



BROKEN ARROW
Where opportunity lives

Broken Arrow Fire Department Hydrant Inspection Project



1437 S. Boulder Ave. Suite 1550 | Tulsa, Oklahoma 74119 | 918.392.5621 | MESHEKENG.COM

Annual Hydrant Testing and Inspections



Broken Arrow Fire Department

- Serves 115K Citizens
- 173 Sworn FF
- 7 Stations, 3 Shifts
- ~6,000 Fire Hydrants

NeighborNews Oklahoma
326 subscribers

S

Watch later

S



Who are the stakeholders?

- Firefighters
- Water Department
- CITIZENS!



Project Goals

→ Make the firefighter's job easier

→ Capture high quality data



Old Paper-Based Process

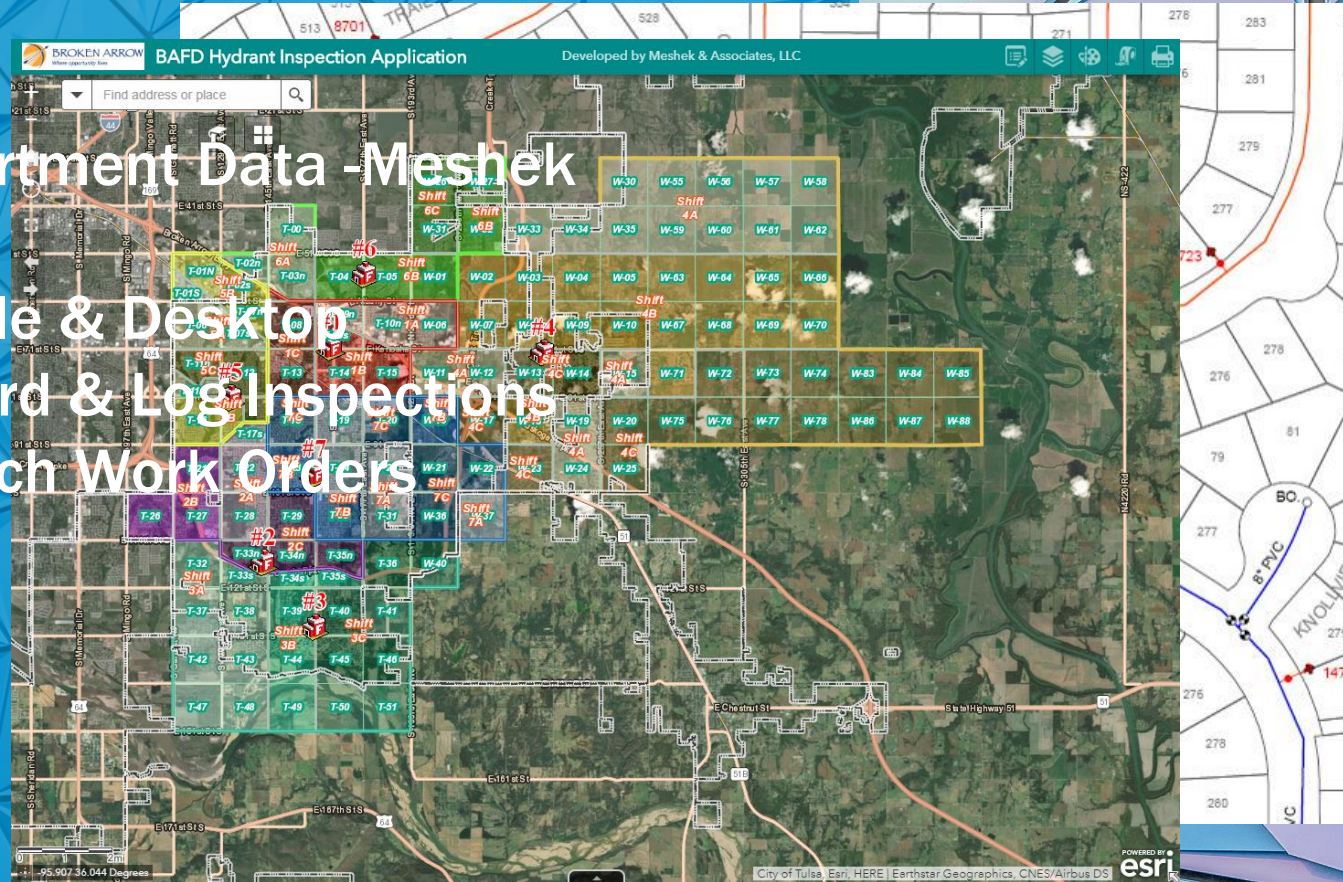
- Inspection/Testing
- eMail Work Order
- File Results



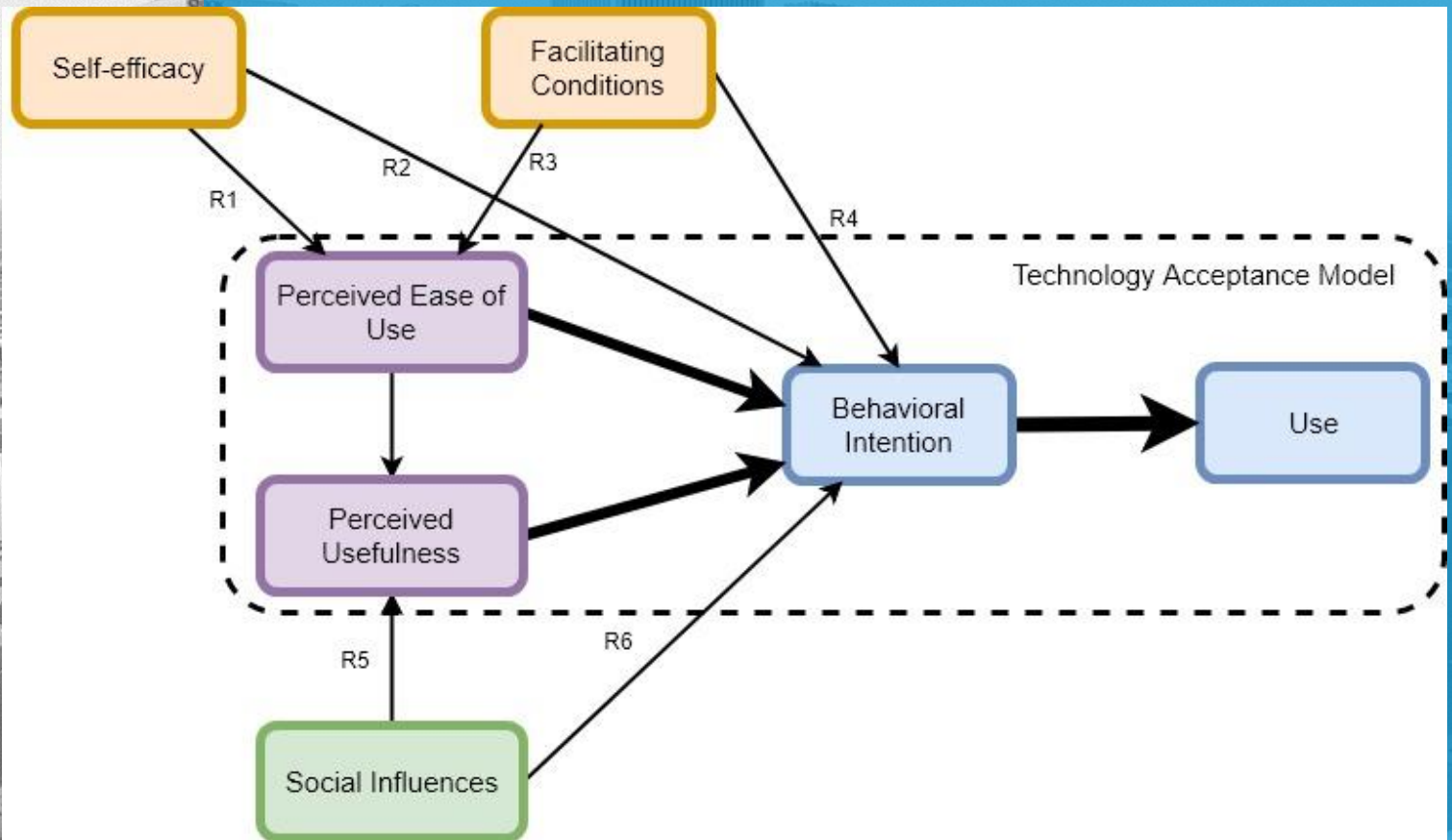
Finding a GIS Solution

- Water Department Data - Meshek
- Concept

- Mobile & Desktop
- Record & Log Inspections
- Launch Work Orders



Keys to Success & Guiding Principles



Keys to Success & Guiding Principles

→ Lean startup principles (Eric Ries, 2008)

- Minimum Viable Product -MVP
- Iterative approach
 - Stay agile
 - Prototypes
 - Beta tests with novice users
 - Pivot
 - Fail forward



ENGINEERING SOLUTIONS

Meshek & Associates LLC
was founded in 1988 by
Janet Meshek, PE, CFM,
SR/WA, to provide
superior engineering
services, and GIS
solutions to public and
private clients.

