Elk River's Enterprise: The Turning Point

Presented By: Angela Hauge – GIS/Mapping Technician

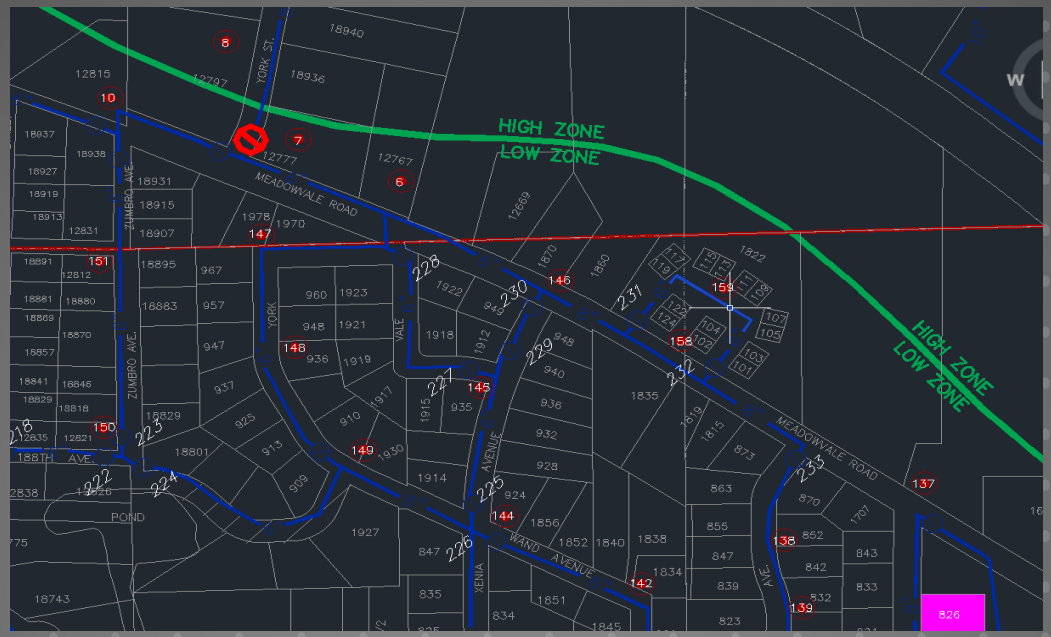
Elk River Municipal Utilities

INTRODUCTION

- Intro
- History of Mapping @ ERMU
- Current Mapping @ ERMU
  - Enterprise
  - GPSing – Hardware & Software
  - Media – Print/Publishing
  - InfraMap (Water)
- Build The Foundation
- Mapping Apps & Extensions
  - In Use
  - Future Use
- Up & Coming
- Re-Cap

HISTORY OF MAPPING @ ERMU

- Pre - 2012
  - CAD



- Contracted GIS Integration – Around 2012?
  - Conversion from CAD
  - Primarily continued with CAD
    - Map books, system analysis, wall maps & overall workflow

