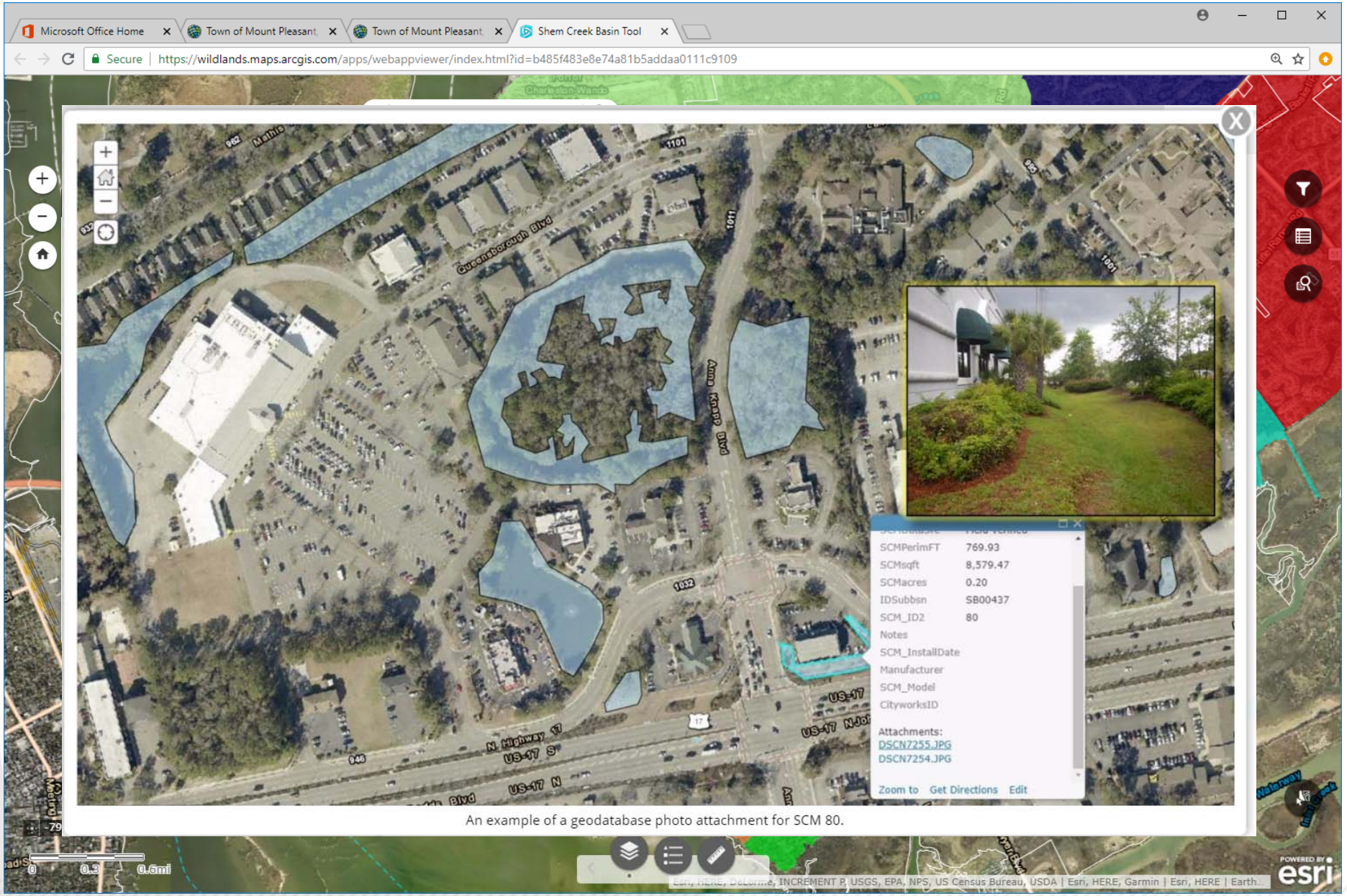
EventObs_Date	October 11, 2017
WshdEvent_Type	Residential Scale Stormwater Installation (e.g. Rain Garden)
EventStatus	Completed or Closed Out
Description	Installed a rain barrel in the Martha Jane Community Garden in the Burton St. Neighborhood
Current Date	