BAFD Hydrant Inspections – Goals

→ Utilize Existing

- Hardware
 - iPads in All Apparatus
- Personnel
 - Ladders, Engines, EMS Squads
- Water Utility GIS
 - Ongoing Updates

→ Increase Departmental Collaboration

- Work Orders

Replace Paper-Based Processes

| Mile Section TO | | | | | | 2017 Hydrant Test | |
|------------------------|-------|----------------------|---------|--------|--------|-------------------|-------|
| Test Date | Shift | Address | Stamped | Make | Static | Residual | Notes |
| 4-19 | C | Sandusky & Hudson | 016 | Mudler | 90 | 60 | |
| | | 1903 N Rockport | 013 | Mudler | 90 | 60 | |
| | | 1909 W. Rockport St. | 012 | Mudler | 90 | 60 | |
| | | 2017 W Rockport St. | 019 | Mudler | 90 | 60 | |
| | | 4700 N. Spruce Ave | 047 | Mudler | 90 | 60 | |
| | | 1909 W. Van St | 051 | Mudler | 90 | 60 | |
| | | 1921 W. Van St | | | | | |
| | | 4401 W. Spruce | | | | | |
| | | 2108 N. Spruce | | | | | |
| | | 1907 W. Woodbury | | | | | |
| | | 4105 N. Redbud Ave | | | | | |
| | | 4121 N. Redbud Ave | | | | | |
| | | 1913 W. Xenia | | | | | |
| | | 4109 W. Sycamore | | | | | |
| | | 4121 N. Sycamore | | | | | |
| | | 2017 W. Xenia | | | | | |
| | | 2029 W. Walnut | | | | | |
| | | 2018 W. Woodbury | | | | | |
| | | 2105 W. Van | | | | | |
| | | 4321 N. Walnut | | | | | |
| | | 2117 W. Van | | | | | |

| A | B | C | D | E | F | G | H |
|-----------|-----------------------------|--------|--|---------------|----------|-------------|--------------------------|
| Section # | Address | Hydr # | Problem Described | Date Repaired | Initials | | NOTES |
| 1 | 4321 north walnut avenue | T0-052 | landscaping planted close | 12/14/2011 | JH | fixed | |
| 3 | 4701 North Maple Avenue | T0-061 | Missing Cap | 12/14/2011 | JH | | replaced cap |
| 4 | 1512 West Ulysses Street | T0-064 | Corner of Maple Ave and Ulysses Street-No Problems Described | 12/14/2011 | JH | Repair ASAT | no problem found |
| 5 | 4108 North Lions Place | T0-072 | Dry Hydrant | 12/14/2011 | JH | | no problem found |
| 6 | 1909 West Rockport | T0-013 | Steamer too tight to open | 12/14/2011 | JH | Repair | removed caps |
| 7 | 4401 North Poplar Avenue | T0-003 | Dry Hydrant | 12/14/2011 | JH | | no problem found |
| 8 | 1409 West Omaha Place | T0-003 | Couldn't flow, Stem is too tight, Nut on top is loose | 12/14/2011 | JH | FD Fix | |
| 9 | 3957 North Narcissus Avenue | T0-024 | Flushed 3D Zone | | | | |
| 10 | 4100 North Maple Avenue | T0-030 | Inside the Turnabout Median - Hard to turn on | 12/14/2011 | JH | | cleaned & greased |
| 11 | 4619 North Redbud Avenue | T0-041 | Located on Empty Lot; Overgrown, Unable to Access | 12/14/2011 | JH | | lot has been mowed |
| 12 | | | | | | | |
| 13 | 3060 North Hemlock Circle | T2-008 | Hard to Turn Stem | 12/14/2011 | JH | | cleaned & gerased |
| 14 | 2512 North Hemlock Circle | T2-012 | Could Not Remove Cap Facing North to Check Residual | 12/14/2011 | JH | | removed caps |
| 15 | 2601 North Hemlock Court | T2-014 | Dead Hydrant | 12/14/2011 | JH | | no problem found |
| 16 | 2400 North Aspen | T2-016 | Could Not Remove Cap Facing East to Check Residual | 12/14/2011 | JH | | removed caps |
| 17 | 2300 West Albany Street | T2 | Steamer Won't Open | 12/14/2011 | JH | | removed caps |
| 18 | | | | | | | |
| 19 | 3005 N. Battlecreek Drive | T3-015 | hard to turn. Leaking from base of hydrant. | 12/15/2011 | TK | | replaced gasket |
| 20 | 3401 N. Battlecreek Drive | T3-017 | unable to turn stem | 12/22/2011 | RG | | cleaned & greased |
| 21 | 3601 N. Battlecreek Drive | T3-018 | hard to turn. | 12/22/2011 | RG | | cleaned & greased |
| 22 | 1700 W. Granger Street | T3-034 | very stiff | 12/22/2011 | RG | | cleaned & greased |
| 23 | 3707 N. Elm Place | T3-037 | very stiff | 12/22/2011 | RG | | cleaned & greased |
| 24 | 1300 W. Omaha Street | | cant find hydrant | 12/22/2011 | RG | | 300' North of water tank |
| 25 | 3427 N. Ironwood Ave | T3-042 | Major Leak at bottom flange - OUT OF SERVICE | | | | |
| 26 | 3300 N. Elm Place | T3-044 | Major Leak at bottom flange - OUT OF SERVICE | 12/22/2011 | RG | | replaced gasket |
| 27 | 3706 N. Ironwood Place | T3-047 | Bushes close - they need to be removed. | | | | |
| 28 | 1900 W. Concord Circle | T3-067 | Tight - WILL NOT OPEN | 12/22/2011 | RG | | cleaned & greased |
| 29 | 2144 W. Albany Street | T3-070 | WILL NOT OPEN - STEAMER STUCK ALSO | 12/22/2011 | RG | | cleaned & greased |
| 30 | | | | | | | |
| 31 | Centennial Middle School | T4-032 | 2 1/2 Threads on North Side Crossthread | 12/22/2011 | RG | | No problem found |
| 32 | | T4-025 | Needs to be Raised | | | | No problem found |
| 33 | | T4-026 | Dead Hydrant | | | | No problem found |

ESRI Solutions

www.Solutions.ArcGIS.com

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Fire Hydrant Inspection

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Overview

Fire Hydrant Inspection is a configuration of Collector for ArcGIS that can be used by fire personnel to inspect fire hydrants and ensure that every hydrant in a district performs properly and reliably when an emergency occurs. It also enables fire fighters to maintain and improve their knowledge of first due areas so they can easily locate hydrants and access or open them when needed.

Fire Hydrant Inspection offers a map-based view of an inspection program that allows fire operations staff to load hydrant information provided by their utility, assign inspections to a station or shift crew, and publish fire hydrant inspection maps that can be used to conduct field inspections. If you don't currently have hydrant information in your GIS or you discover missing hydrants while in the field, you can collect missing hydrants with your location-aware smartphone.



[REQUIREMENTS](#)

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New automated deployment option

This ArcGIS Solution can now be quickly deployed in your organization with the ArcGIS Solutions Deployment Tool.

▀ [ArcGIS Solutions Deployment Tool](#)

You may be interested in

ArcGIS for Local Government includes several related maps and apps that also can be configured in your organization:

- ▀ [Fire Service Maps](#)
- ▀ [Water Utility Network Editing and Analysis](#)

ESRI Solutions

www.Solutions.ArcGIS.com

ArcGIS Solutions for Water ▾

GALLERY

COMMUNITY

DOCUMENTATION

SEARCH



Hydrant Maintenance Inspection

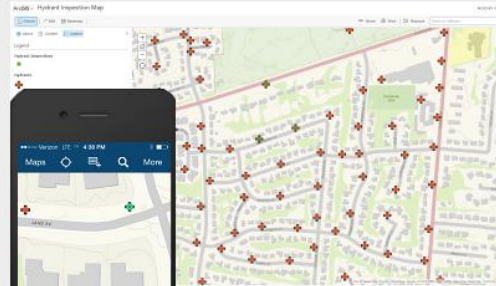
Home

Get Started

Overview

The Hydrant Maintenance Inspection solution modernizes the paper report for Hydrant Maintenance Inspections by using a smartphone or tablet device. By using a map view of hydrants, field crews are able to record scheduled or ad hoc Hydrant Maintenance Inspections on any mobile device using the Hydrant Maintenance Inspection schema.

Hydrant Maintenance Inspection is a configuration of ArcGIS. Once configured, the Hydrant Maintenance Inspection map can be accessed by field crews using the Collector for ArcGIS application to view hydrants and record inspections.



You may be interested in

- [Water Distribution Network](#)
- [Water Leak Investigator](#)

REQUIREMENTS

WHAT YOU GET

WHAT'S NEW

DOWNLOAD

→ Inspections

- Model from Paper Inspections
- Maintain Historic Records
 - Update Missing Information
 - Location Description
 - Manufacturer

→ Maintenance Requests

- Identify Issues
- Simplify Work Order Entry
- Provide Accountability

Configure Enterprise Geodatabase

Water Utilities Feature Service

- Hydrant Feature Class
 - Create Relationship Classes
 - H_Inspections
 - Schema from Paper
 - H_Maintenance
 - Type, Severity, etc.
 - Customize Attribute Domains
 - Domains = Dropdown Choices

Collector

Cancel

Sign In

Collector for ArcGIS wants to access your
ArcGIS Online account information

Sign In



Username

Password

SIGN IN

[Forgot password?](#) [Forgot username?](#)