DWG TM

2012-2015

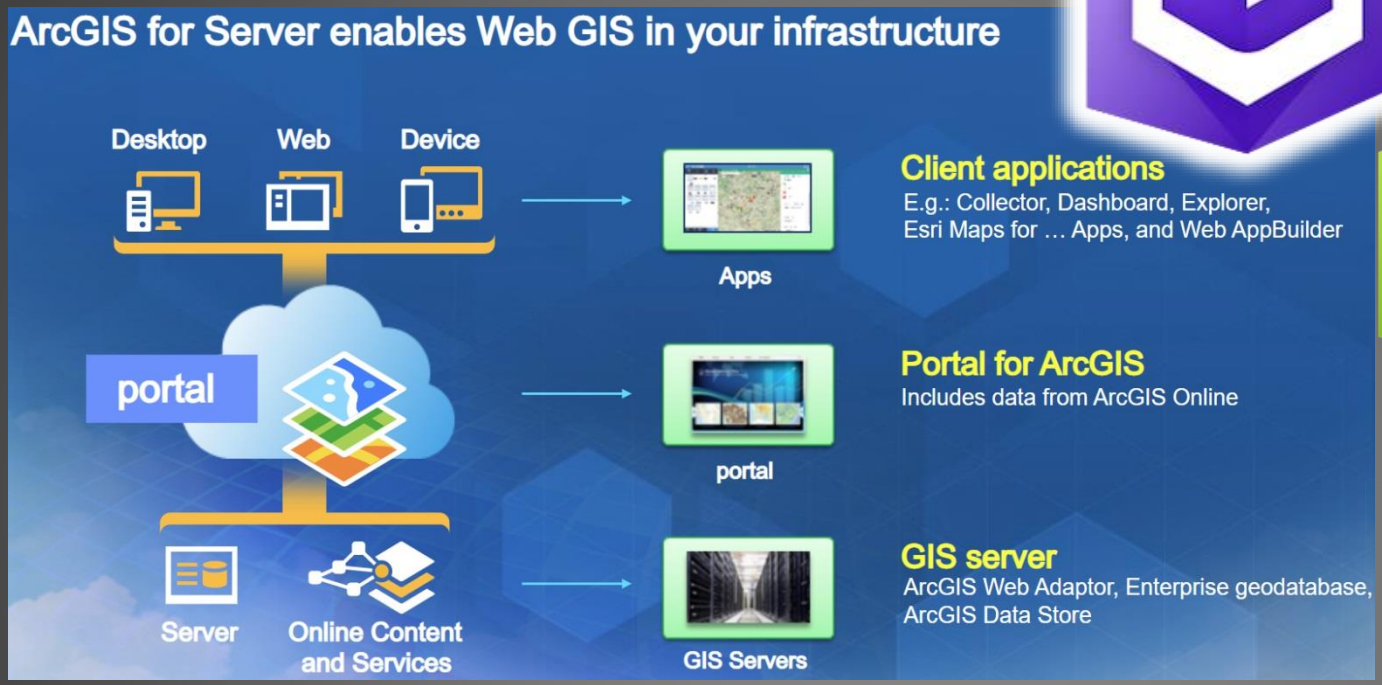
- Contracted GPSing
  - Water:
    - Hydrants
    - Valves
    - Other water features
- Contracted GIS
    - Electric database constructed
    - The "A" Team GPSed & gathered data
      - Lineman & Meter Reader GPSing
        - Excel Sheets – basic fields, unique numbers, tables brought into GIS
          - Unique number issues, field checks
          - No one keeping up with system changes
            - No workflow practices to catch them

