

# GIS ENABLING UTILITY OPERATIONS



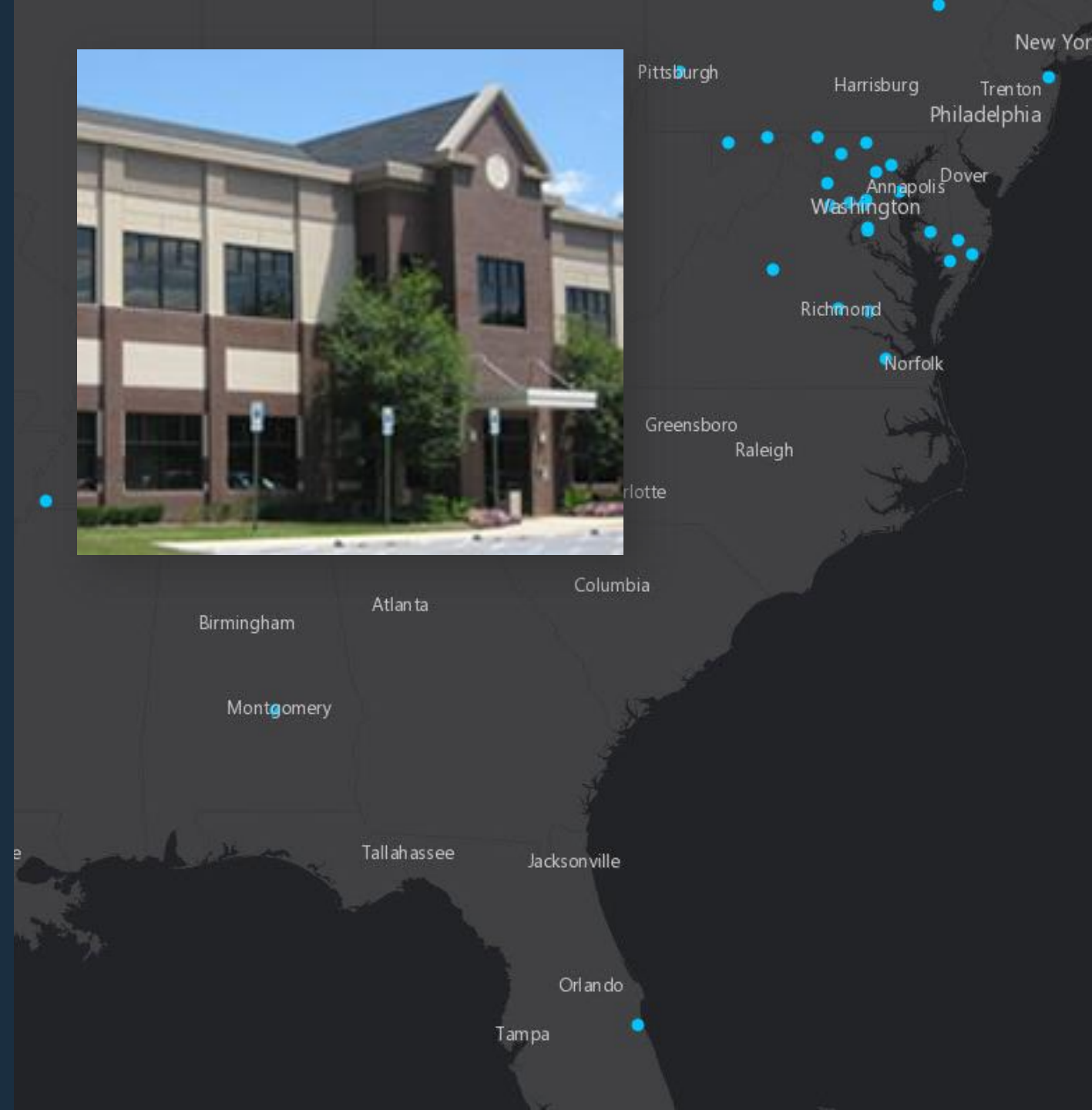
Shannon Eagan · GIS Project Manager · Spatial Systems Associates, Inc.

Susan Hmel · GIS Application Developer · Spatial Systems Associates, Inc.

Jim Sizemore · Technical Support Operations Superintendent · Charles County, MD

# Spatial Systems Associates, Inc.

- Located in Columbia, MD
- Founded in 1995 as a GIS centric organization
- Services customers primarily in Mid-Atlantic region
- Customers include City, County, State, Federal Governments as well as private industry and non-profit organizations
- Core competencies in: GIS Consulting, GIS Project Management, GIS application development, GIS data development, GIS analysis, field data collection



# Charles County, Maryland

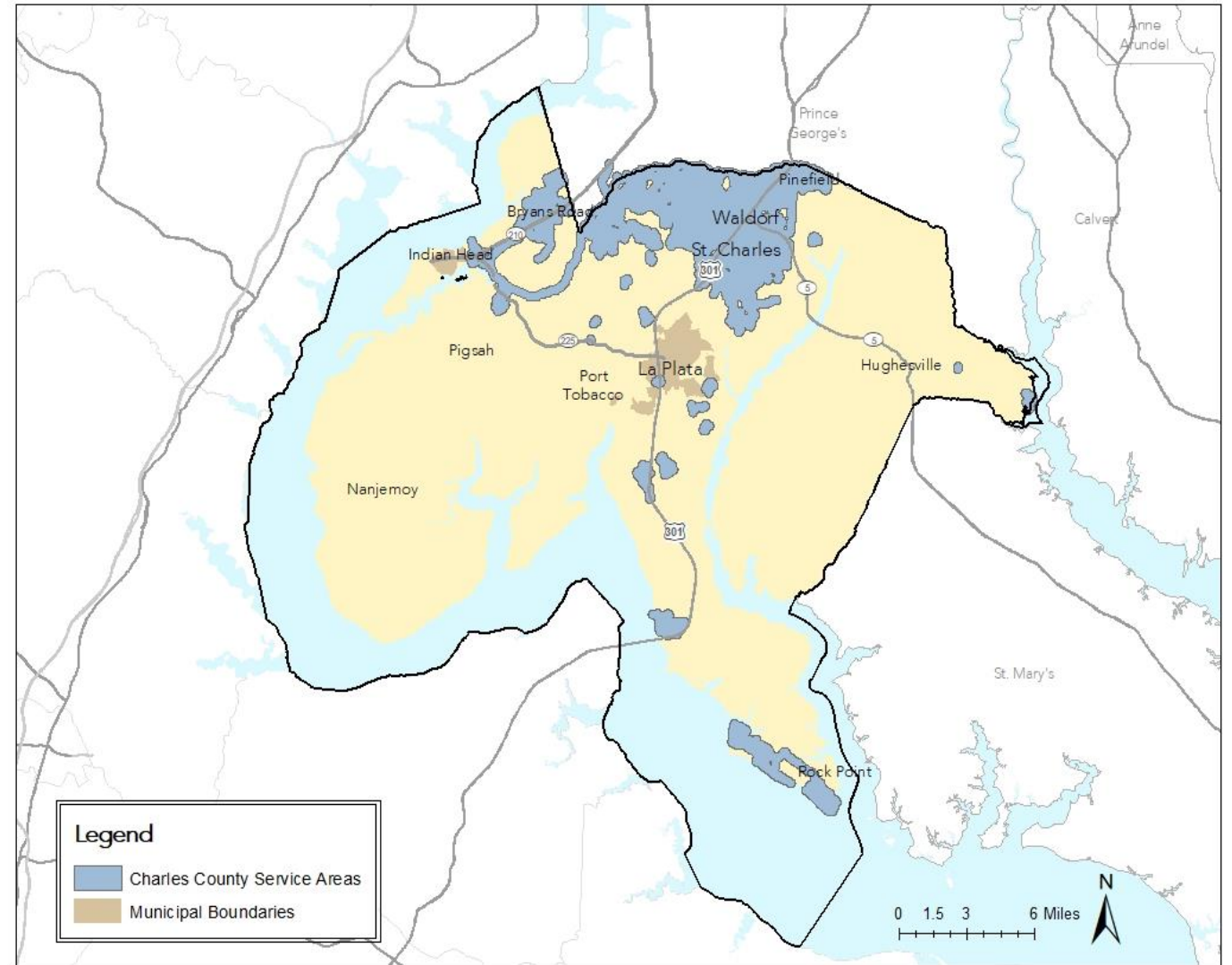


# Charles County, MD

## Department of Public Works, Utilities Division

Responsible for the operation, maintenance, and compliance monitoring and reporting of all water and wastewater facilities owned by the Charles County Commissioners