Attachments:
Installed rain barrel.jpg

Shem Creek

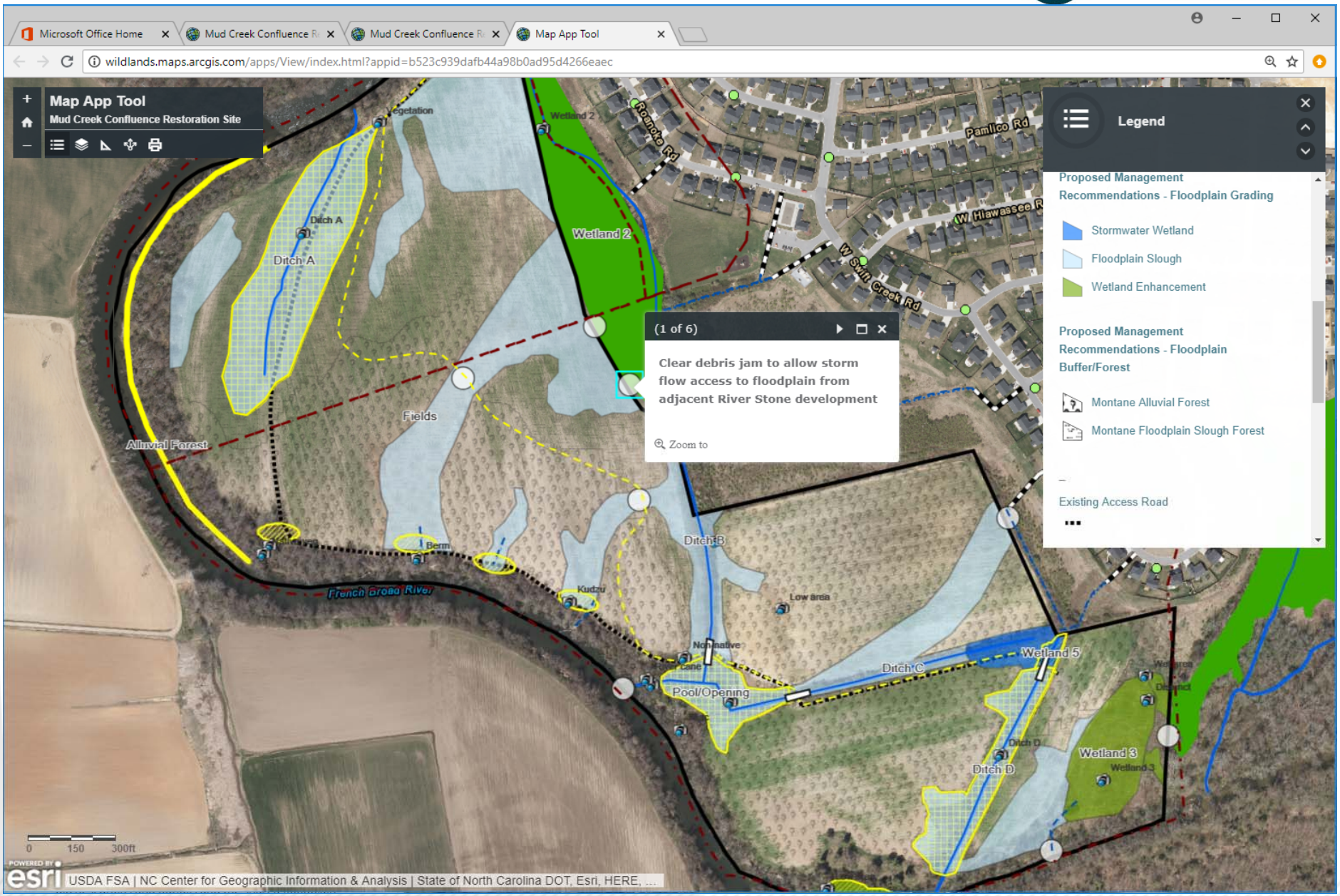

Microsoft Office Home
Town of Mount Pleasant
Town of Mount Pleasant
Shem Creek Basin Tool
Secure | https://wildlands.maps.arcgis.com/apps/webappviewer/index.html?id=2113221322634421b222c467a4b56cef
Layer List
Operational layers
Water Quality Sample Sites
Freelock Drive Monitoring Site
Sanitary Sewer Overflows (SSOs) - April 2010 to October 2015
Parcels on Septic
Heat Map of Sanitary Sewer Leaks/Spills/Odor between 2006-2011 (Data Source: MPW)
Wastewater Treatment Plant
Sanitary - Lift Station
Sanitary - Manhole
Sanitary - Private Laterals
Sanitary - Service Line
Wando River
Mt Pleasant
MT PLEASANT
Site #1
Site #2
Site #3
Site #4
Site #5
Site #6
Site #7
Site #8
Site #9
Site #10
June 19, 2017 to June 26, 2017
-79.868 32.785 Degrees
Esri, HERE, DeLorme, INCREMENT P, USGS, EPA, NPS, US Census Bureau, USDA | Esri, HERE, Garmin

Shem Creek



An example of a geodatabase photo attachment for SCM 80.

Mud Creek


Microsoft Office Home
Mud Creek Confluence
Mud Creek Confluence
Map App Tool
wildlands.maps.arcgis.com/apps/View/index.html?appid=b523c939dafb44a98b0ad95d4266eaec
Map App Tool
Mud Creek Confluence Restoration Site
Legend
Proposed Management Recommendations - Floodplain Grading
Stormwater Wetland
Floodplain Slough
Wetland Enhancement
Proposed Management Recommendations - Floodplain Buffer/Forest
Montane Alluvial Forest
Montane Floodplain Slough Forest
Existing Access Road
(1 of 6)
Clear debris jam to allow storm flow access to floodplain from adjacent River Stone development
Zoom to
Roanoke Rd
Pamlico Rd
W Hiawassee Rd
W Swift Creek Rd
Wetland 2
Ditch A
Fields
Alluvial Forest
Berm
French Broad River
Kudzu
Ditch B
Low area
Non-native cane
Pool/Opening
Ditch C
Wetland 5
Ditch D
Wetland 3
0
150
300ft
USDA FSA | NC Center for Geographic Information & Analysis | State of North Carolina DOT, Esri, HERE, ...