OR

Sign in with

ENTERPRISE LOGIN

Sign in with

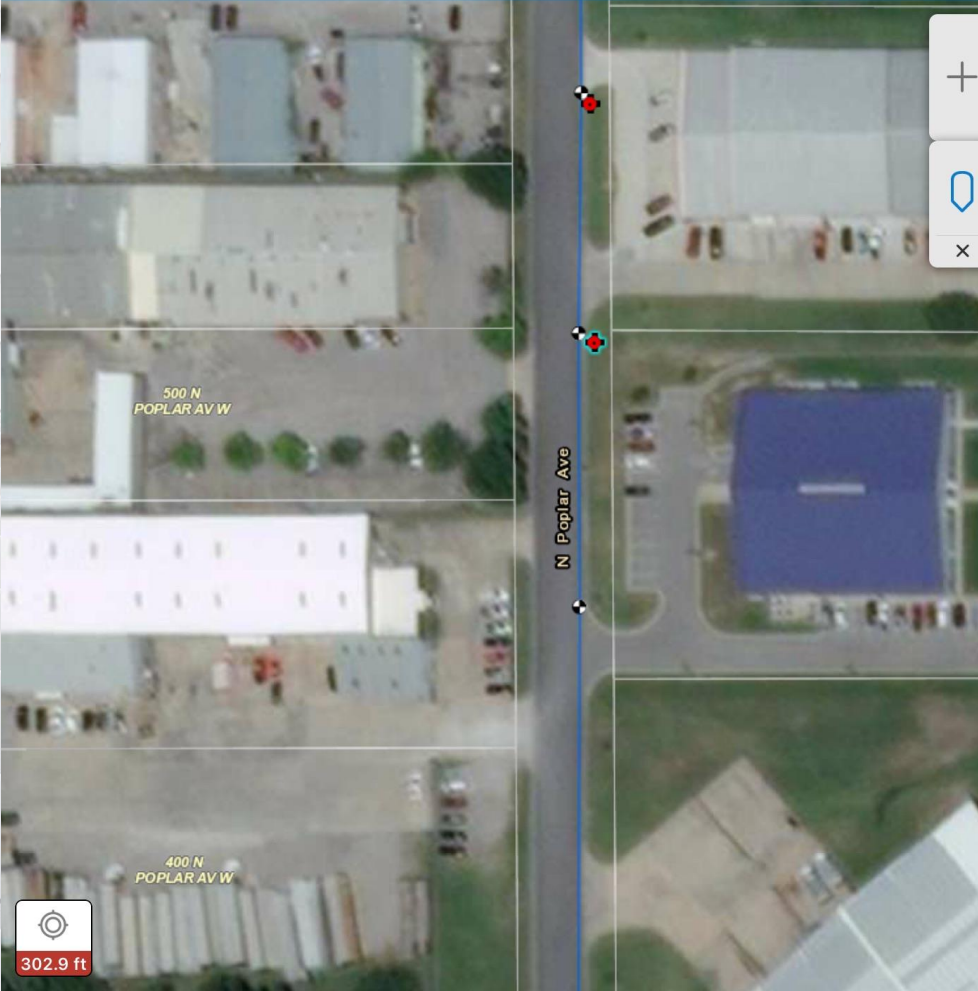


Collector for ArcGIS developed by:



Try it

Maps

**Hydrant: T13-16474**

T13-16474

Details**Location**

Lat: 36.05660505° Long: -95.80905031°

Edited by ARCSERVER 8 hours ago

Hydrant: T13-16474

Hyd-ID

T13-16474

Address

NA

Manufacturer

Operable?

True

Active?

True

Owned By

Broken Arrow

Managed By

Broken Arrow

Inspection_Status

Pending

created_user

ARCSERVER

created_date

5/10/2018 10:53 AM

Maps



Copy

Edit

Delete

Zoom to

Directions to here

ARCSERVER

last_edited_date

6/4/2018 9:48 PM

Atlas Panel

T-13

District

1

Shift

C

Hydrant Maintenance

View >

New >

Hydrant Inspections

View >

New >



Cancel



Submit

Cancel

Done

Manufacturer

Filter

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American Darling

Clow Corporation

Corey

Dresser

Eddy

Iowa Valve

Kennedy Valve

M&H Valve

M&H Valve / Dresser

Mueller Company

Traverse City



328.1 ft

Maps



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ARCSERVER

last_edited_date

6/4/2018 9:48 PM

Atlas Panel

T-13

District

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Shift

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Hydrant Maintenance

View



New

**Hydrant Inspections**

View



New

500 N
POPLAR AV W

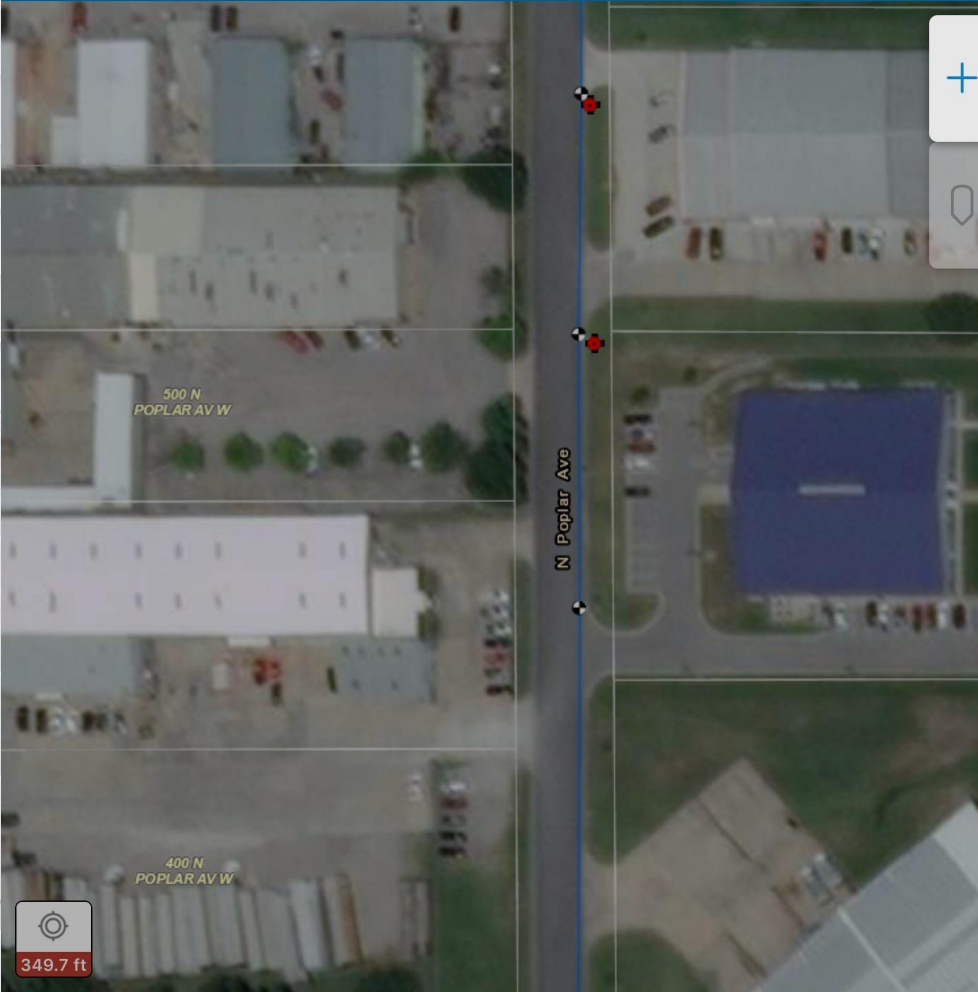
N Poplar Ave

585
N POPLAR
AV W

Cancel



Submit



Hydrant Inspection: Good - Adequate for Now

Condition Rating >

Good -Adequate for Now

Flow (GPM) >

Static (PSI) >

Residual (PSI) >

Visible? >

Yes

Color? >

Red

Paint Req'd? >

No

Chains Req'd? >

No

Lubrication Req'd? >

No

Stamped? >

No

Stamp # >

Inspection Notes >



349.7 ft

Cancel



Cancel

Done

Submit

Inspection Notes

Test

4/255



rant Inspection: Good -
Adequate for Now

Rating

adequate for Now



(S)



"Test"