Operates and maintains wells, water storage tanks, fire hydrants, water meters, pump stations, wastewater treatment plants and manholes

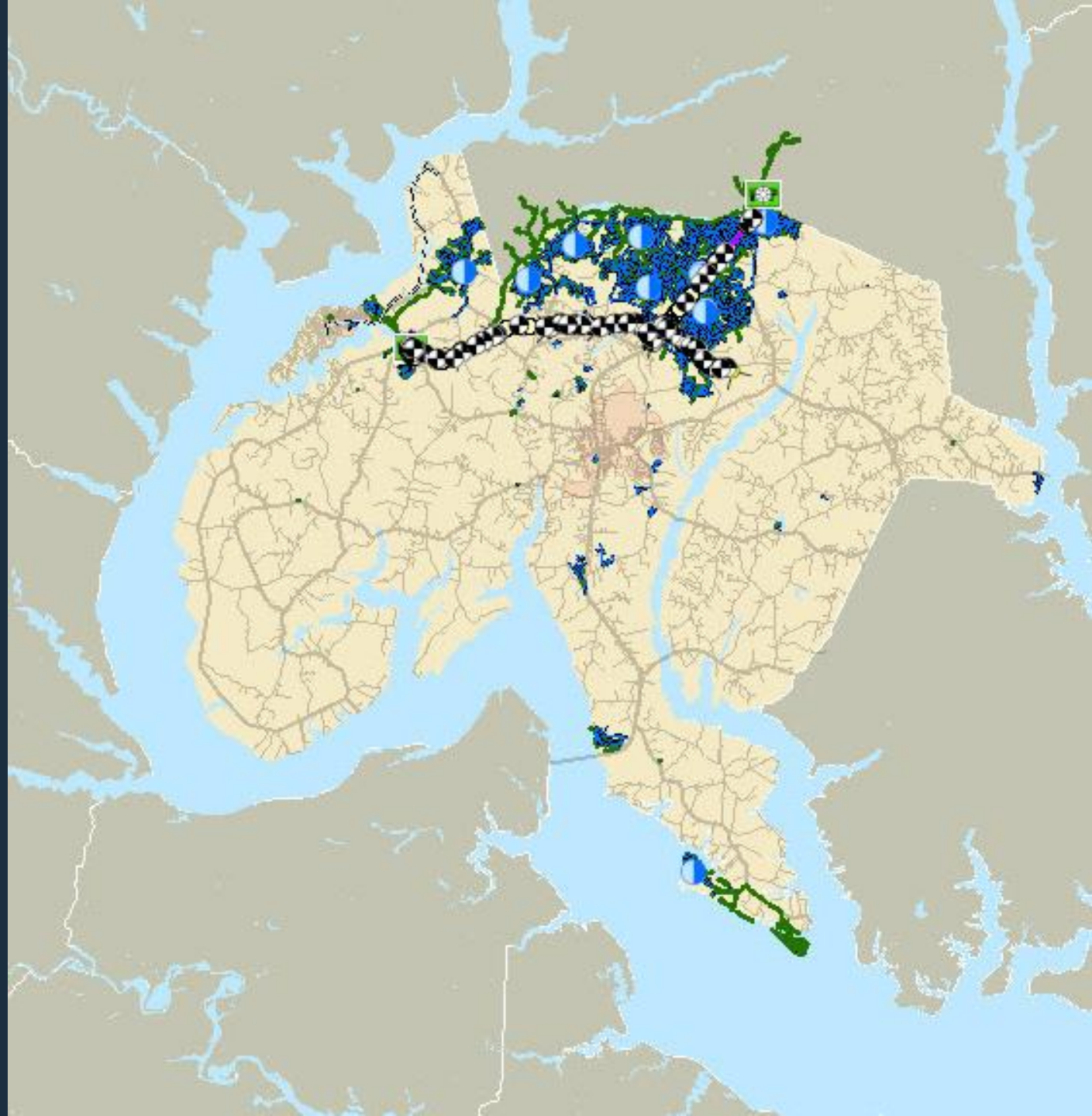




# Charles County, MD

## Department of Public Works, Utilities Division

- 33,000 Customers....and growing.
- 71 ground water wells.
- 16 water sub systems
- 7 Wastewater Treatment plants
- 422 Miles of water distribution mains
- 481 Miles of sewer collection mains
- Oldest infrastructure dates to 1940s
- On going development and growth



# GIS Functions

## Utilities Division

### Vectorization and Map Production

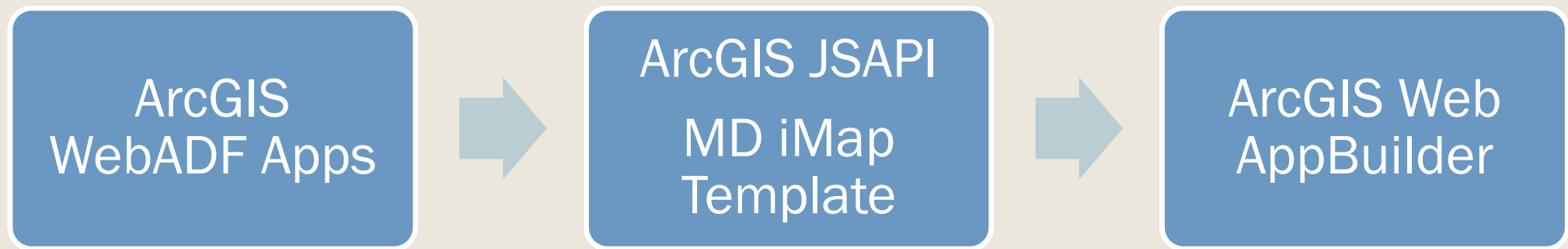
- 2007 – 2012 - *Primary Sewer Vectorization*
- 2009 – 2013 - *Primary Water Vectorization*
  - Vectorization of 18,000+ plan drawings

### System Support for ArcGIS Enterprise and Editing Operations

- *ArcGIS Server 10.2.2 (version required by Infor)*
- *ArcGIS Geodatabase Implementation on MS-SQL Server*
- *Ongoing 2 Way Disconnected Geodatabase Replication*



# Application Development Utilities Division



# V-FIRE

## Valve - Find Inspect Repair Exercise

- Since 2013



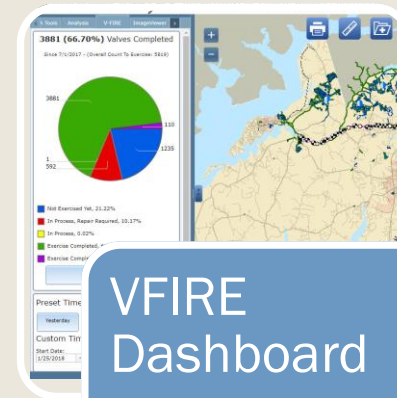
### Contractor

- Exercises Valves in the field
- Synchronizes Edits over 4G Network



### ArcGIS Online

- Hosted Feature Service



### VFIRE Dashboard

- 30 Minute Synchronization
- Updates Visible to County

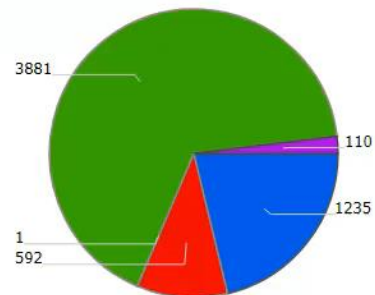




Tools Analysis V-FIRE ImageViewer

**3881 (66.70%) Valves Completed**

Since 7/1/2017 - (Overall Count To Exercise: 5819)