Field Design Verification

Field Design Verification

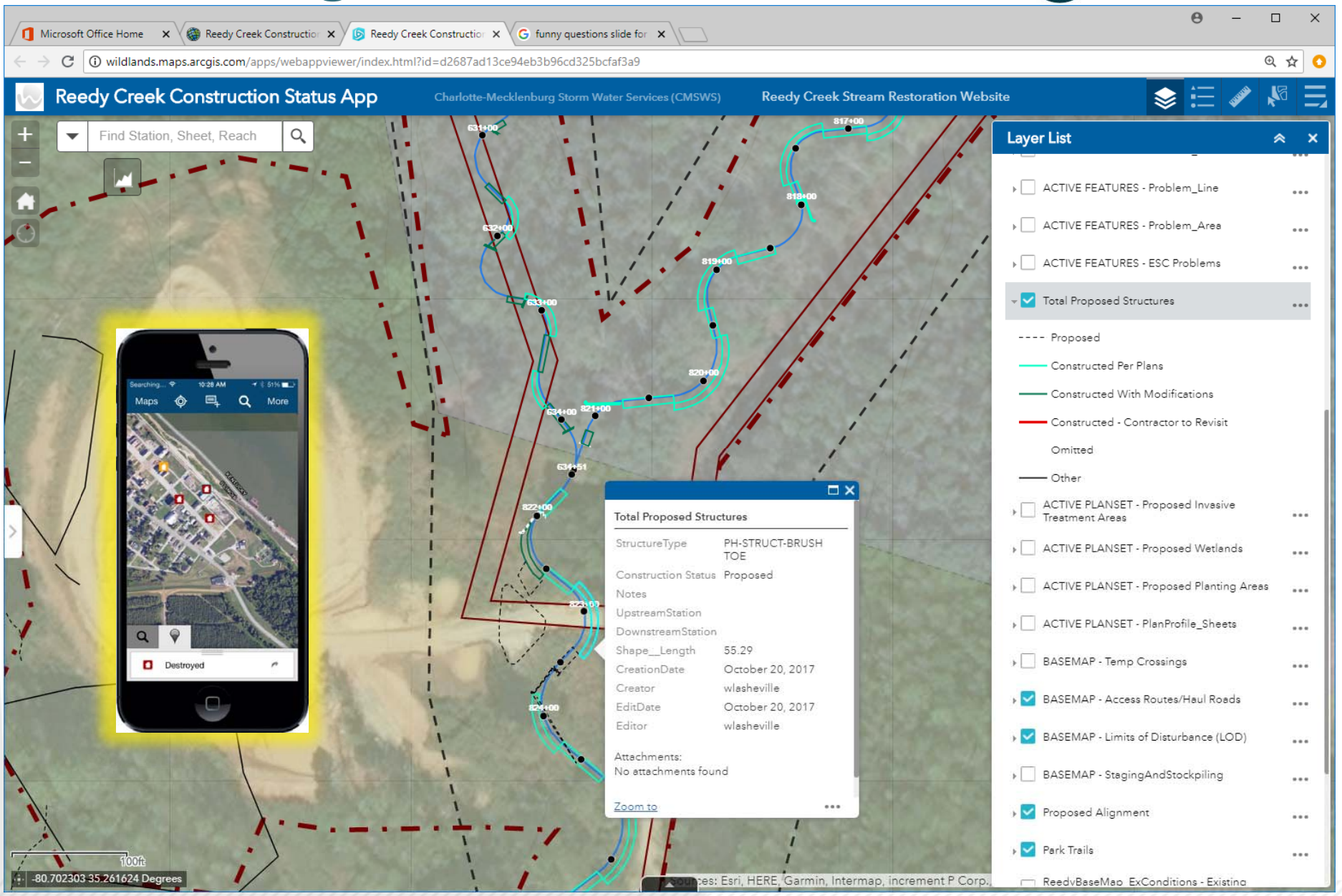


Photo Sharing During Design Process

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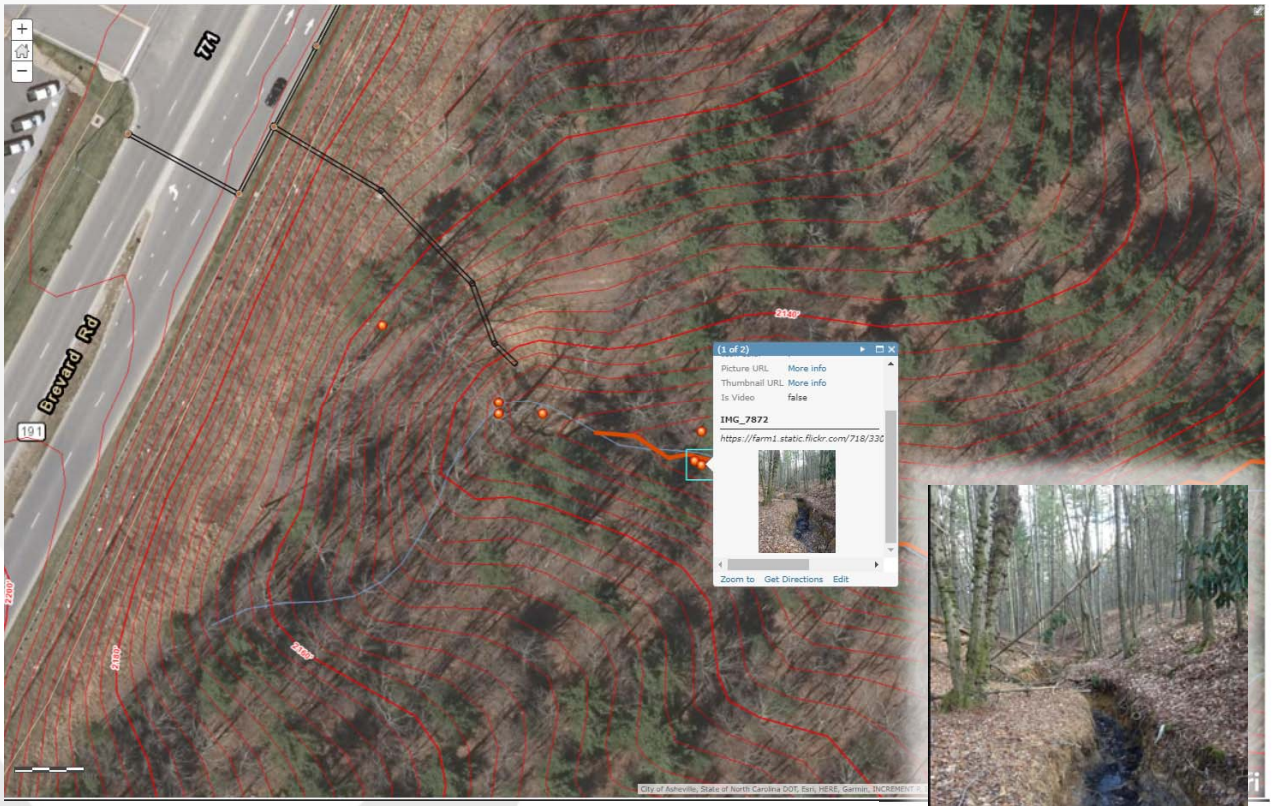
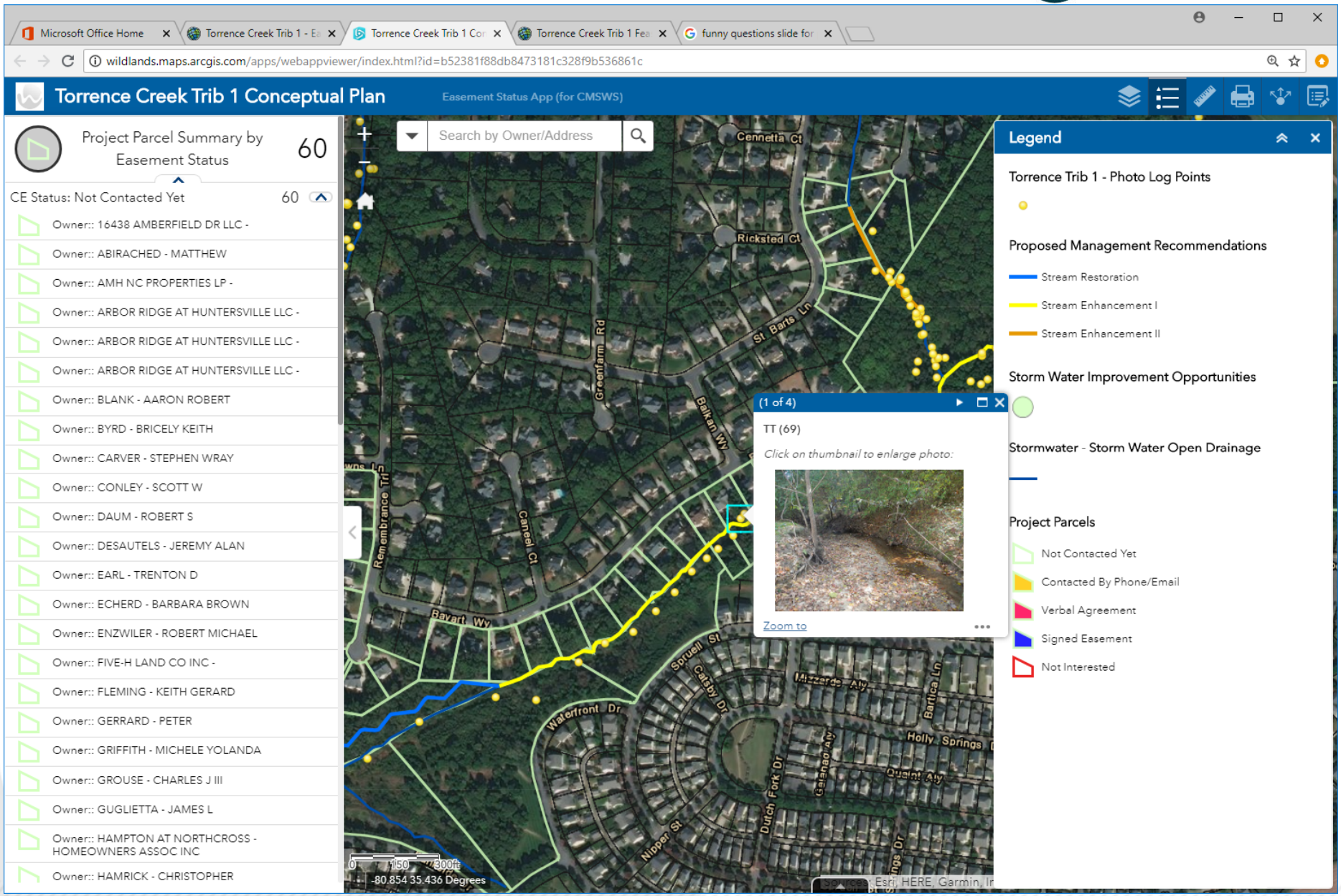