Testing

Tests

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123



123



Cancel



Submit

Done

Attachments

Add

Take Photo or Video

Choose From

rant Inspection: Good -
Adequate for Now

Rating

adequate for Now



500 N
POPLAR AV W

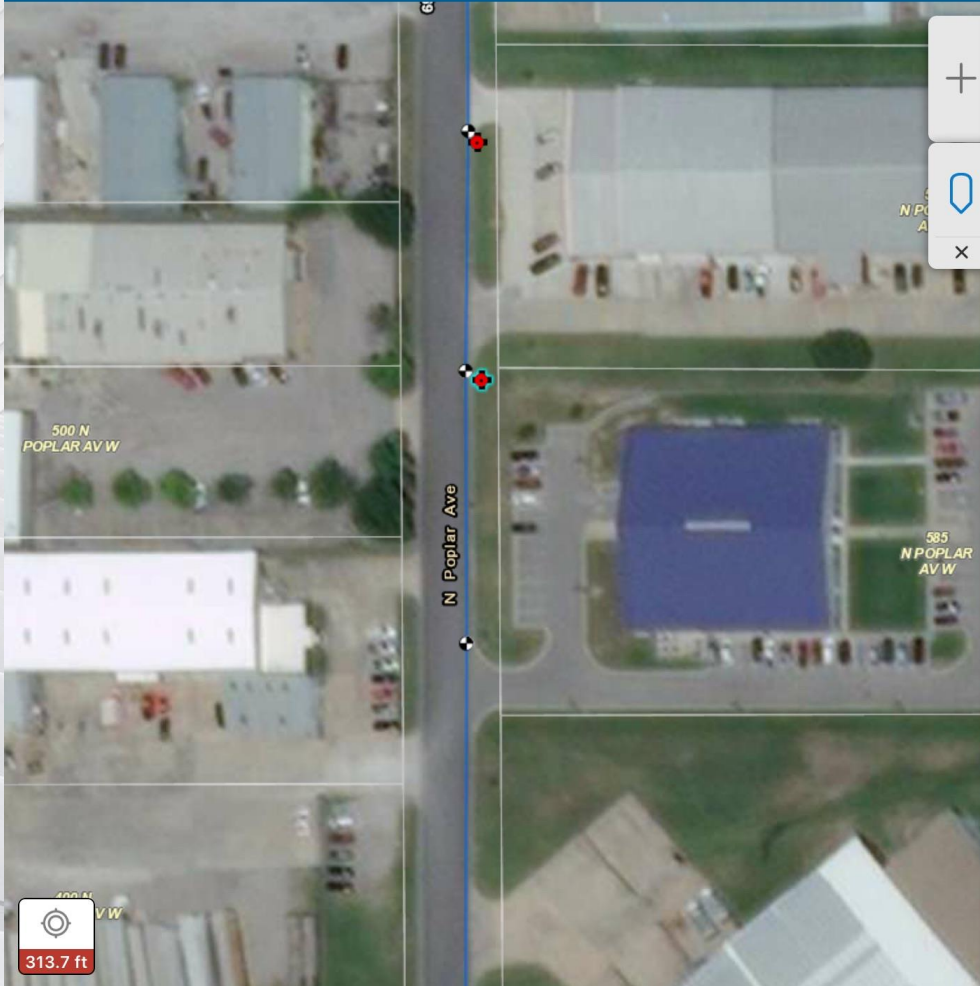
400 N
POPLAR AV W



349.7 ft



Maps



313.7 ft



Hydrant: T13-16474

T13-16474



Details Hydrant Inspections

Hydrant Inspection: Good -Ad...



All Maps



Search maps

All

On Device

2 maps

On Device



ArcGIS Collector
Hydrant Inspection

Downloaded 6/5/18



BAFD Hydrant
Inspection WebMap

6/4/18 | Willard Gustafson



All Maps



Search maps

All

On Device

2 maps

On Device



ArcGIS Collector
Hydrant Inspection

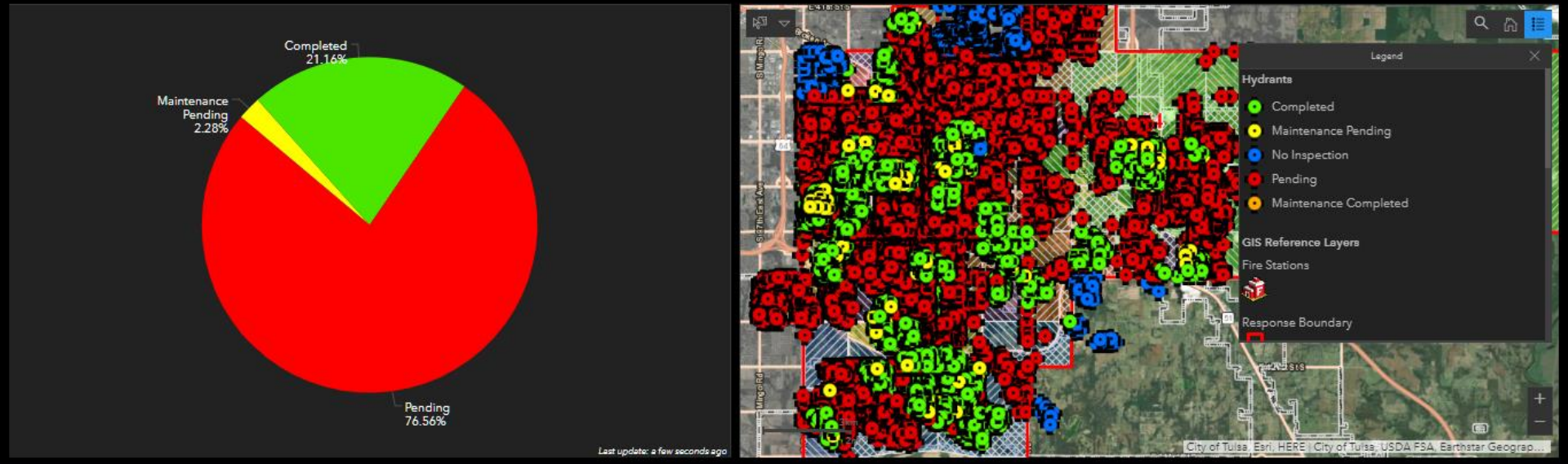
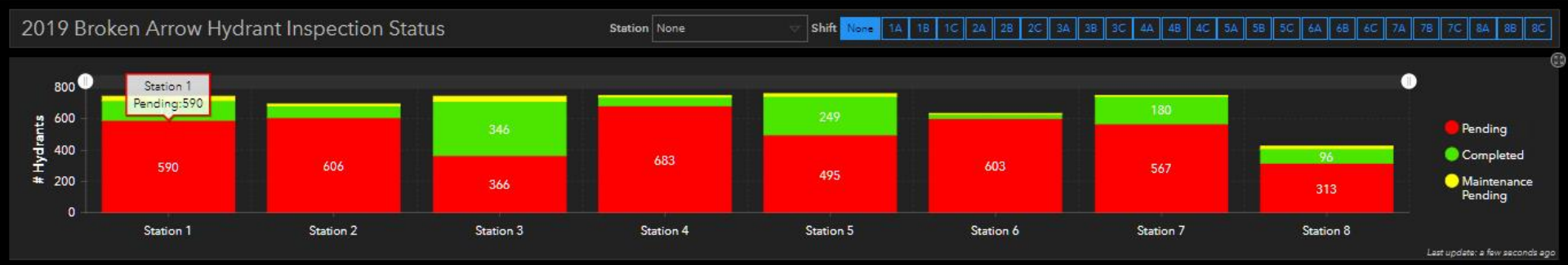
Downloaded 6/5/18



BAFD Hydrant
Inspection WebMap

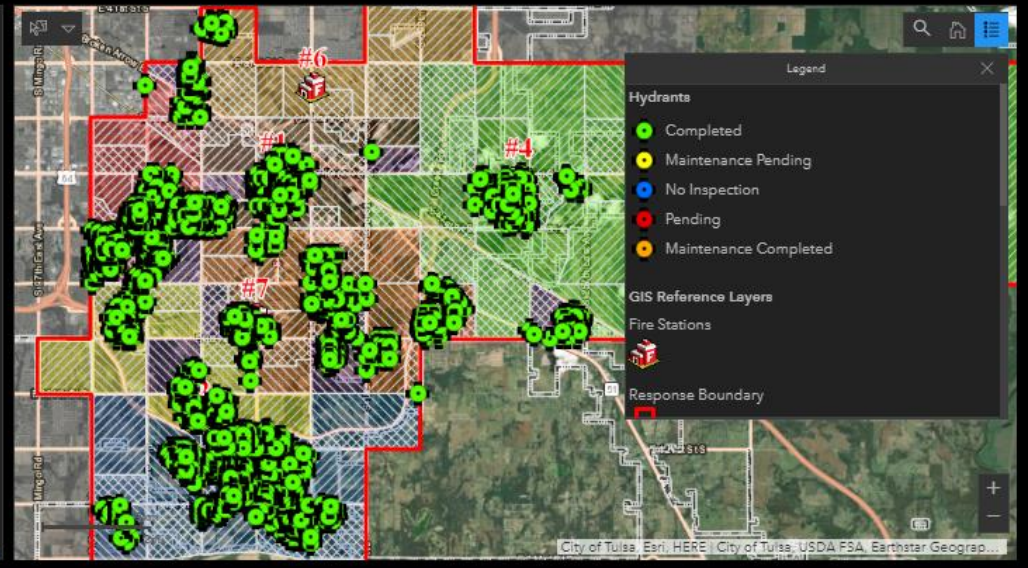
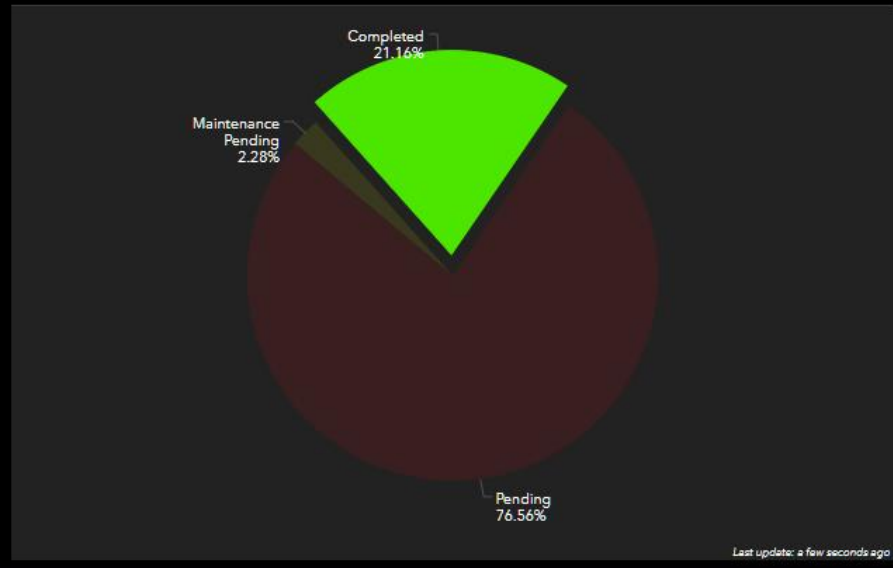
6/4/18 | Willard Gustafson