- Not Exercised Yet, 21.22%
- In Process, Repair Required, 10.17%
- In Process, 0.02%
- Exercise Completed, 66.70%
- Exercise Complete, Repair Required, 1.89%

Clear Selection

Preset Time-Frame:

Yesterday

Last Week

Lifetime

Custom Time-Frame:

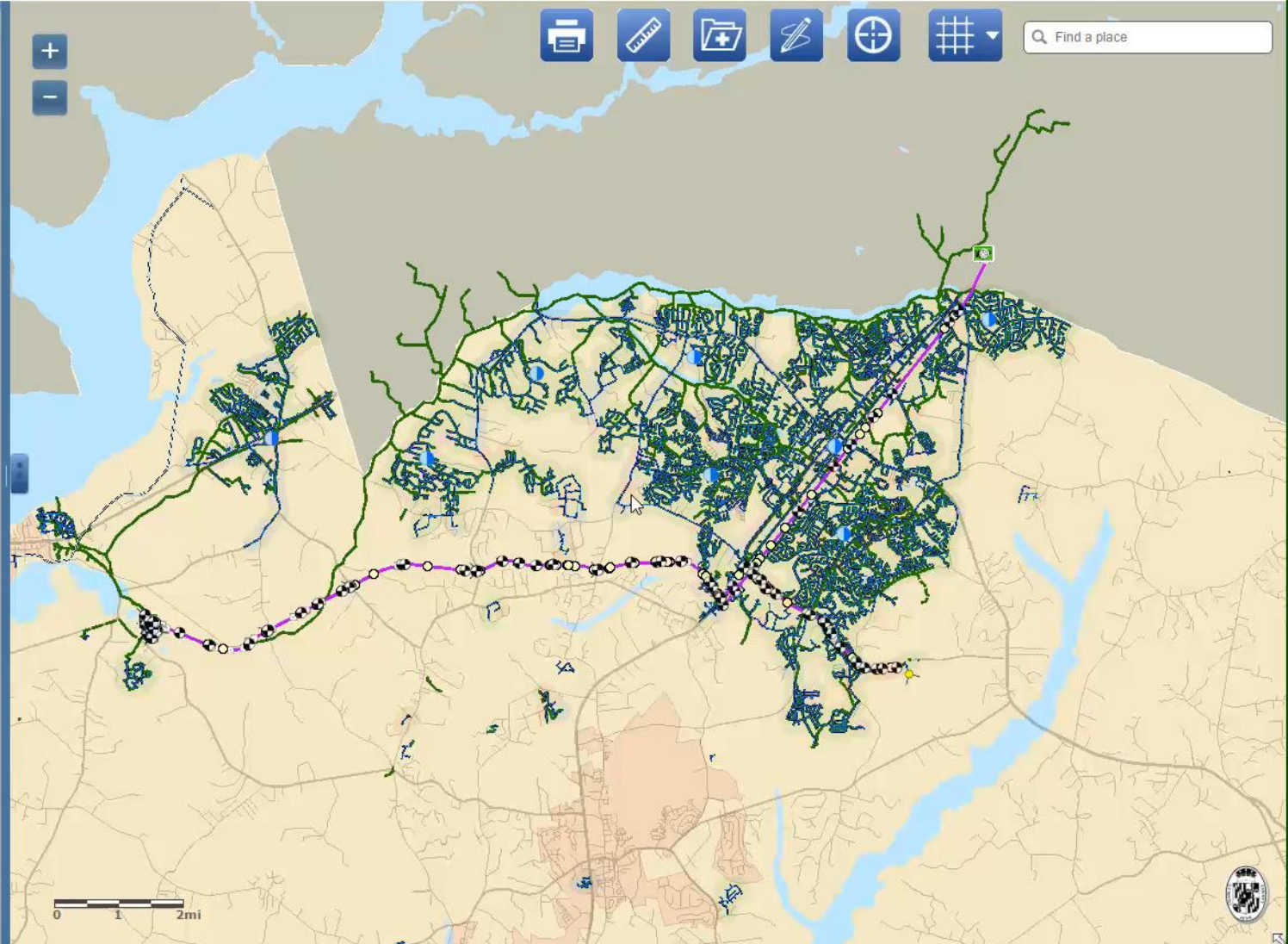
Start Date:

1/25/2018

End Date:

1/25/2018

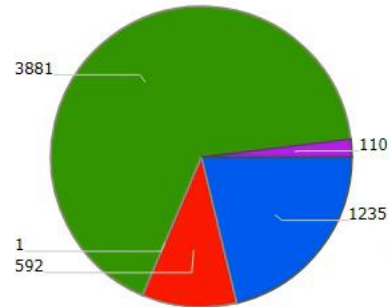
Submit



Tools Analysis V-FIRE ImageViewer

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Yesterday

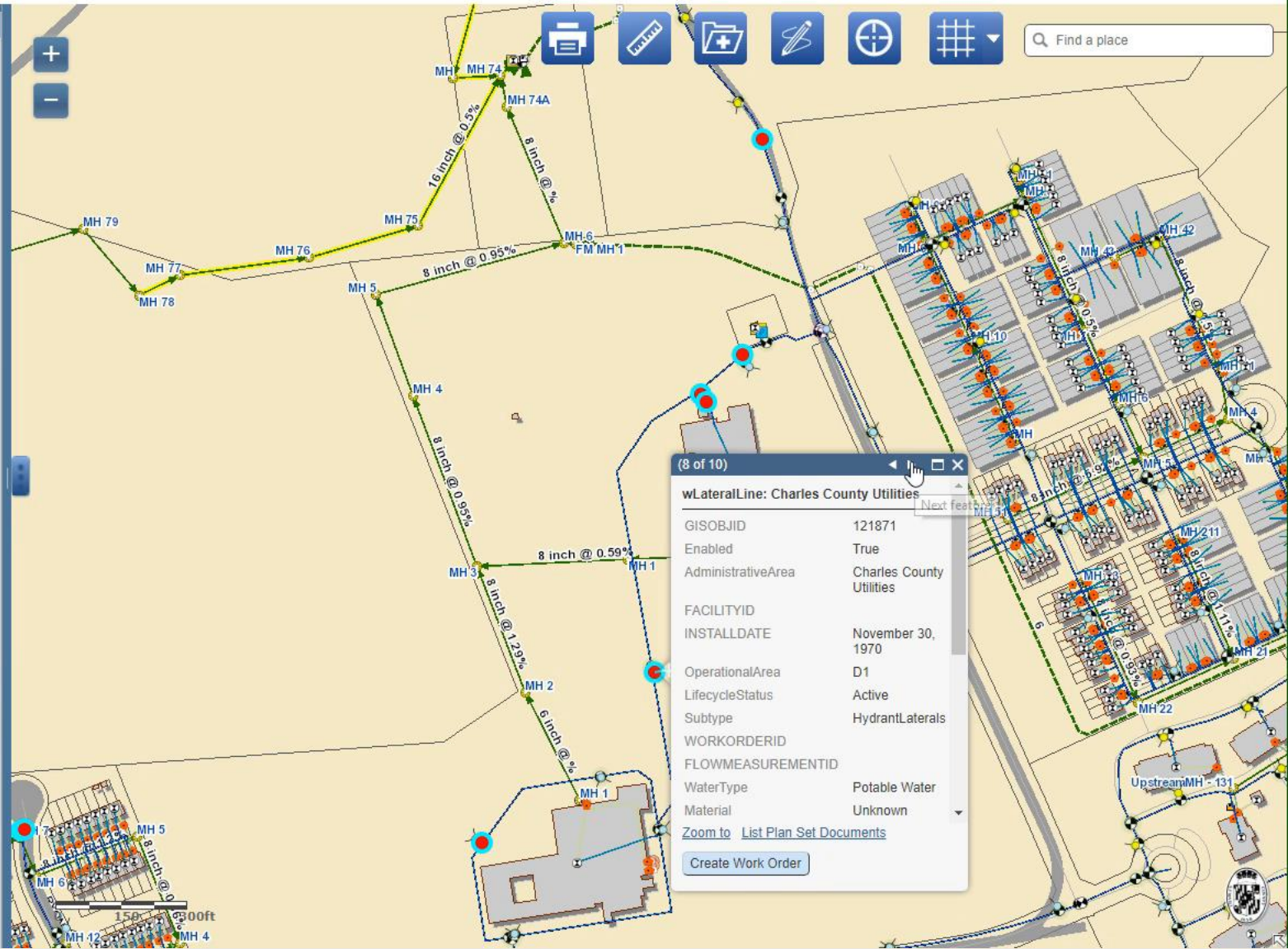
Last Week

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#### Custom Time-Frame:

Start Date: 1/25/2018 End Date: 1/25/2018

Submit



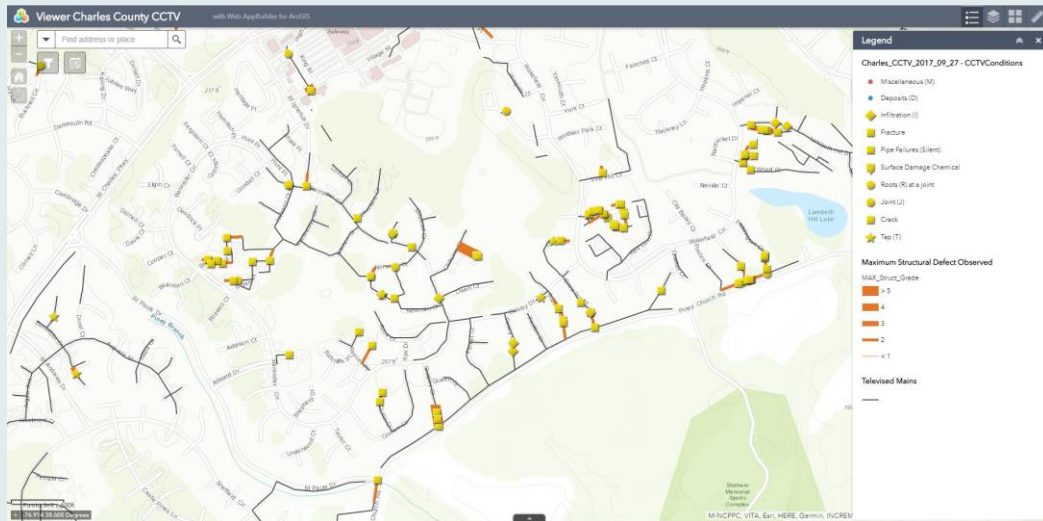
**SSA**  
GIS & FMIS



**CHARLES COUNTY**  
*Maryland*



# Sewer Cleaning and CCTV Inspection Data Review



National Association of Sewer Service Companies (NASSCO)  
certified databases

Visually display and make “actionable”

ESRI CCTV Processor

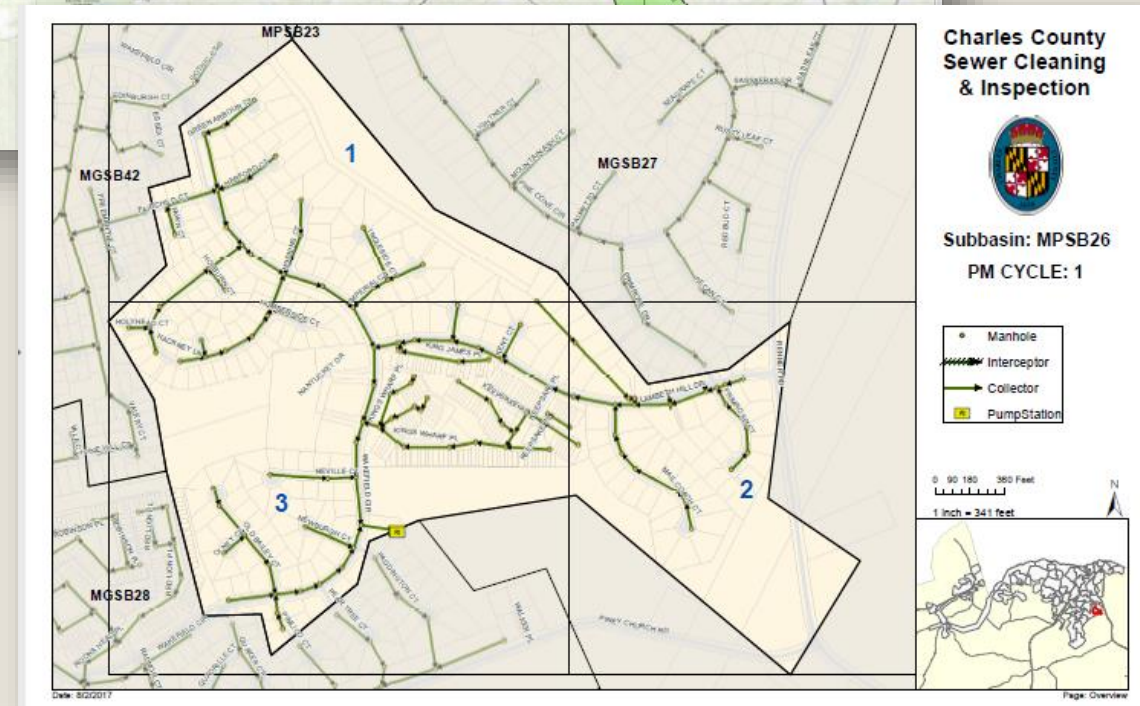
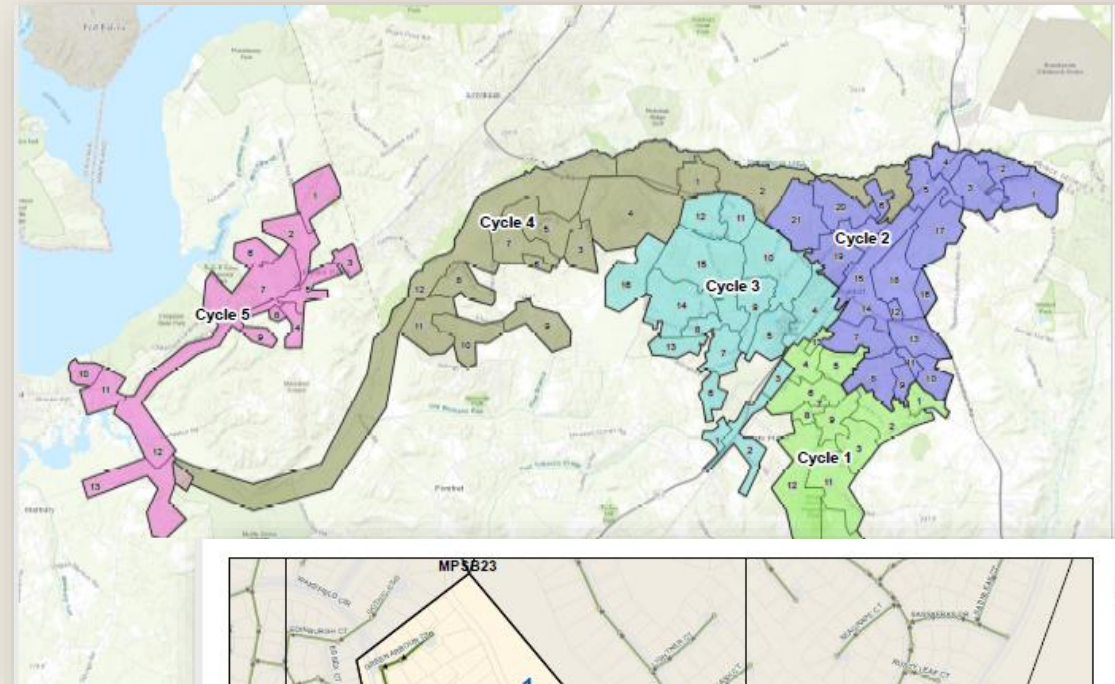
Pipeline Assessment and Certification Program (PACP) grading  
system to determine rating of the 2000+ pipes