Stakeholder Coordination

Torrence Creek Trib 1



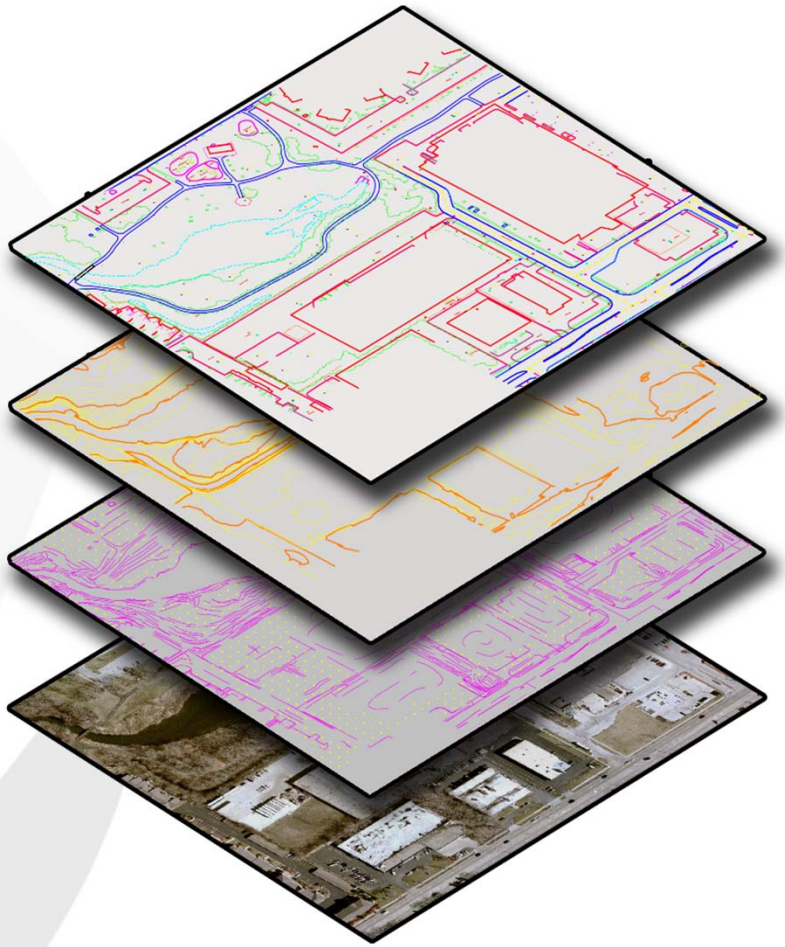
Construction Management

Configuration & Setup

- CAD objects formatted to GDB
- Domains (pulldown/picklist menus)
- Scalable across mobile and desktop devices
- Flexibility