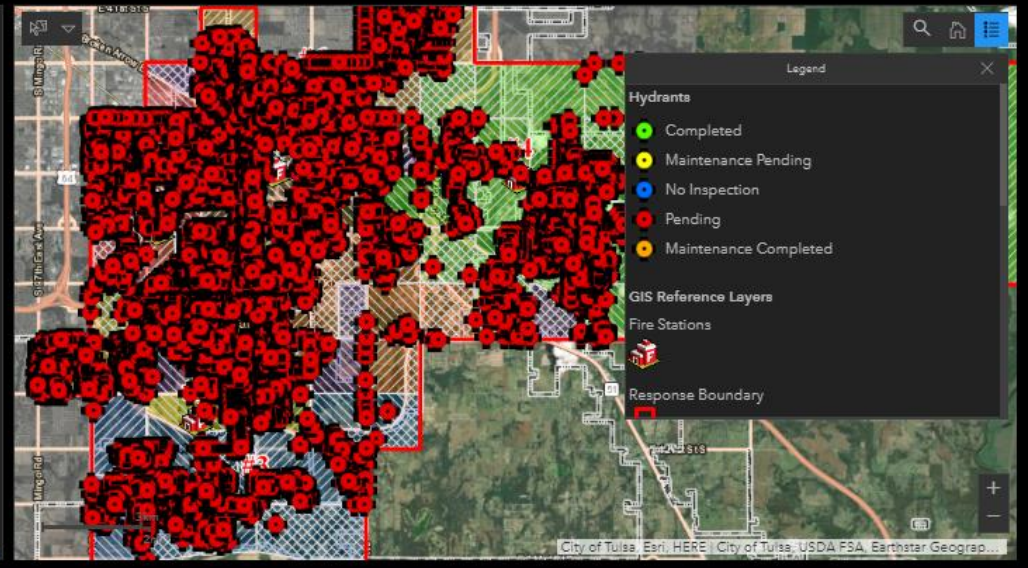
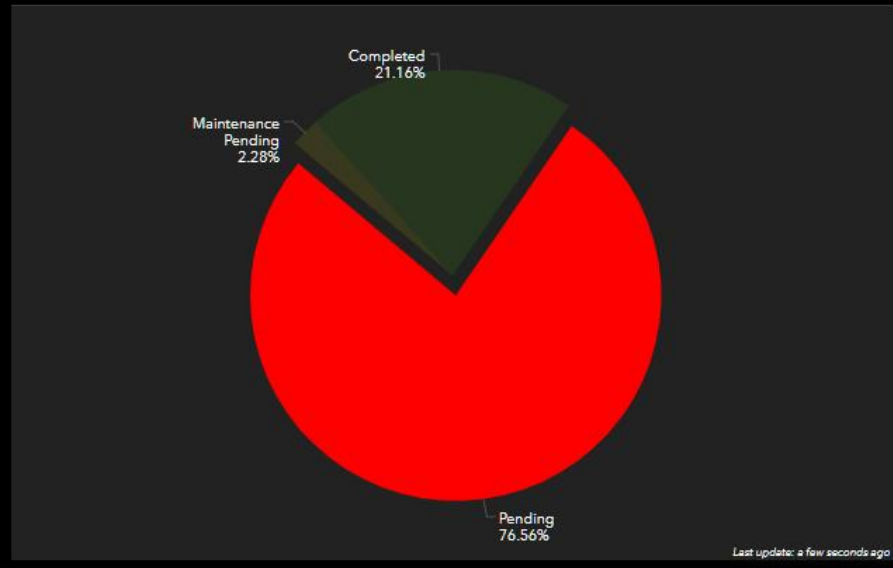
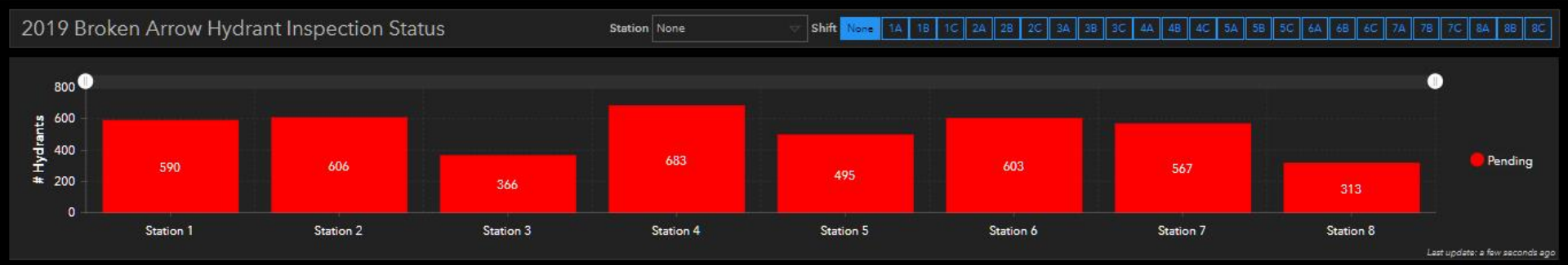




2019 Broken Arrow Hydrant Inspection Status

Station: None Shift: None 1A 1B 1C 2A 2B 2C 3A 3B 3C 4A 4B 4C 5A 5B 5C 6A 6B 6C 7A 7B 7C 8A 8B 8C

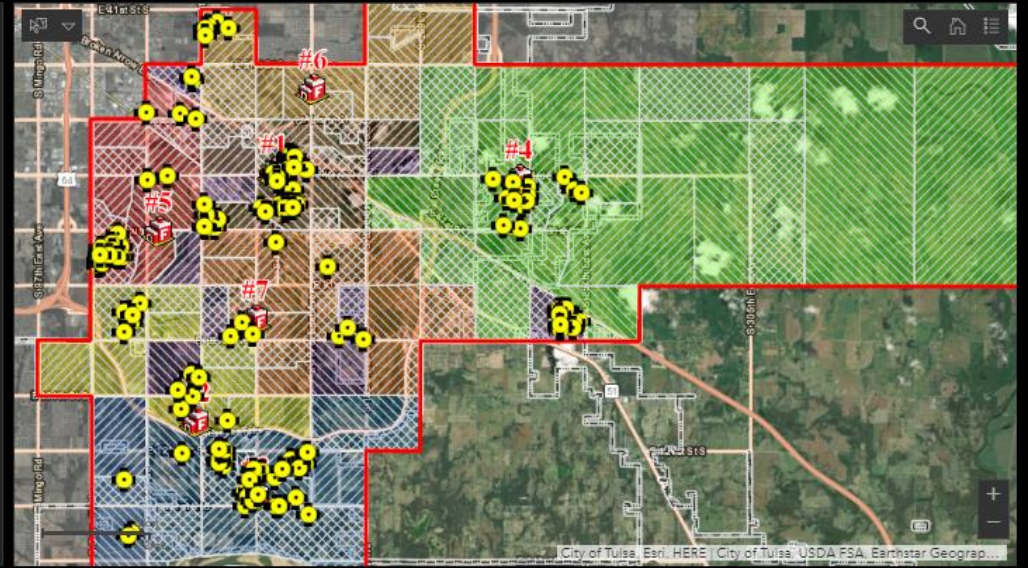
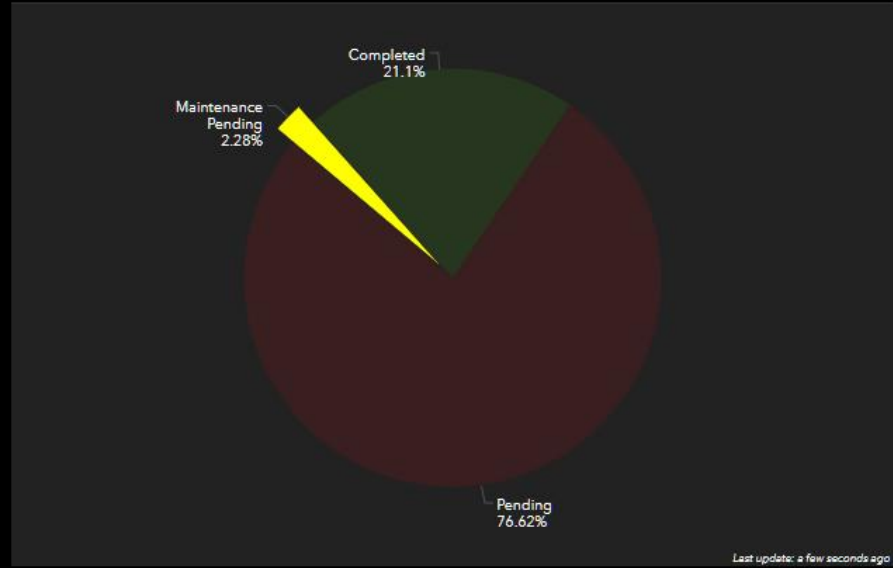