CCTV video archived to the Cloud for secure on-line  
streaming/access

ArcGIS Online Web AppBuilder with video access and defect review  
tracking

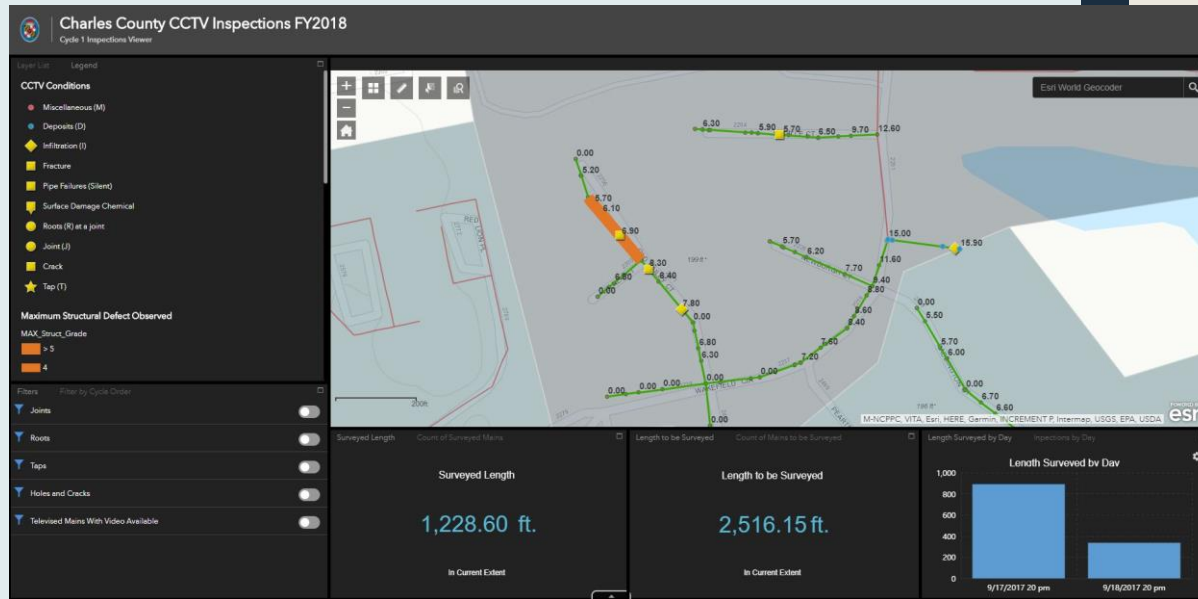
# Sewer Cleaning and CCTV Inspection Contractor Management – FY18

- Mapbooks distributed for contractor assignment
  - Preventative Maintenance Schedule
  - Based on “top down” cleaning process to ensure that upstream pipes are cleaned before the pipes they flow into
- Monthly deliverable
  - NASSCO Database
  - CCTV video files
  - Inspections Reports





# Sewer Cleaning and CCTV Inspection Dashboard



County's  
2018  
Fiscal Year  
Cleaning

- Monthly deliverables from vendor get reviewed and processed.
- CCTV video archived to Cloud for secure on-line streaming/access. (3,000 videos / 1 TB)

Web  
AppBuilder  
Application

- Progress based on Zone
- Pipe index rating
- Defects/Conditions
- Inspection reports
- CCTV video link
- Filter by Defect or Zone
- Select and export
- Cover depth above defect (where pipe elevation data is available)



Legend

- ### Maximum Structural Defect Observed

MAX\_Struct\_Grade

- ## Televised Mains

- Y Joints
- Y Roots
- Y Taps
- Y Holes and Cracks
- Y Televised Mains With Video Available



Surveyed Length

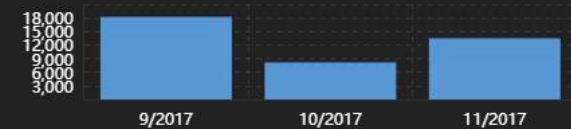
Surveyed Length  
39,772.58 ft.

### In Current Extent

Length to be Surveyed  
118,512.81 ft.