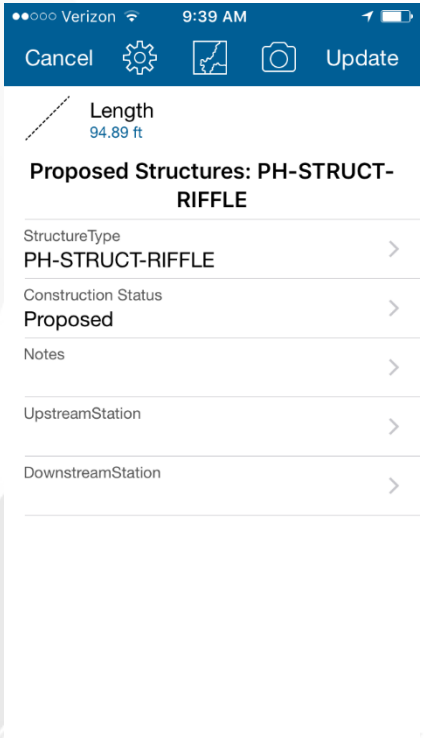
Layer Categories

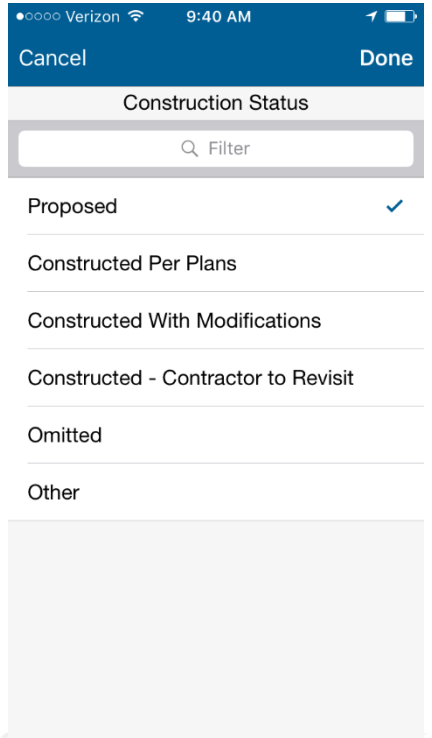
- Basemapping Layers
- Plan Set Layers
- Inspection Layers



Active Feature Layers – Plan Set

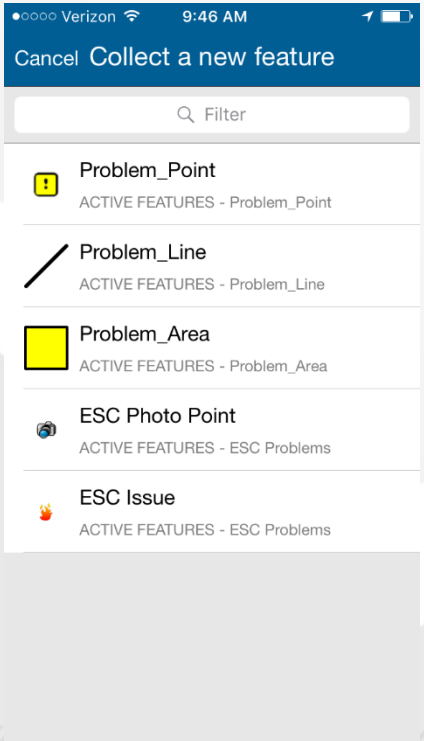
- Proposed Structures
- Proposed Invasive Treatment Areas
- Proposed Wetlands
- Proposed Planting Areas