GeoExplorer 6000

2016-2017

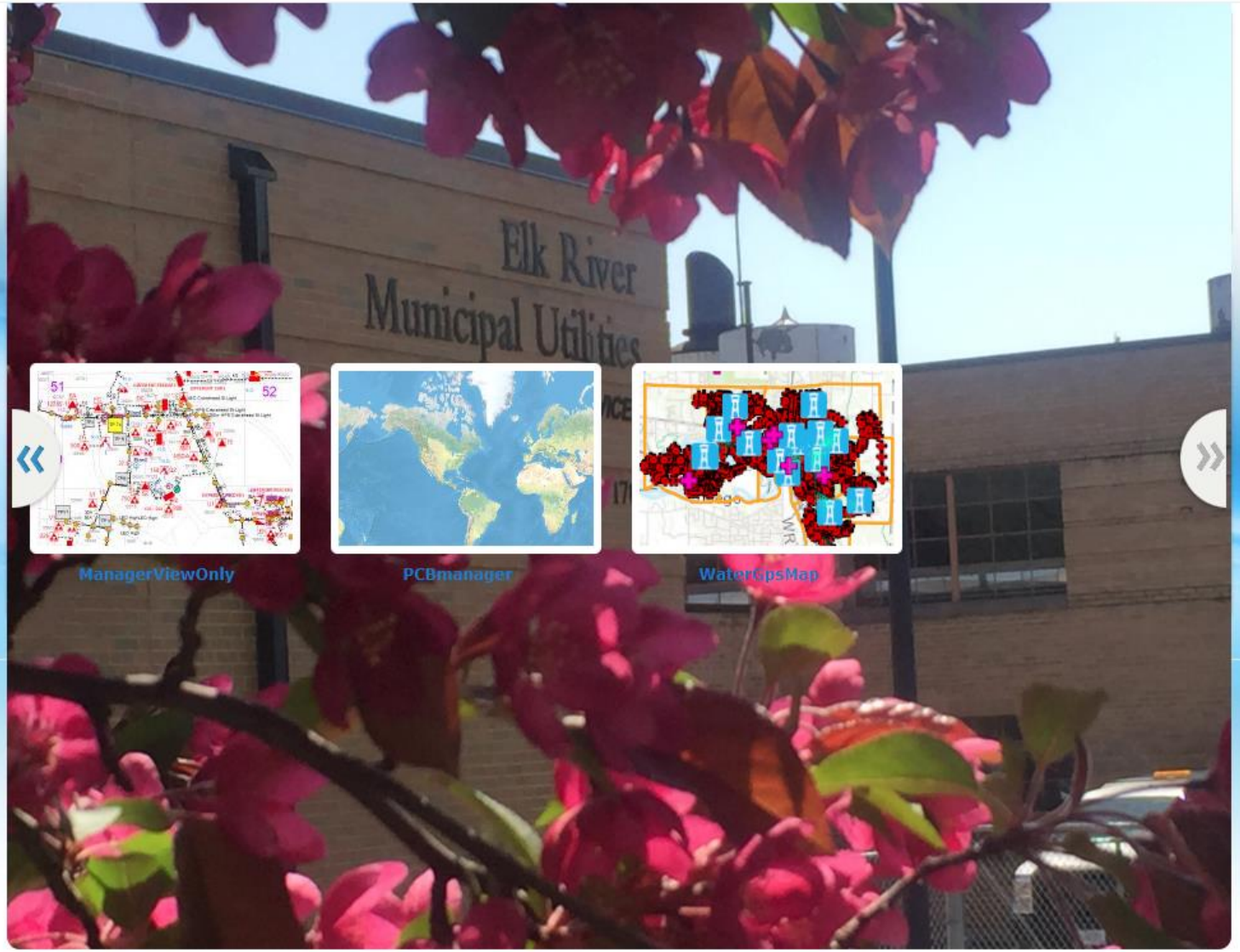
- GIS/Mapping Position Created
  - Brush the rust off & learn the latest
    - 10 years
      - Tech changes in GIS
        - Software & Hardware
- Learn Electric & Dug Into The Database
  - What's everything, what does it do, how does the map showcase each item
    - What is pertinent information?
    - If this, than that…
  - Communicated with Linemen/Foremen
    - What was useful for them in the field/office
      - What did we need/potentially need for data from the field?
        - Think outside the box
- Cleaned up the GIS & kept up with CAD
  - System continually grew through large territory acquisition & new builds
  - Tremendous learning opportunity