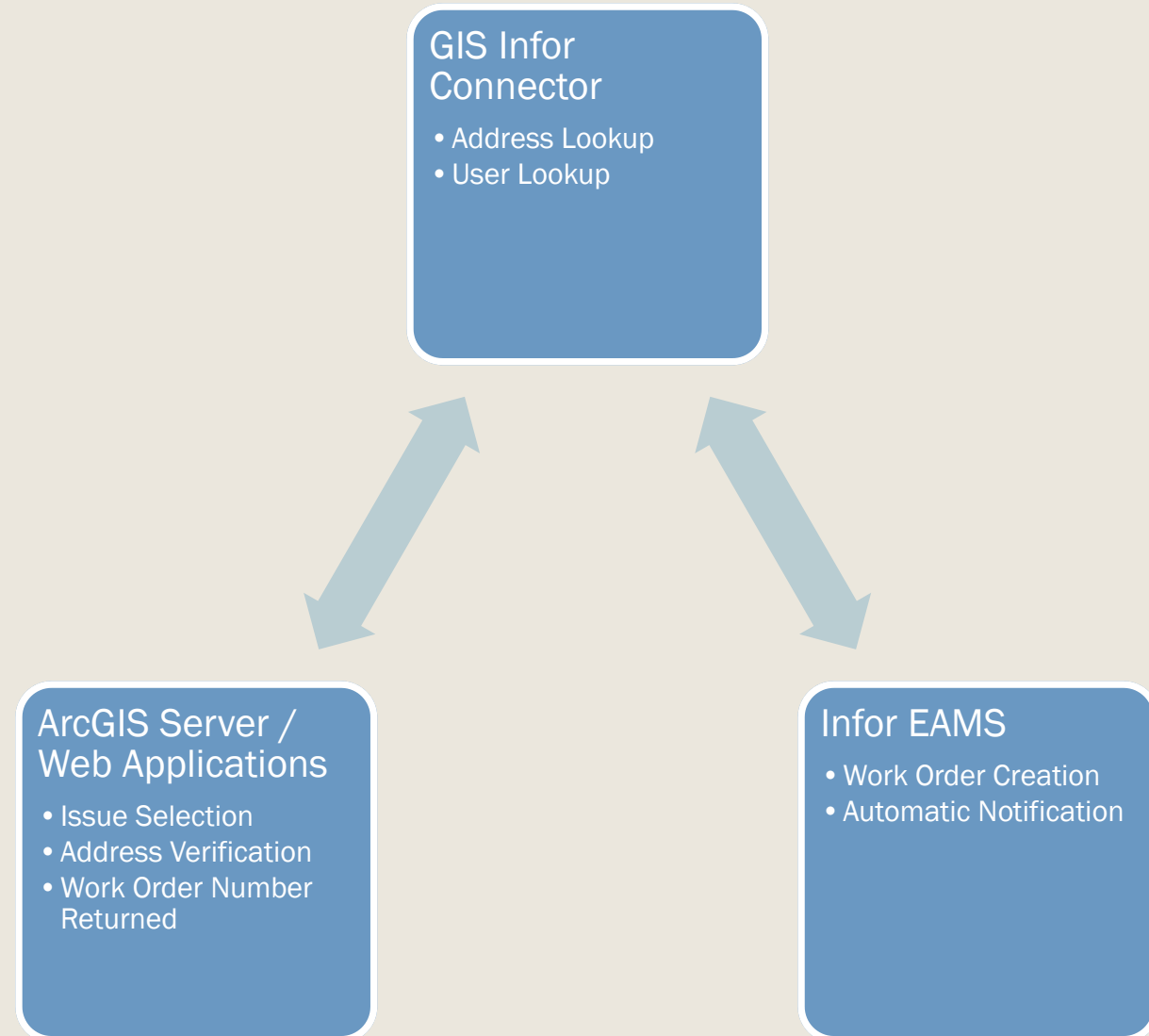
### In Current Extent

Length Surveyed by D...



# Work Order Creation

- Integrate GIS and Info Enterprise Asset Management System
- Requires Infor SDK





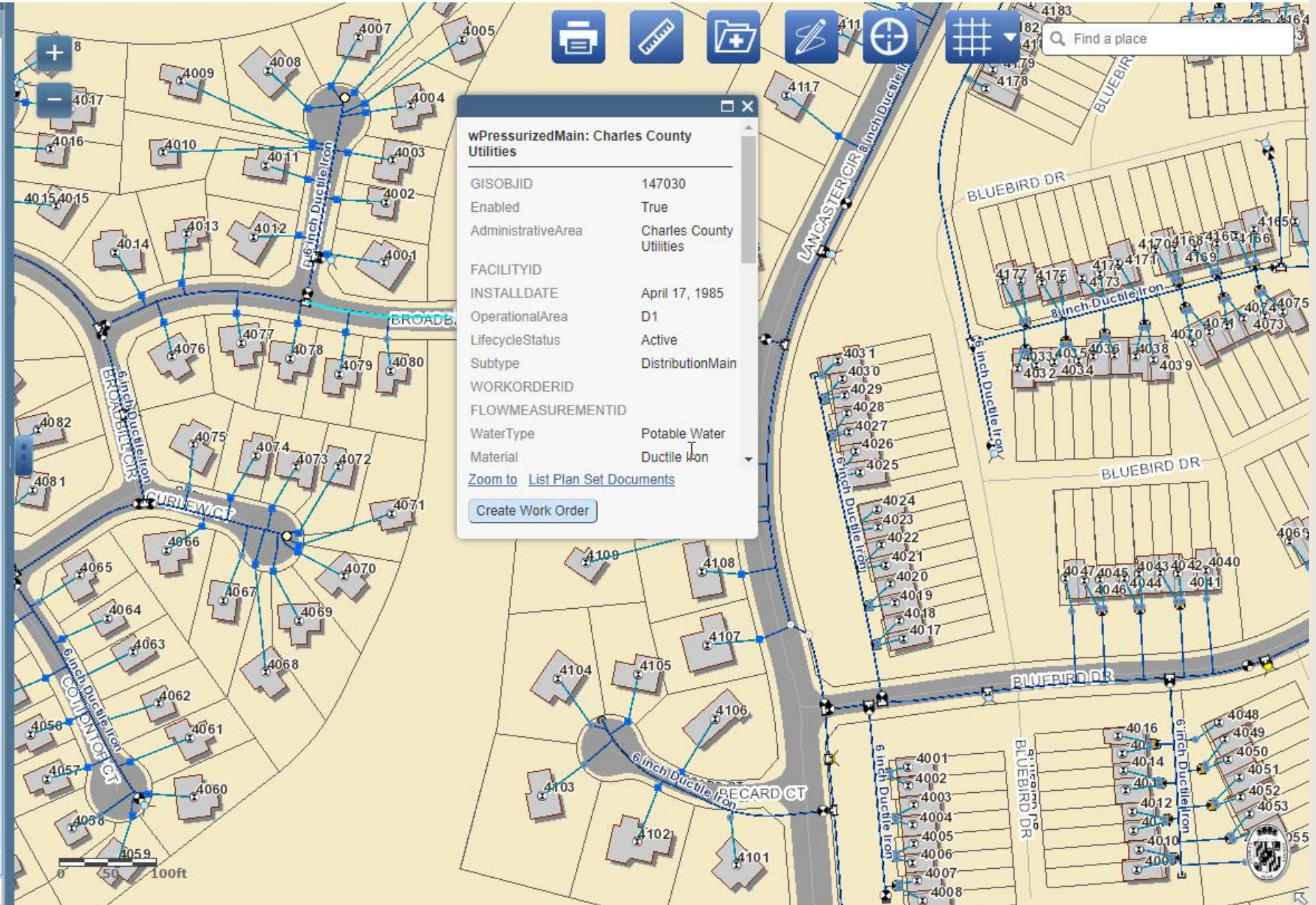
[Contents](#)
[Search Tools](#)
[Analysis](#)
[V-FIR](#)

Legend

☒ **Water**

- ☒ wWaterTower
- ☒ wMeter
- ☒ wCurbStop
- ☒ wSamplingStation
- ☒ wNetworkStructure
  - <all other values>
  - EnclosedStorageFacility
  - ProductionWell
  - PumpStation
  - StorageBasin
  - TreatmentPlant
- ☒ wManhole
  - <all other values>
  - Bend
  - Cap
  - Coupling
  - Cross
  - ExpansionJoint
  - Offset
  - Reducer
  - Riser
  - Saddle
  - Sleeve
  - Tap

Add Data





[Contents](#)
[Search Tools](#)
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[V-FIR](#)