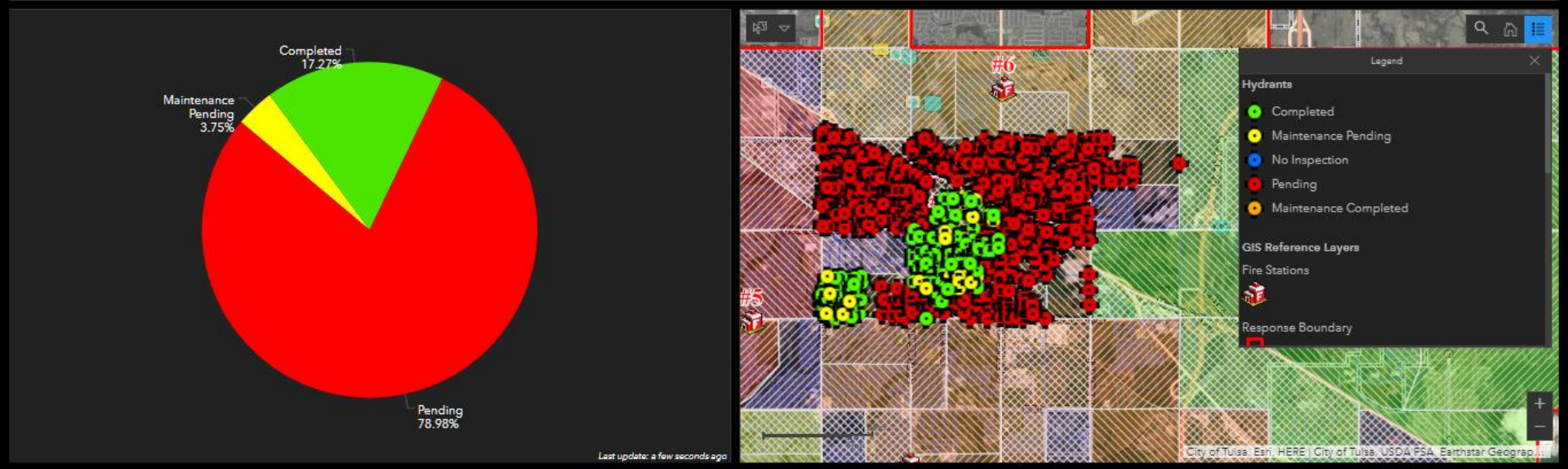
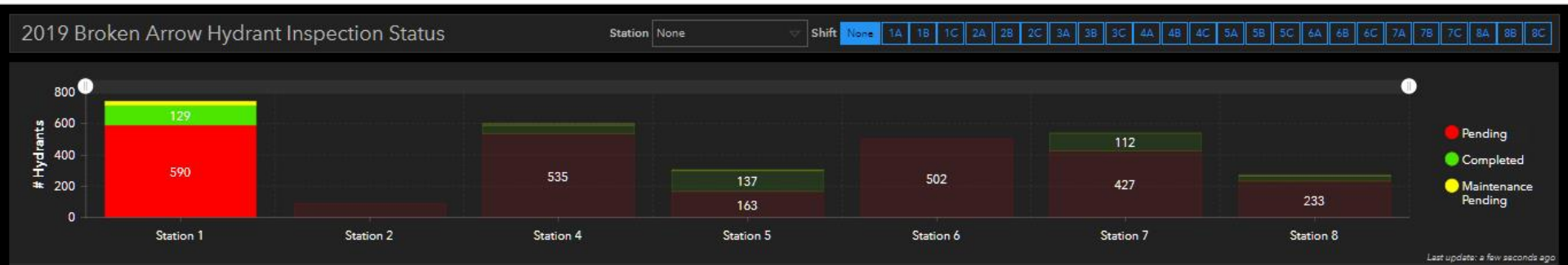


2019 Broken Arrow Hydrant Inspection Dashboard

Station: None Shift: None

1A 1B 1C 2A 2B 2C 3A 3B 3C 4A 4B 4C 5A 5B 5C 6A 6B 6C 7A 7B 7C 8A 8B 8C





2019 Broken Arrow Hydrant Inspection Dashboard

Station Station 5

Shift

None

1A

1B

1C

2A

2B

2C

3A

3B

3C

4A

4B

4C

5A

5B

5C

6A

6B

6C

7A

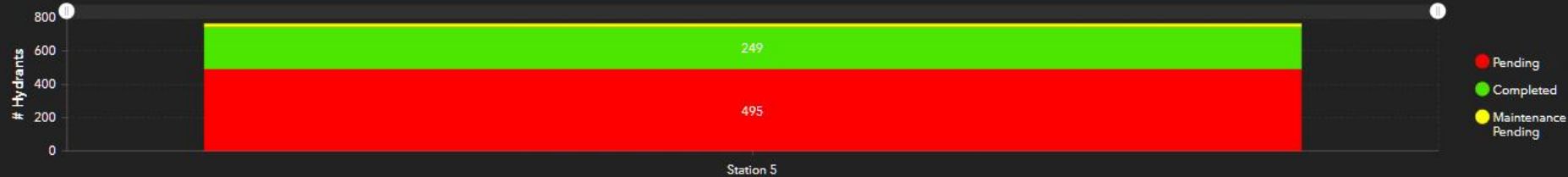
7B

7C

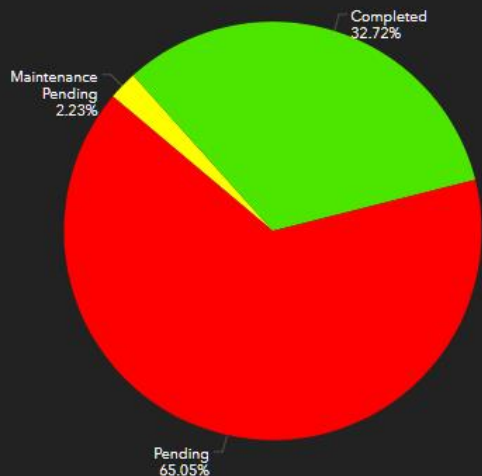
8A

8B

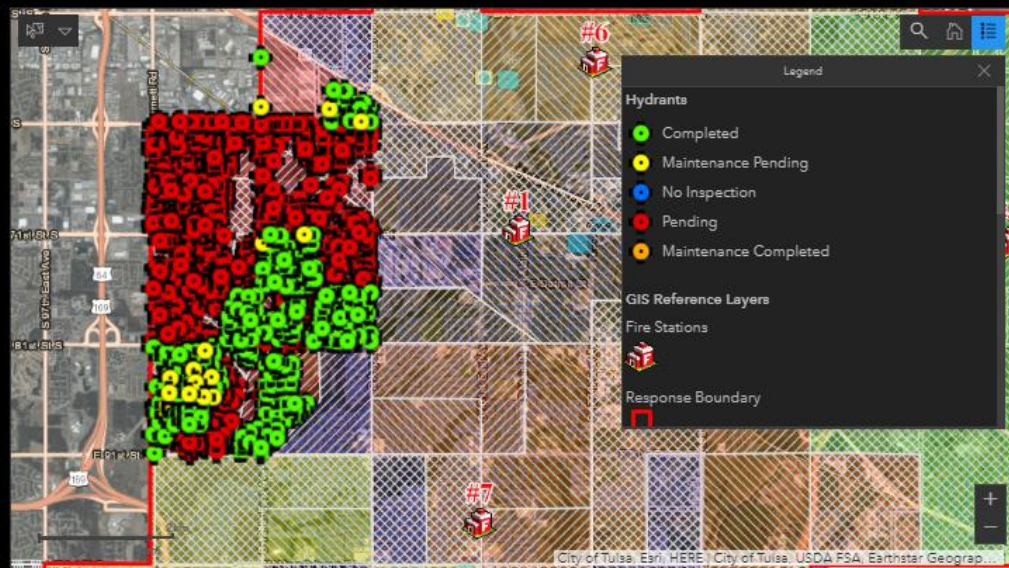
8C



Last update: a few seconds ago

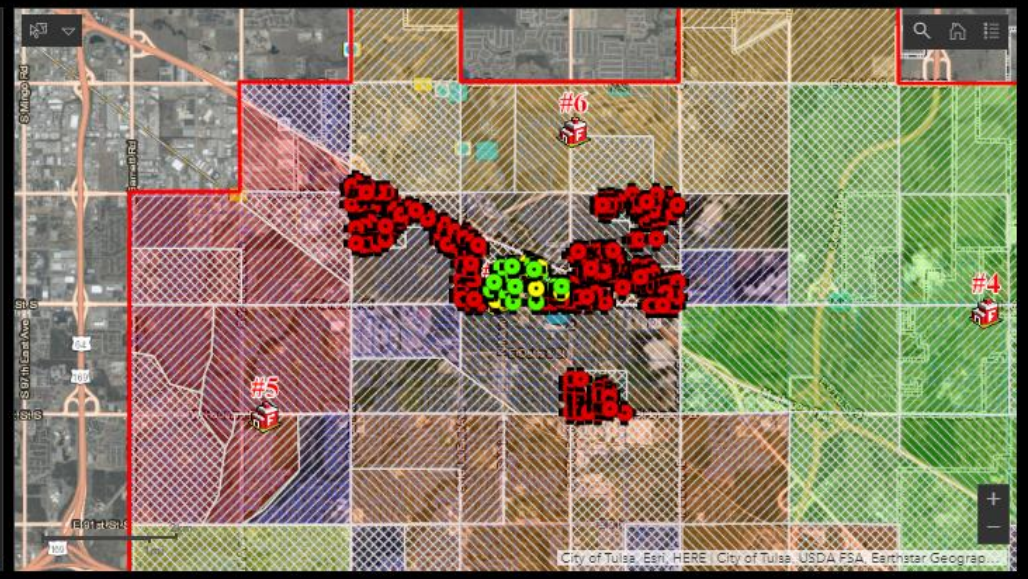
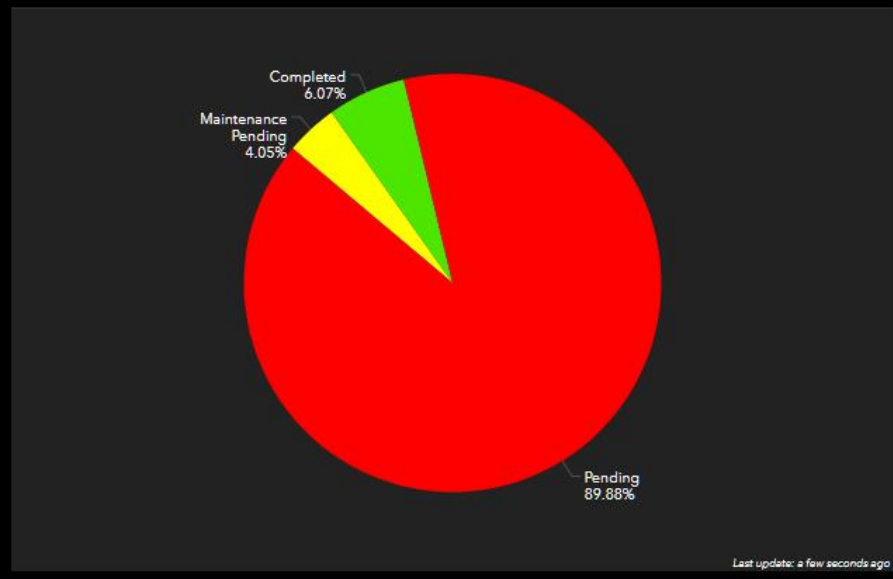