- Enterprise - 2017

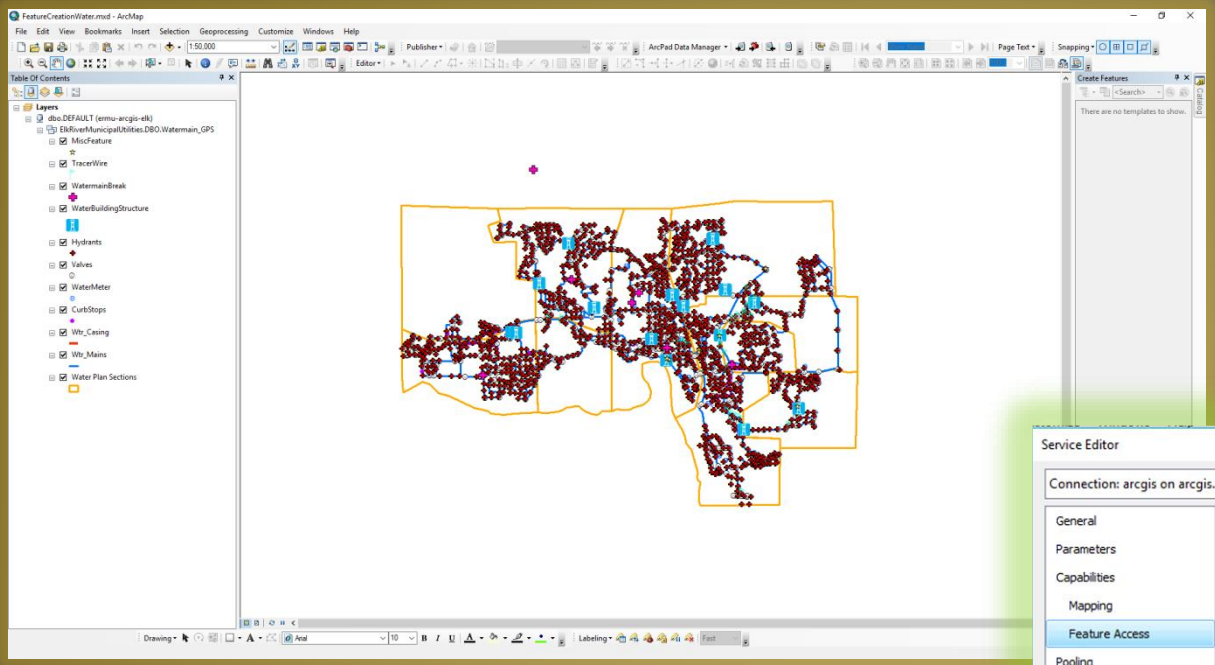


- Portal
  - Company Connection

ERMU's Portal - Website

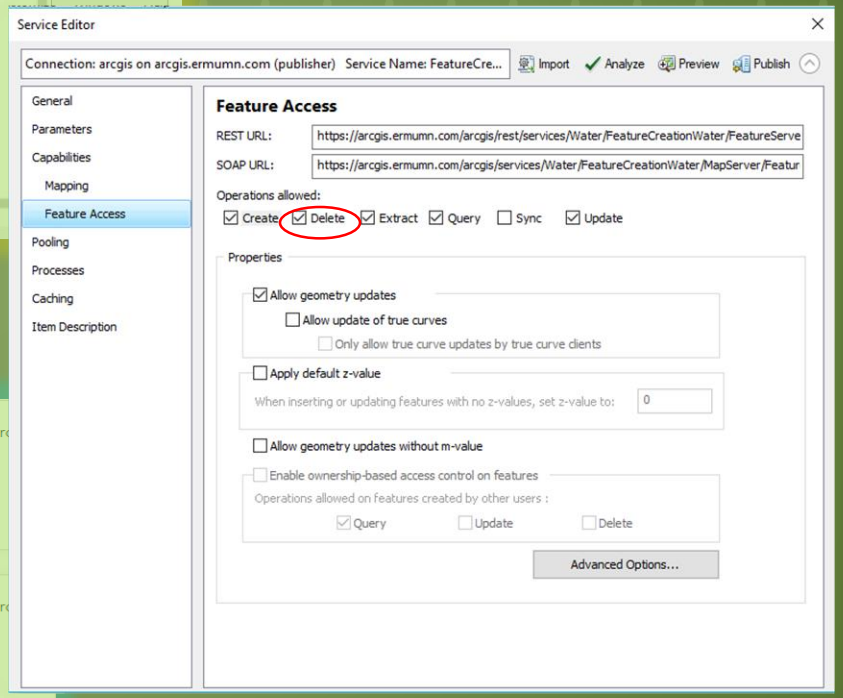


Publish Services To Portal

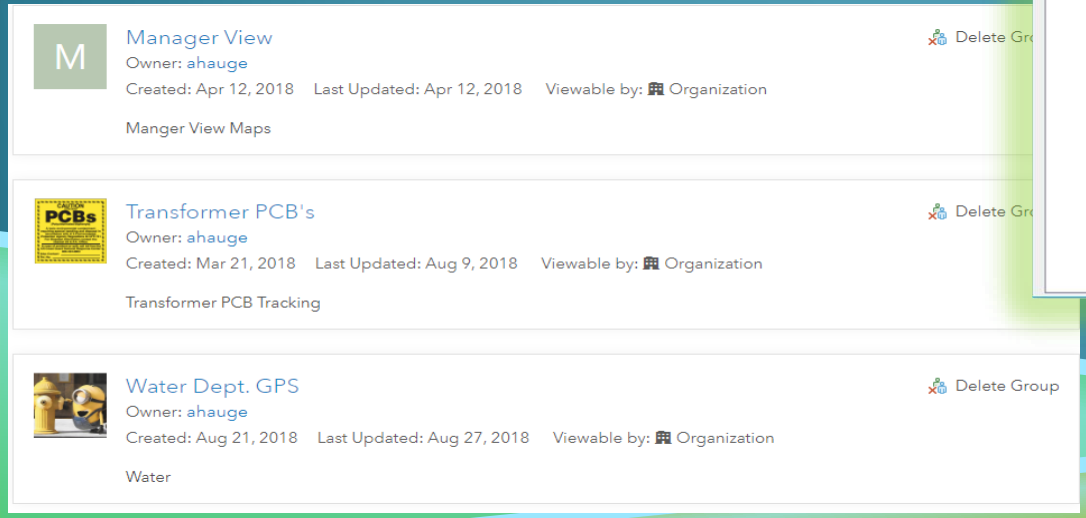


Publish a Features Map (editable items & a Background Map (items not to be edited by end user: GPSer or viewer), add both published maps to create a Portal Map & configure for the users. Pop-Ups (Labels), organize those fields), hide what they don't need.