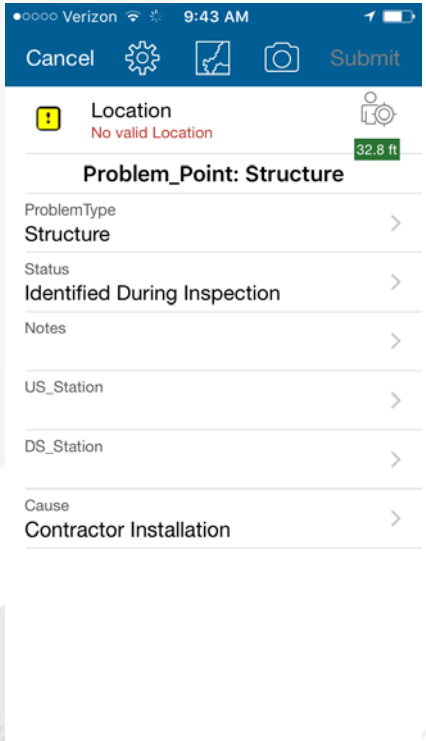


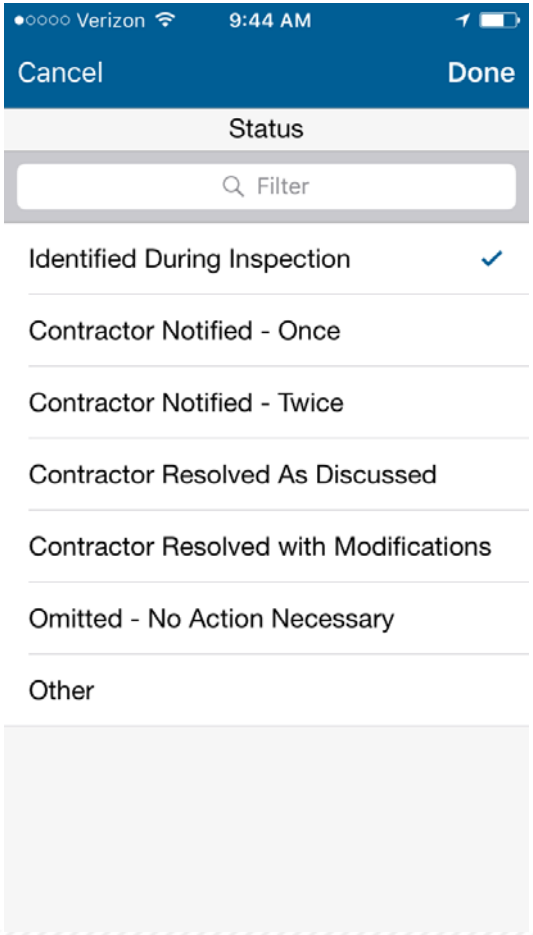


Active Feature Layers – Inspection

- Problem Areas
- ESC Issues







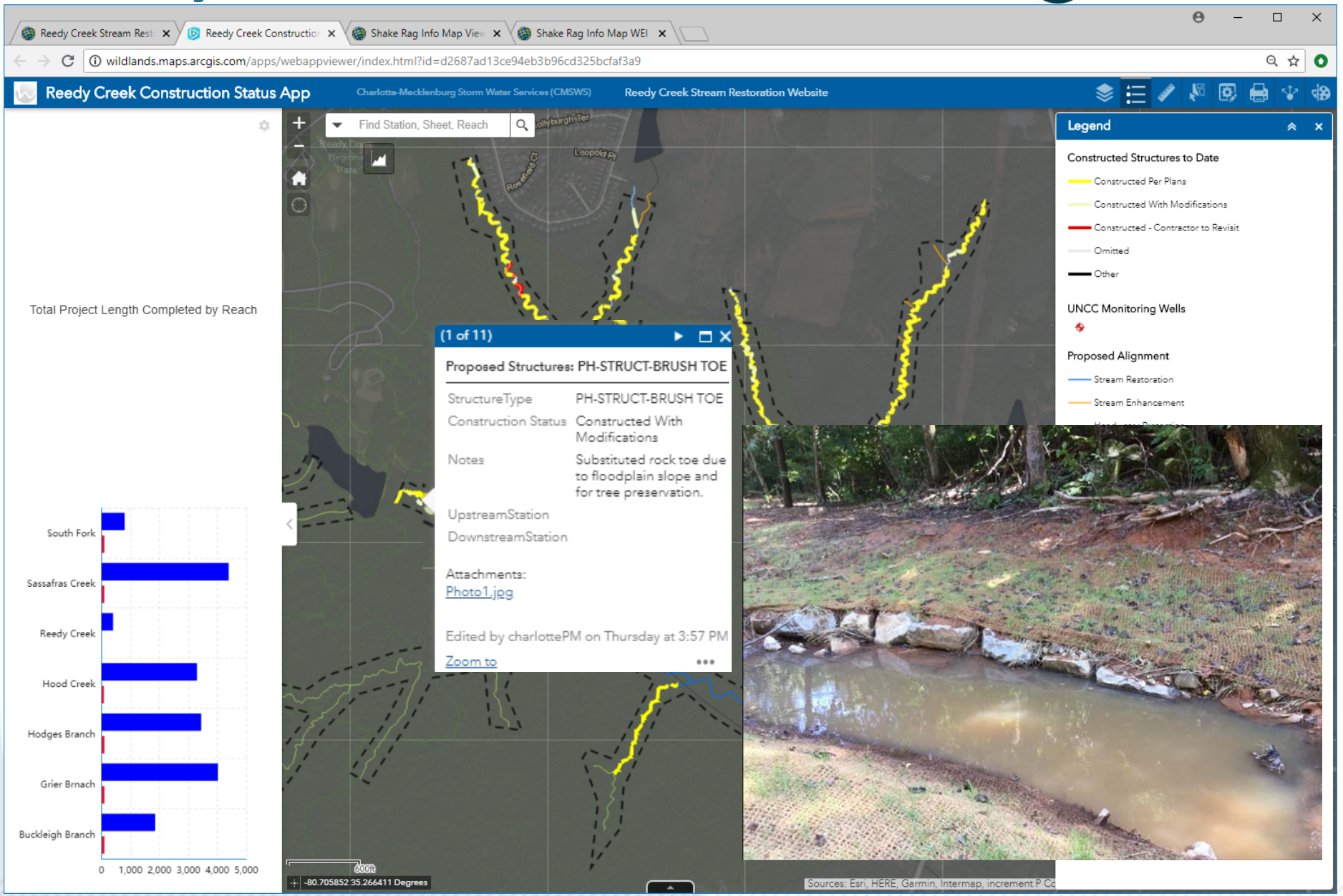
Potential Uses

- Project Status
- Percent Complete
- Invoicing
  - Print/export PDF map
  - Quantities
- Baseline for QA/QC of as-built plans
- Construction admin support

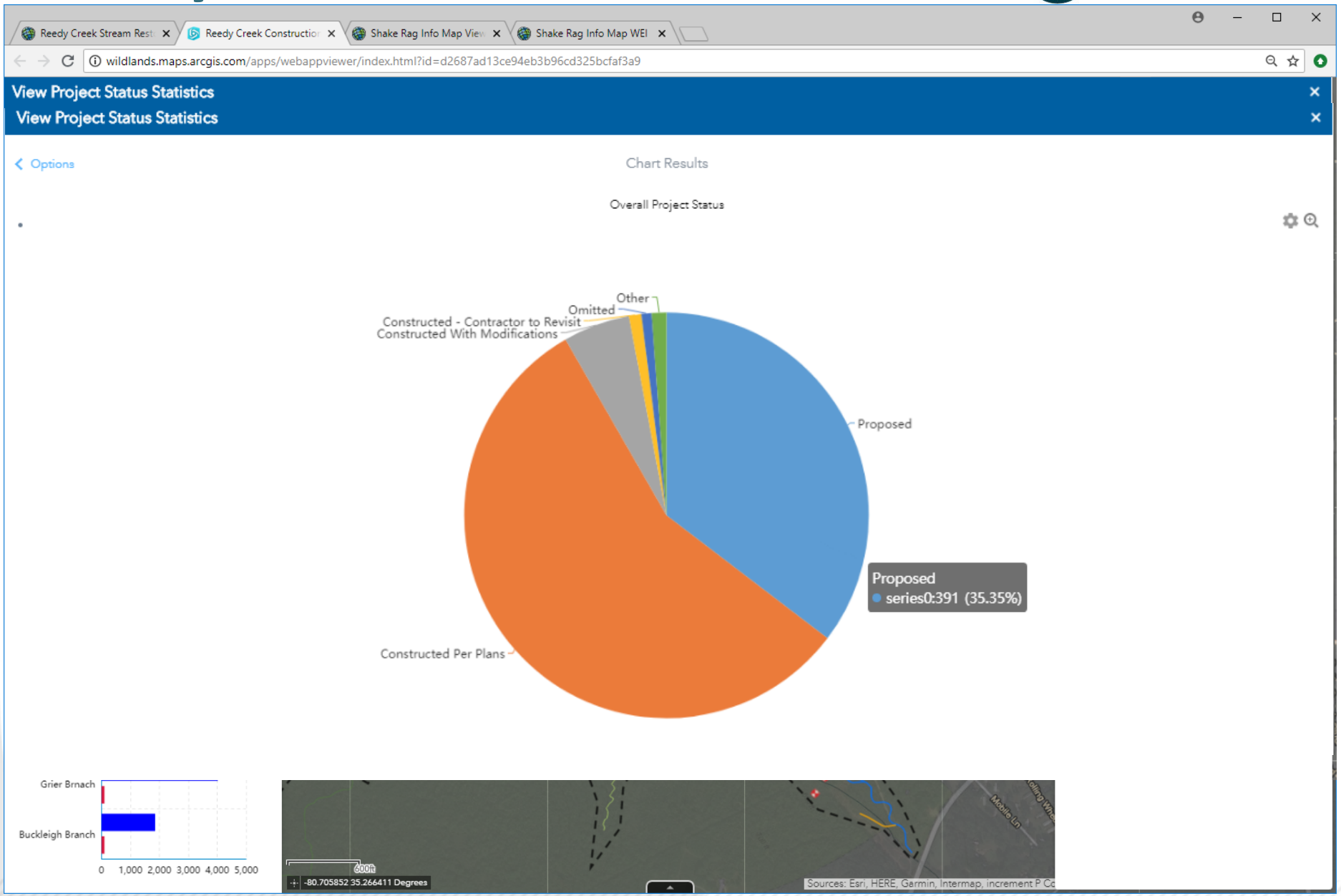
Other Features

- Attach photos or videos
- Records date, time and username
- Search by station, stream name, plan sheet