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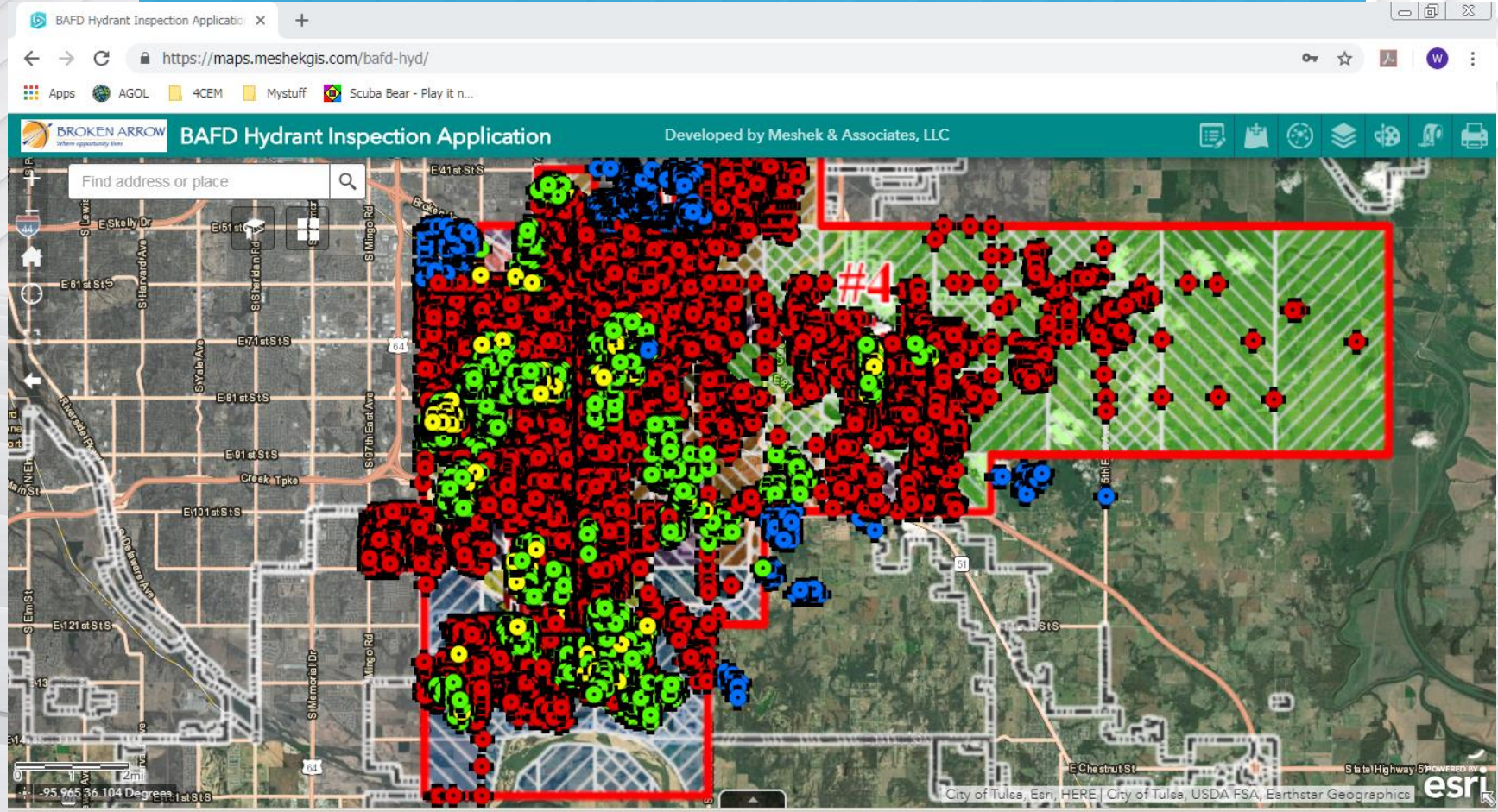


2019 Broken Arrow Hydrant Inspection Dashboard

Station: None Shift: None 1A 1B 1C 2A 2B 2C 3A 3B 3C 4A 4B 4C 5A 5B 5C 6A 6B 6C 7A 7B 7C 8A 8B 8C