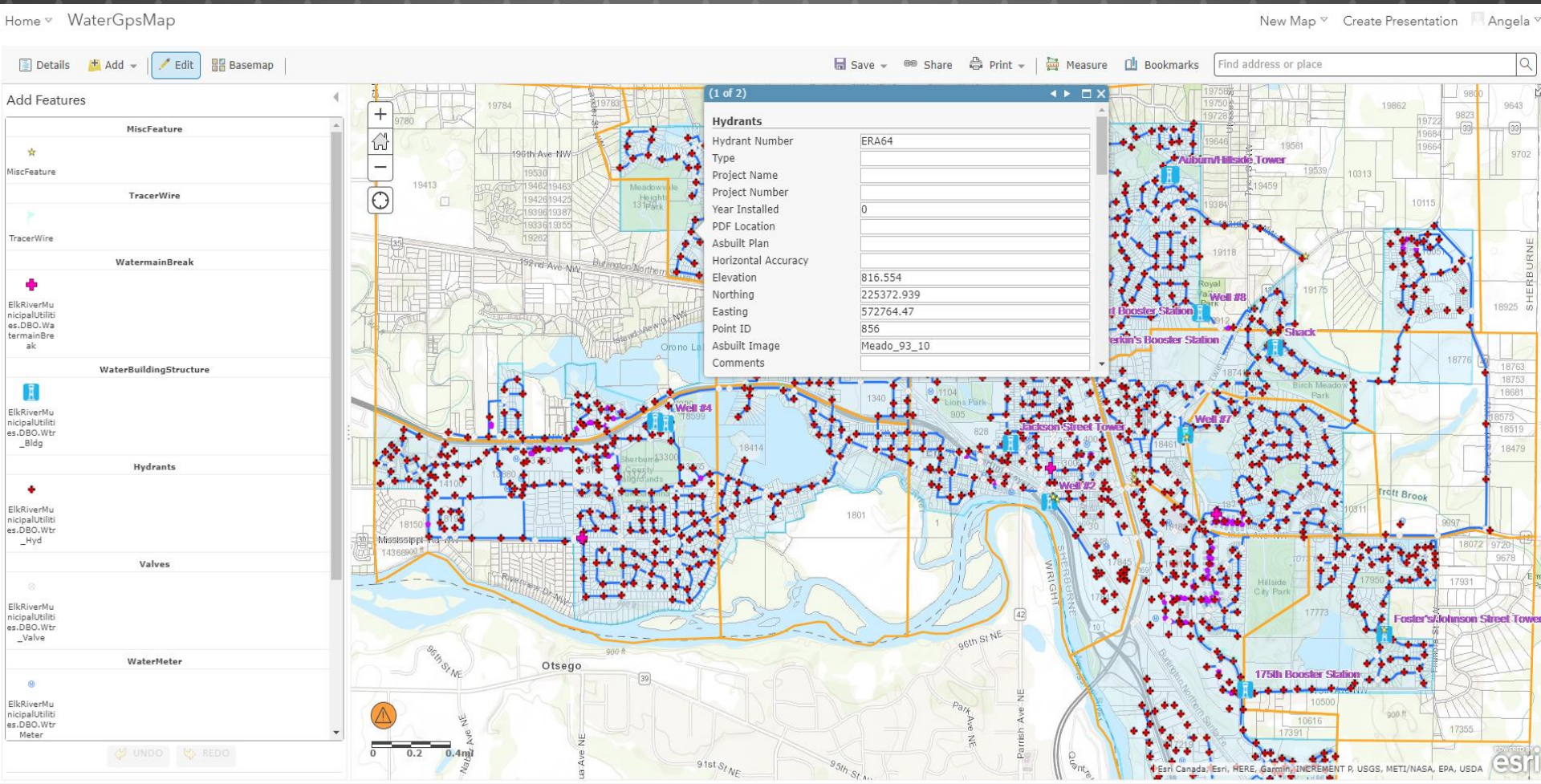
Manage Feature Editing



Allow Access



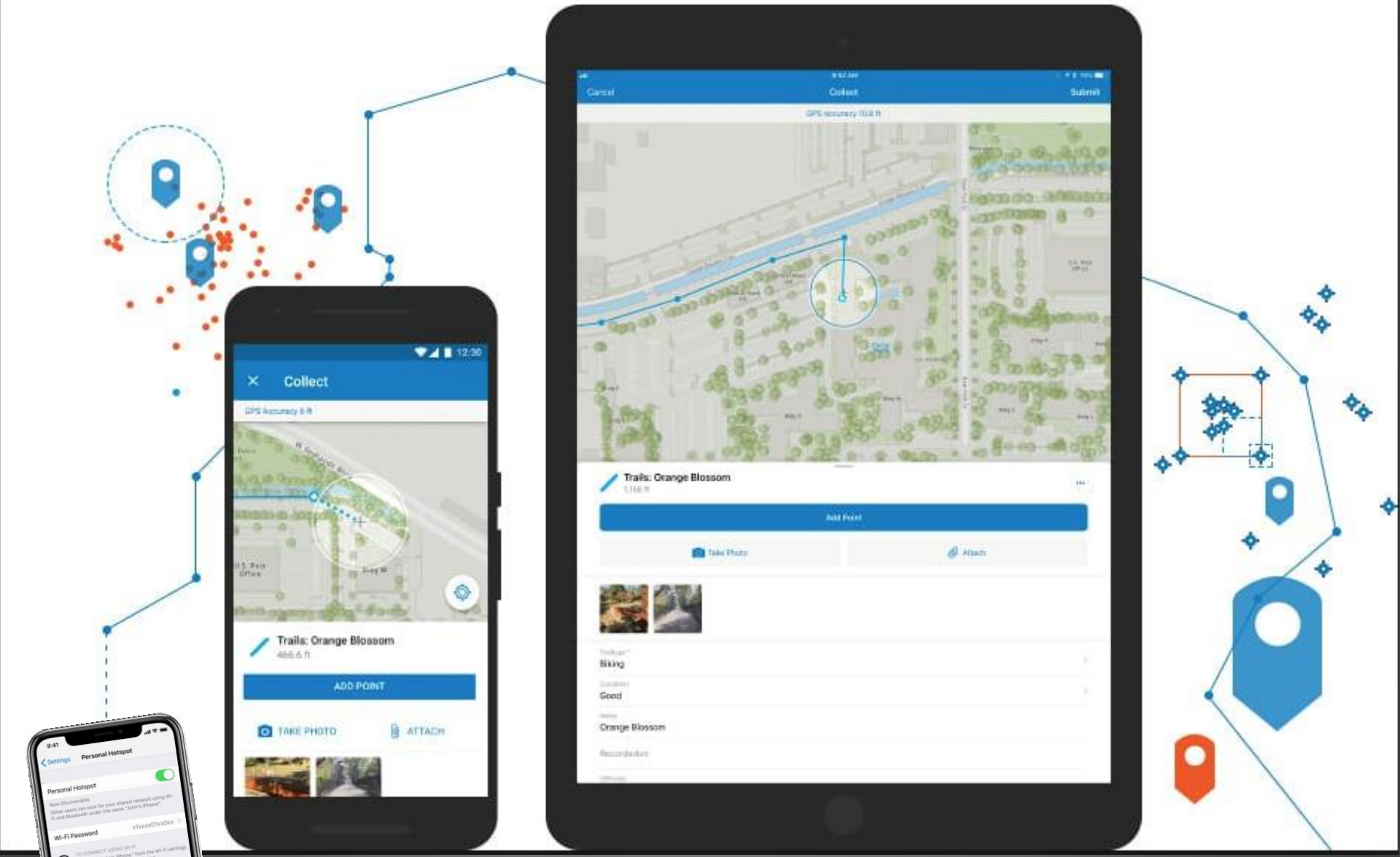
Collector – In The Field Editing



New Collector – Enable *Tracking* for certain fields if you want it to be a required data entry, some could be automatic….Timestamp, Date, User, etc…