**Legend**

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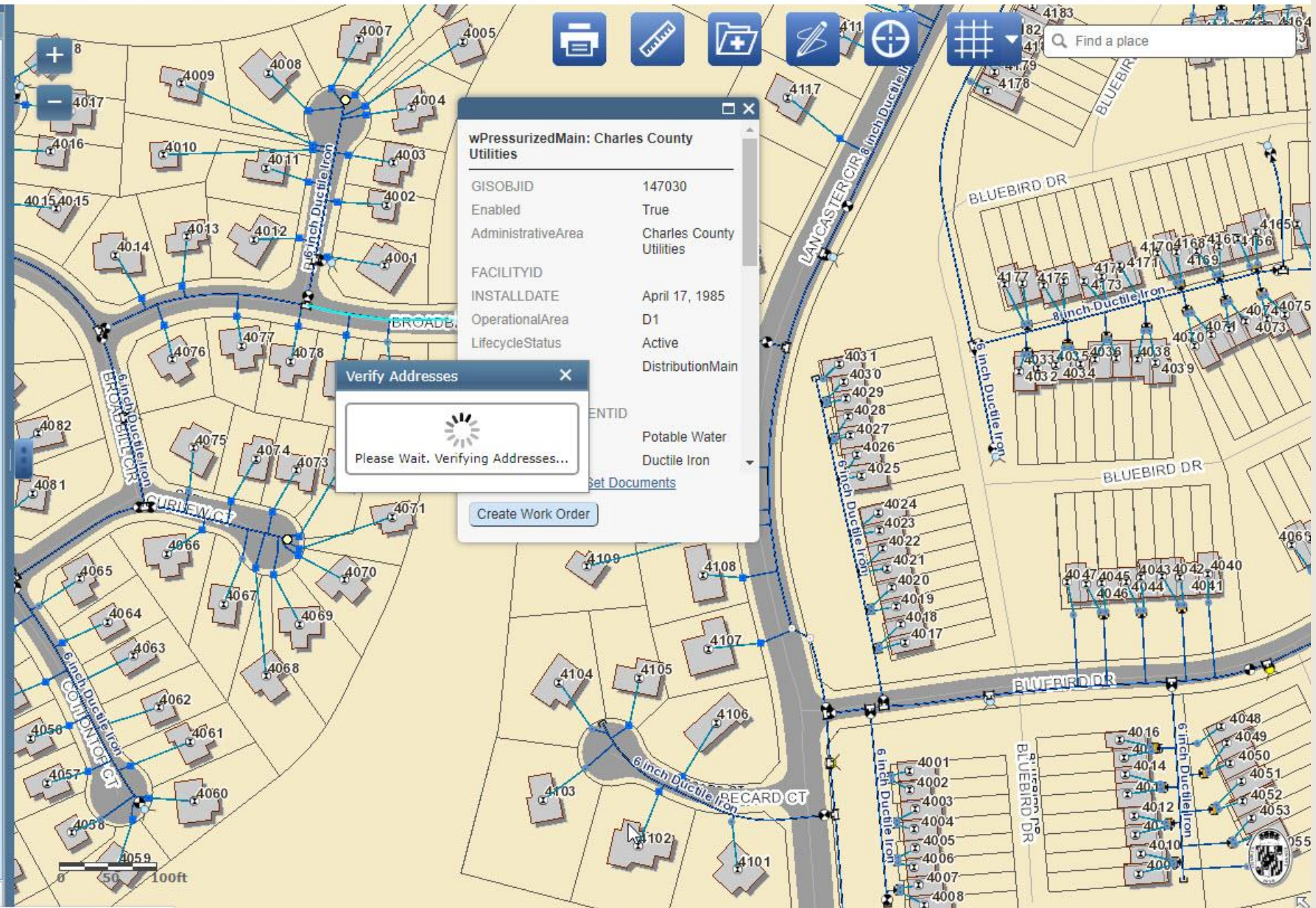
<all other values>

☒ EnclosedStorageFacility
 ☒ ProductionWell
 ☒ PumpStation
 ☒ StorageBasin
 ☒ TreatmentPlant
 ☒ wManhole
 ☒ wFitting
 

<all other values>

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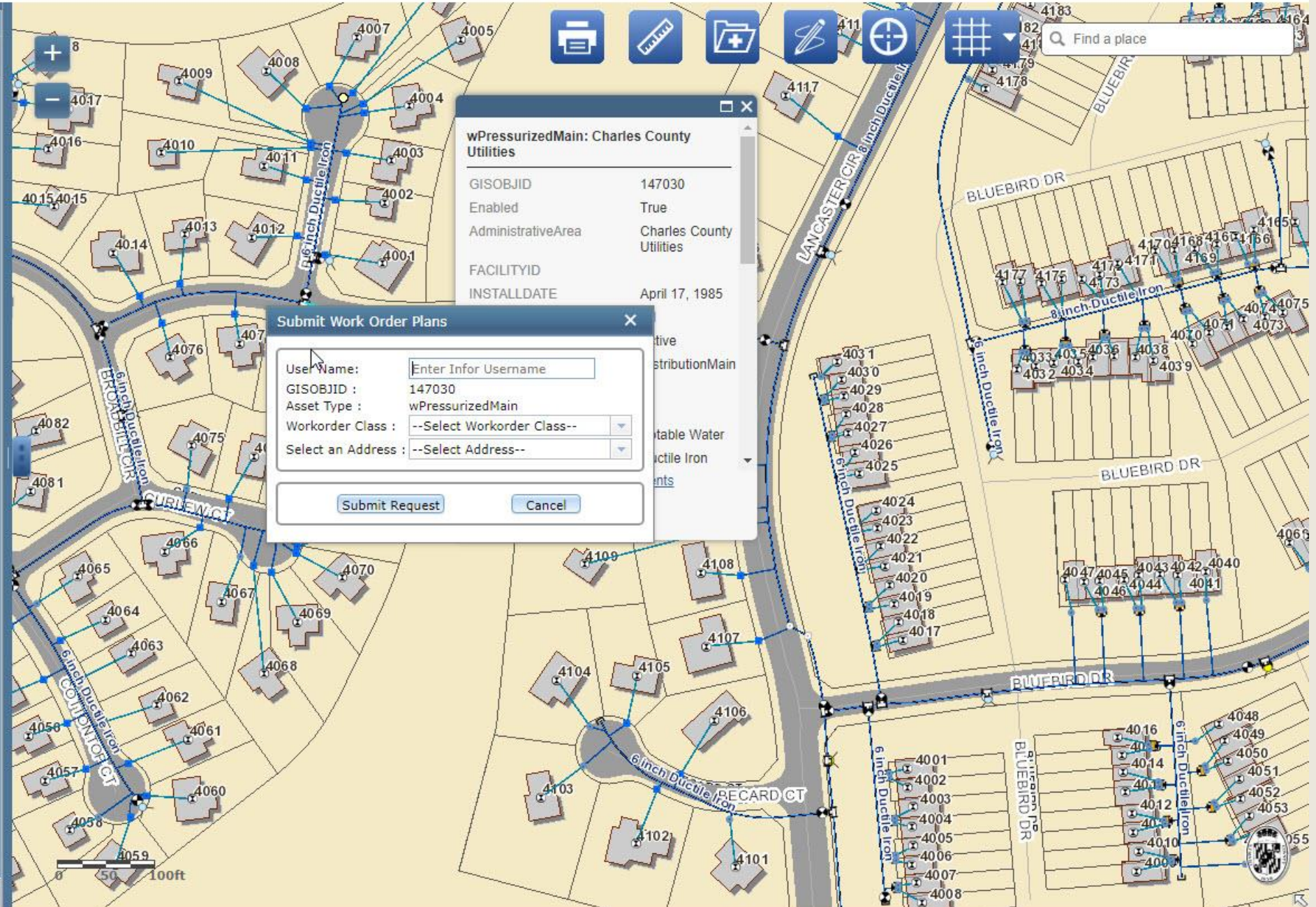
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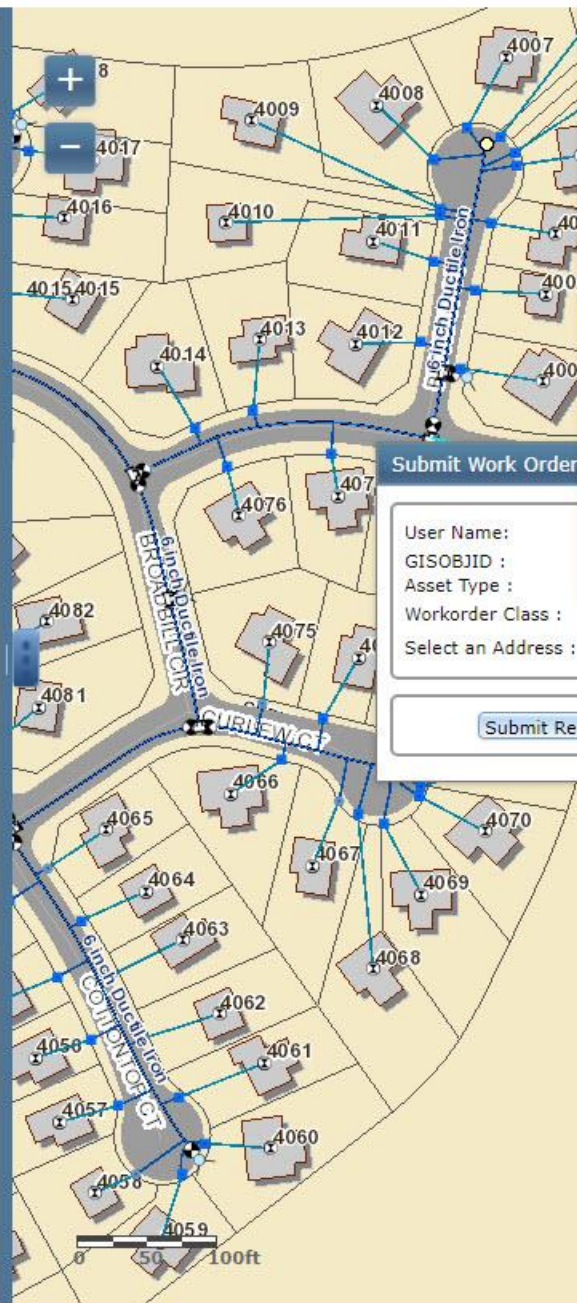
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Add Data