BA Fire Department Hydrant Inspection Web Application



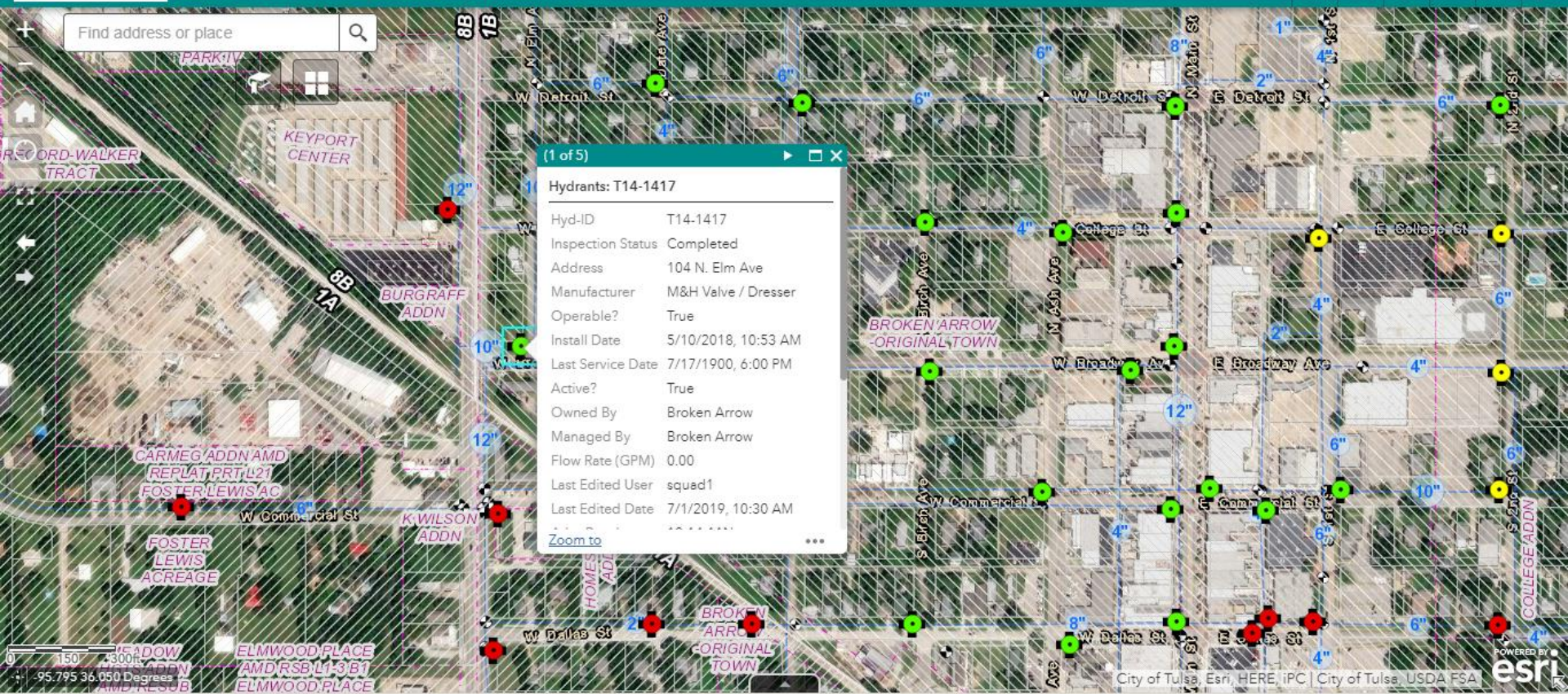
BROKEN ARROW

BAFD Hydrant Inspection Application

Developed by Meshek & Associates, LLC



Find address or place



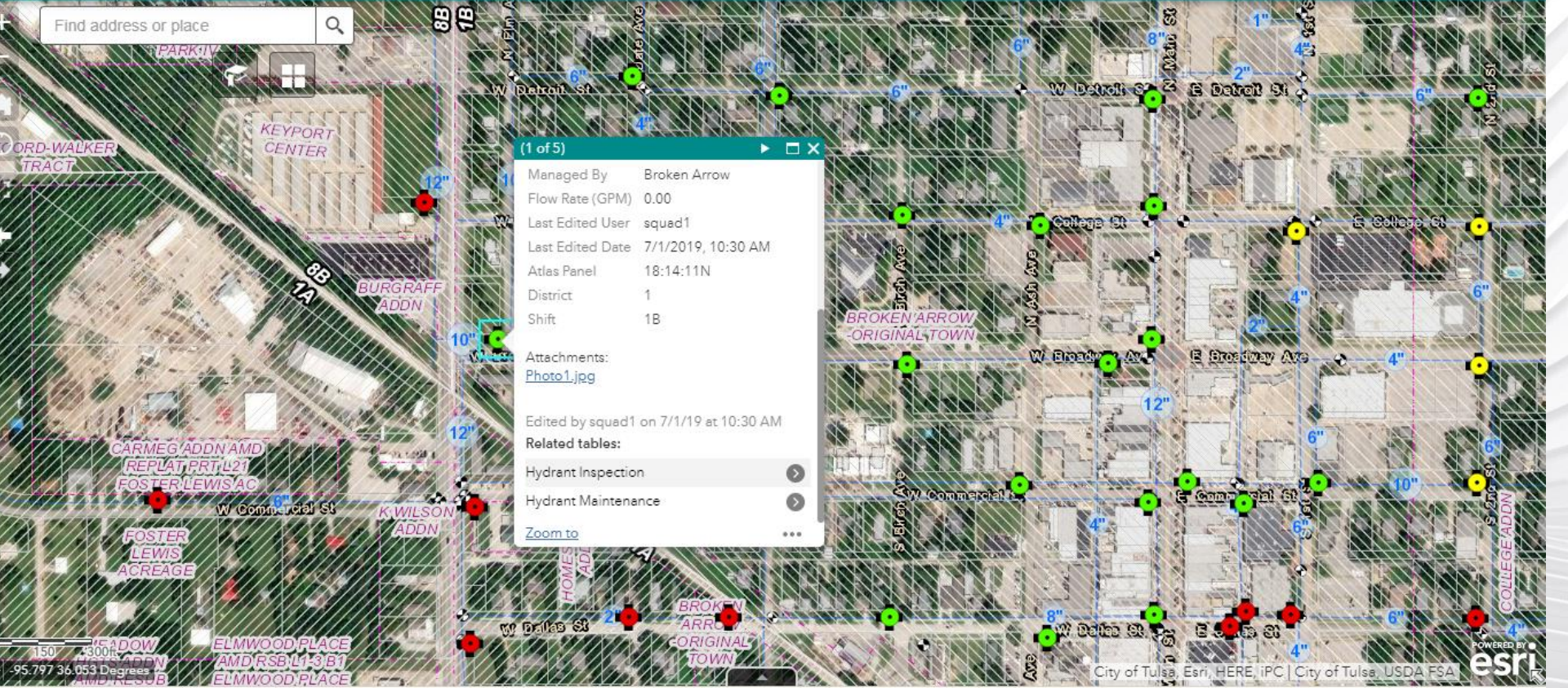
(1 of 5)

Hydrants: T14-1417

| | |
|-------------------|---------------------|
| Hyd-ID | T14-1417 |
| Inspection Status | Completed |
| Address | 104 N. Elm Ave |
| Manufacturer | M&H Valve / Dresser |
| Operable? | True |
| Install Date | 5/10/2018, 10:53 AM |
| Last Service Date | 7/17/1900, 6:00 PM |
| Active? | True |
| Owned By | Broken Arrow |
| Managed By | Broken Arrow |
| Flow Rate (GPM) | 0.00 |
| Last Edited User | squed1 |
| Last Edited Date | 7/1/2019, 10:30 AM |

[Zoom to](#)







BAFD Hydrant Inspection Application

Find address or place

KEYPORT CENTER

BURGRAFF ADDN

CARMEL ADDN AND REPLAT PRT L21 FOSTER LEWIS AC

FOSTER LEWIS ACRES

ELMWOOD PLACE AND RSB L1-3 B1

W Commercial St

K WILSON ADDN

W Dallas St

12"

10"

6"

4"

8B 1A

1B

1

2

1 (of 5)

- Lubrication Req'd?
- Stamped?
- Stamp #
- Inspection Notes
- Created User
- Created Date
- Last Edited User
- Last Edited Date

Attachments:

[Photo1.jpg](#)

Edited by engine1

Related tables:

Hydrants



BAFD Hydrant Inspection Application

Find address or place

KEYPORT CENTER

BURGRAFF ADDN

CARMEL ADDN AND REPLAT PRT L21 FOSTER LEWIS AC

FOSTER LEWIS ACRES

ELMWOOD PLACE AND RSB L1-3 B1

W Commercial St

K WILSON ADDN

W Dallas St

12"

10"

6"

4"

8B 1A

1B

1

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1 (of 5)

- Lubrication Req'd?
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- Last Edited Date

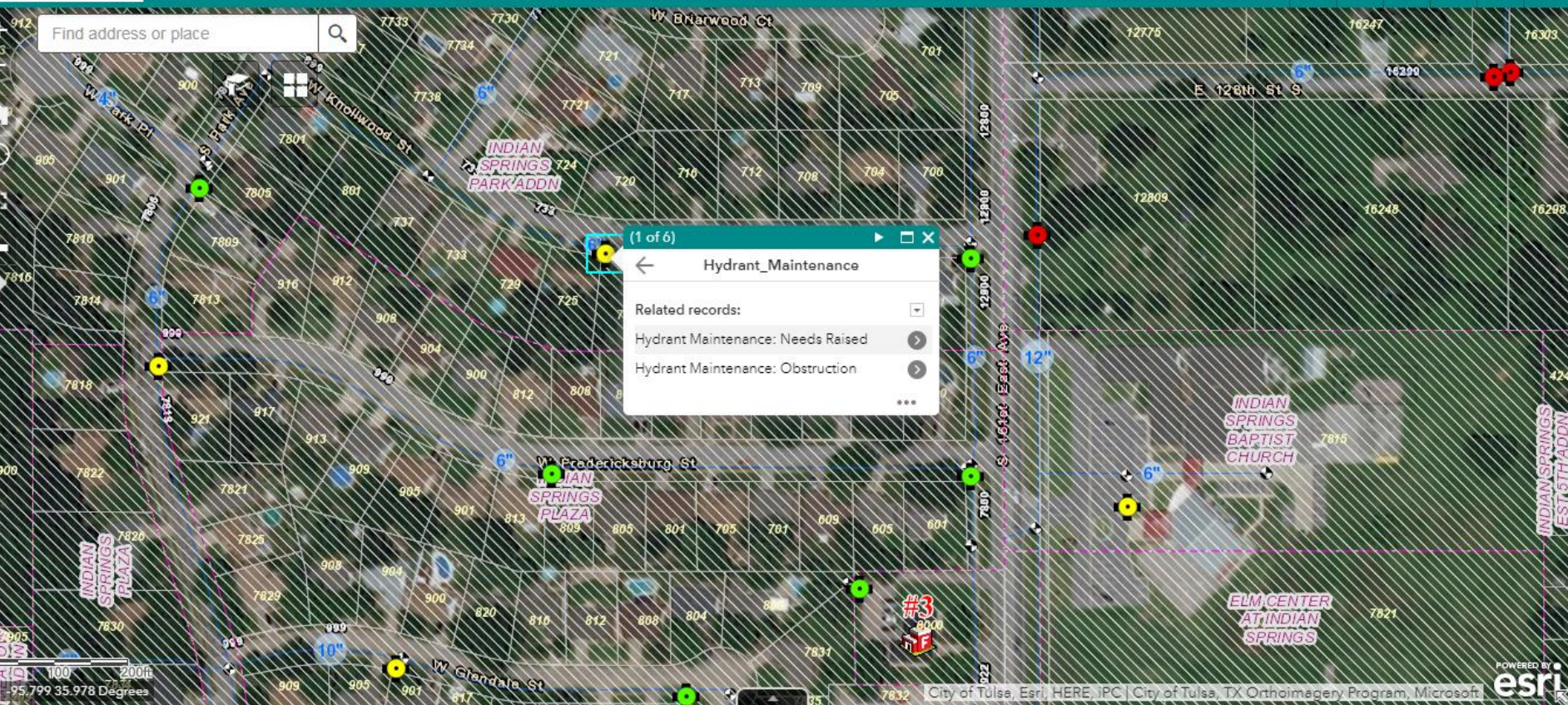
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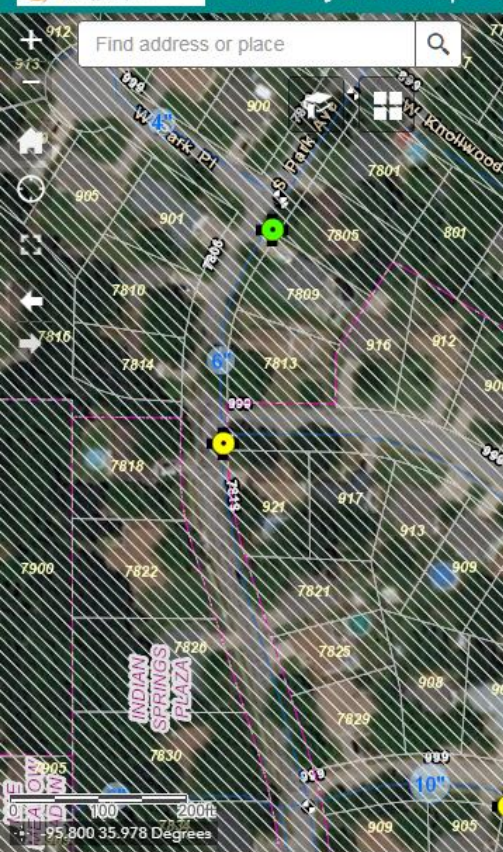
[Photo1.jpg](#)

Edited by engine1

Related tables:

Hydrants





Thanks!

Any questions? Contact us!



918.392.5620



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