Reedy Creek

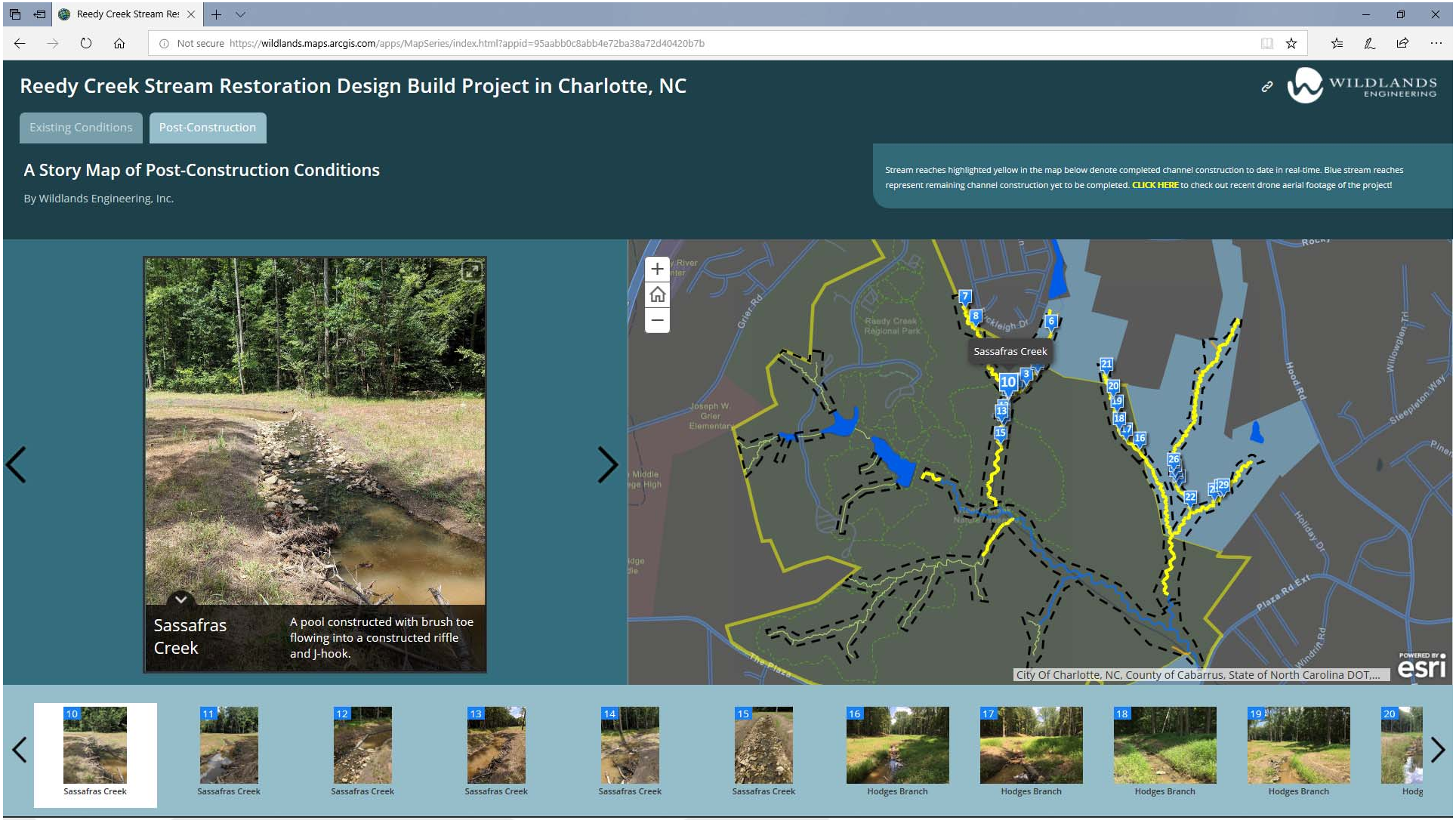

Reedy Creek Stream Rest
Reedy Creek Construction
Shake Rag Info Map Vie
Shake Rag Info Map WEI
wildlands.maps.arcgis.com/apps/webappviewer/index.html?id=d2687ad13ce94eb3b96cd325bcfaf3a9
Reedy Creek Construction Status App
Charlotte-Mecklenburg Storm Water Services (CMSWS)
Reedy Creek Stream Restoration Website
Find Station, Sheet, Reach
Total Project Length Completed by Reach
South Fork
Sassafras Creek
Reedy Creek
Hood Creek
Hodges Branch
Grier Brnach
Buckleigh Branch
0
1,000
2,000
3,000
4,000
5,000
(1 of 11)
Proposed Structures: PH-STRUCT-BRUSH TOE
StructureType
PH-STRUCT-BRUSH TOE
Construction Status
Constructed With Modifications
Notes
Substituted rock toe due to floodplain slope and for tree preservation.
UpstreamStation
DownstreamStation
Attachments:
Photo1.jpg
Edited by charlottePM on Thursday at 3:57 PM
Zoom to
Legend
Constructed Structures to Date
Constructed Per Plans
Constructed With Modifications
Constructed - Contractor to Revisit
Omitted
Other
UNCC Monitoring Wells
Proposed Alignment
Stream Restoration
Stream Enhancement
600ft
-80.705852 35.266411 Degrees
Sources: Esri, HERE, Garmin, Intermap, increment P Co