Submit Work Order

User Name:

GISOBJID :

Asset Type :

Workorder Class : --Select Workorder Class--

Select an Address : --Select Address--

Submit Request

Cancel

Sewer backups/spill that are not the County's responsibility

Sewer main cleaning

Sidewalk repair

Sink Hole

Smelly Water

Snow removal

Turn on Water

Water Leak

Water Main Break

Water Shut Off

Water in water meter

Water meter needs repair

Well Overflowing

Wet well cleaning

White Water

Yard Repair

Yellow Water





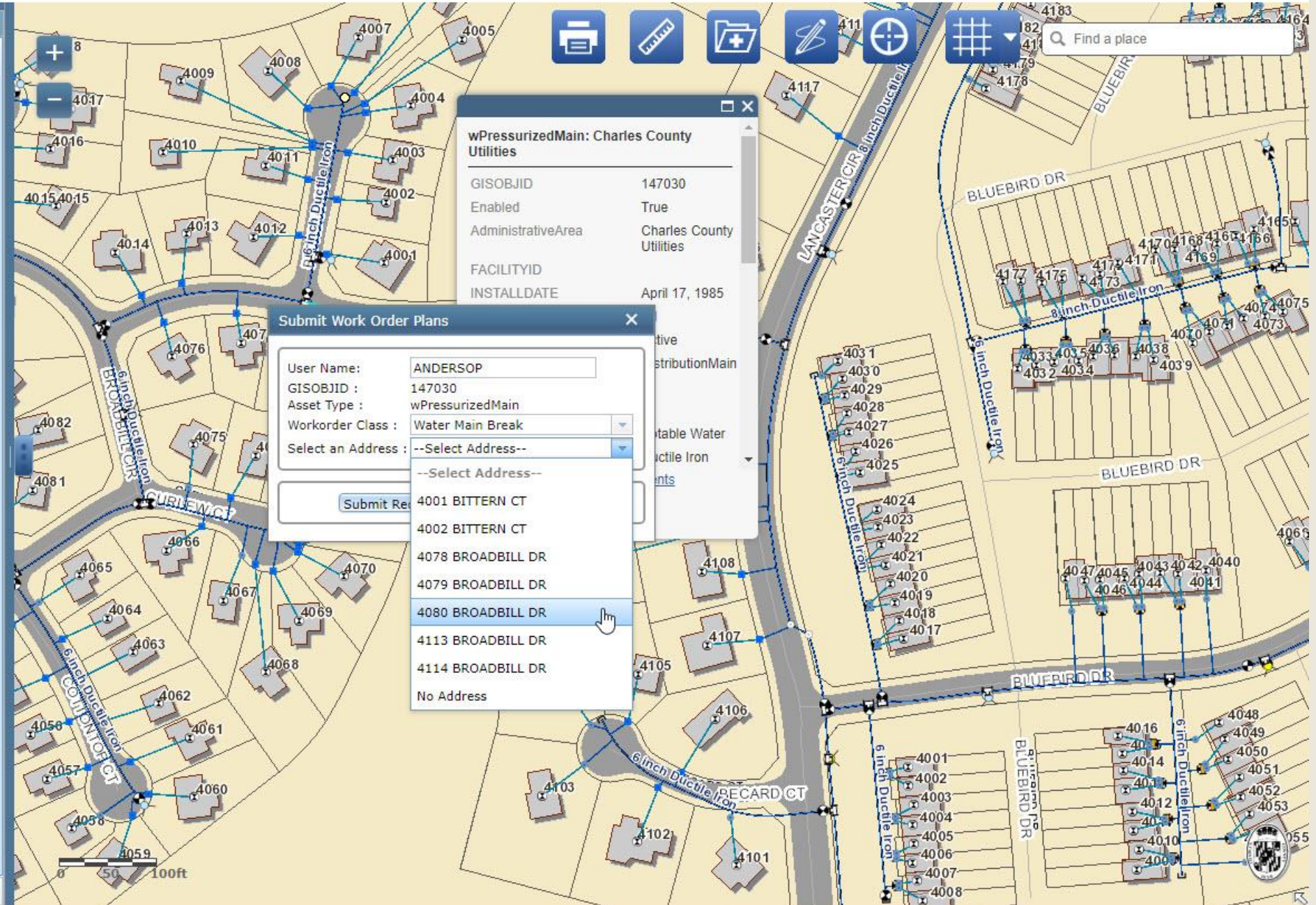
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Add Data





**Submit Work Order Plans**

User Name:

GISOBJID :

Asset Type :

Workorder Class :

Select an Address :

**Work Order Successfully Submitted**

**Work Order ID: "832409"**

**wPressurizedMain: Charles County Utilities**

OBJID	147030
Is Deleted	True
AdministrativeArea	Charles County Utilities
UTILITYID	
INSTALLDATE	April 17, 1985
InstallationArea	D1
LifeCycleStatus	Active
Type	DistributionMain
WORKORDERID	
WMEASUREMENTID	
WaterType	Potable Water
Material	Ductile Iron

[Zoom to](#) [List Plan Set Documents](#)



Infor EAM

SPATIALSYS

\*\*\*\*\*

Log In



Work Order 832409 4080 BROADBILL DR | Water Main Break



All Work Orders

Edit

Work Order

(A) 32409

Run

Work Order	Description	Status	Organization	Area	Equipment	Class	Reported By	Sched. Start Date
(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	=
832409	4080 BROADBILL DR   Water Main Break	Released	UT	LINEMAINT	D-WLD- PMAINS- 147030	WMB	ANDEP	01/25/2018

Record View

## Work Order 832409 4080 BROADBILL DR | Water Main Break



List View

Record View

Comments

Activities

Book Labor

Closing

Parts

Cost Summary

Additional Costs

Booked Labor by Activity Chart

Checklist



Work Order: 832409

4080 BROADBILL DR | Water Main Break

Organization: UT

Equipment: D-WLD-PMAINS-1470

Pressurized Mains, Water System, DistributionMain, 8 ", D

Created By: GENGISCON

Type: CM - Corrective

Status: Released

Date Created: 01/25/2018

Area: LINEMAINT

Account #:

Contact Name:

Contact #:

Unit #:

Subdivision:

House #: 4080

City:

Street Name: BROADBILL DR

Jurisdiction:

ZIP Code:

Comment(s) Included: ☐Warranty: ☐Safety: ☐Multiple Equipment: ☐

## Work Order Details

Class: WMB

Standard WO:

Problem Code: CSR-2

Priority: 3 - Unscheduled

Criticality:

Cost Code:

PM Code:

Target Value:

USD

## Scheduling

Reported By: ANDEP

Date Reported: 01/25/2018 00:00

Assigned By: \*

Assigned To: \* ANDEP



# Summary

- GIS provides advanced digital inventory of assets and customers
- Ability to track and manage projects – VFIRE, CCTV
- Connectivity between Asset Management and GIS

# QUESTIONS?

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