Reedy Creek


Reedy Creek Stream Rest
Reedy Creek Construction
Shake Rag Info Map View
Shake Rag Info Map WEI
wildlands.maps.arcgis.com/apps/webappviewer/index.html?id=d2687ad13ce94eb3b96cd325bcfaf3a9
View Project Status Statistics
View Project Status Statistics
Options
Chart Results
Overall Project Status
Other
Omitted
Constructed - Contractor to Revisit
Constructed With Modifications
Proposed
Constructed Per Plans
Proposed
series0:391 (35.35%)
Grier Brnach
Buckleigh Branch
0
1,000
2,000
3,000
4,000
5,000
600ft
-80.705852 35.266411 Degrees
Sources: Esri, HERE, Garmin, Intermap, increment P Co

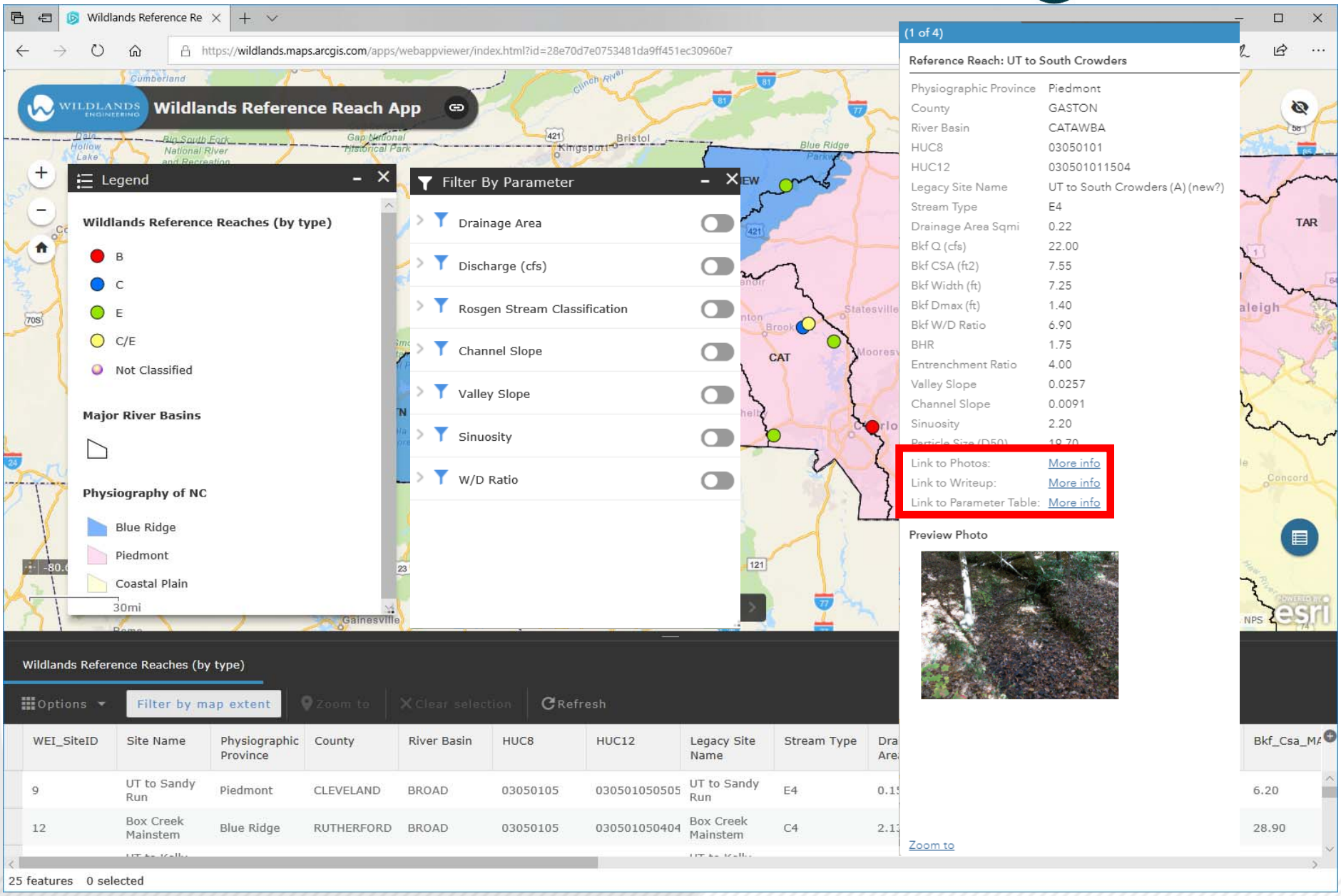
Public Relations

Reedy Creek


Reedy Creek Stream Res
Not secure https://wildlands.maps.arcgis.com/apps/MapSeries/index.html?appid=95aabb0c8abb4e72ba38a72d40420b7b
Reedy Creek Stream Restoration Design Build Project in Charlotte, NC
WILDLANDS ENGINEERING
Existing Conditions
Post-Construction
A Story Map of Post-Construction Conditions
By Wildlands Engineering, Inc.
Stream reaches highlighted yellow in the map below denote completed channel construction to date in real-time. Blue stream reaches represent remaining channel construction yet to be completed. CLICK HERE to check out recent drone aerial footage of the project!
Sassafras Creek
A pool constructed with brush toe flowing into a constructed riffle and J-hook.
Sassafras Creek
City Of Charlotte, NC, County of Cabarrus, State of North Carolina DOT,...
esri
10 Sassafras Creek
11 Sassafras Creek
12 Sassafras Creek
13 Sassafras Creek
14 Sassafras Creek
15 Sassafras Creek
16 Hodges Branch
17 Hodges Branch
18 Hodges Branch
19 Hodges Branch
20 Hodg

Research & Development

Reference Reach Database



Applications in the Works…

- Land Management & Maintenance
- Monitoring

Questions


What's for lunch?
Should I ask a question?
Is it lunchtime yet?
Should I have attended the other session?
What time is check out?
Should I leave the conference before or after lunch?
Should I buy this guy a beer?
What time do the breweries open?

Cost

- Storage
  - Feature services → 2.4 credits / 10MB / month
  - Tile and other data → 1.2 credits / 1GB / month
- Analytics
  - <= 1 credit per 1000 features