- GPSing – Hardware & Software
  - Hardware
    - Cellphone – Hotspot to iPad
    - R1 Receiver – Connect to Cell
    - iPad – Operating Work Surface
  - Software
    - GIS Server - Portal
    - ArcMap
    - Collector App
    - GNSS Status App

ERMU GPS



Mobile Data via phone cell company

Or

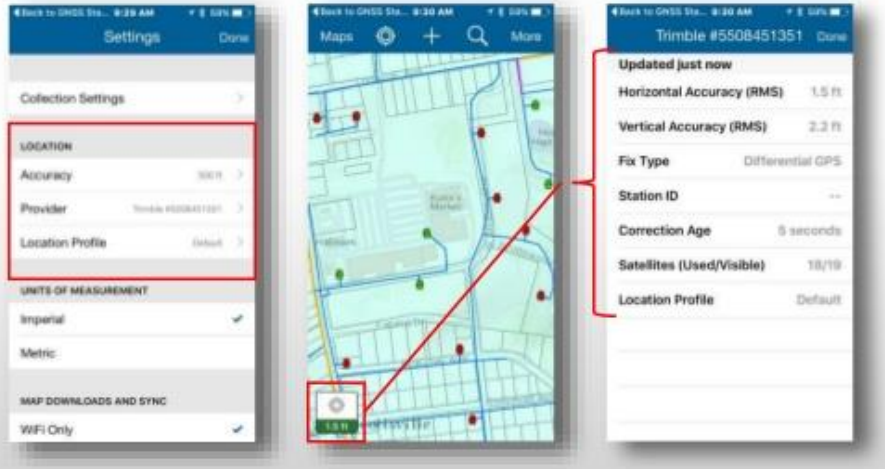
Hotspot from cellphone service

Wi-Fi to iPad from Cell

Bluetooth to iPad from R1 Receiver

GET THE MOST OUT OF YOUR TECHNOLOGY

High-Accuracy GNSS Receiver Support



Trimble released a rugged R1 GNSS Receiver for smartphones and tablets

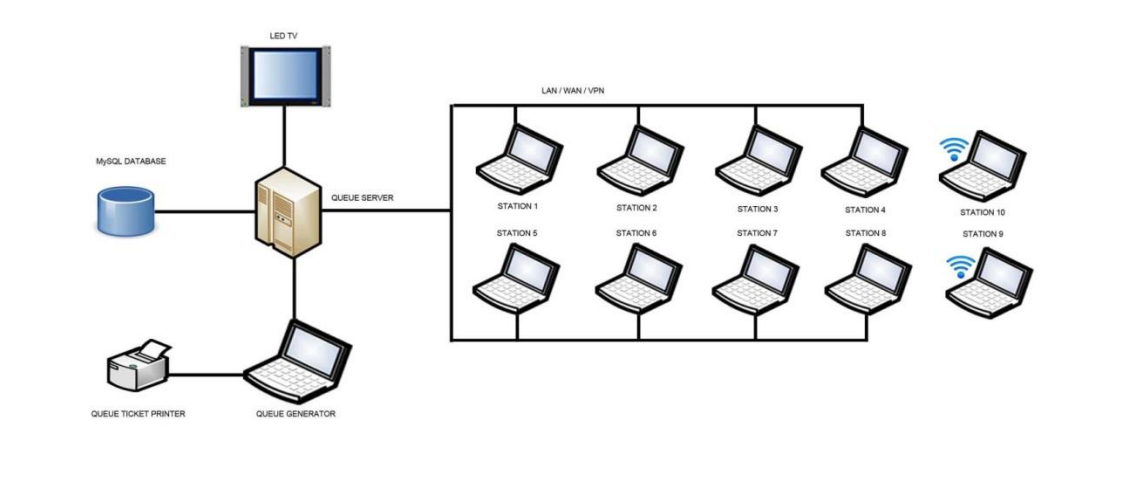
Receiver Firmware Update – April 6th

The R1 is compatible with **Android, iOS, Windows OS** and enables to achieve up to 50 cm accuracy using various correction sources (via IP or over **satellite**).

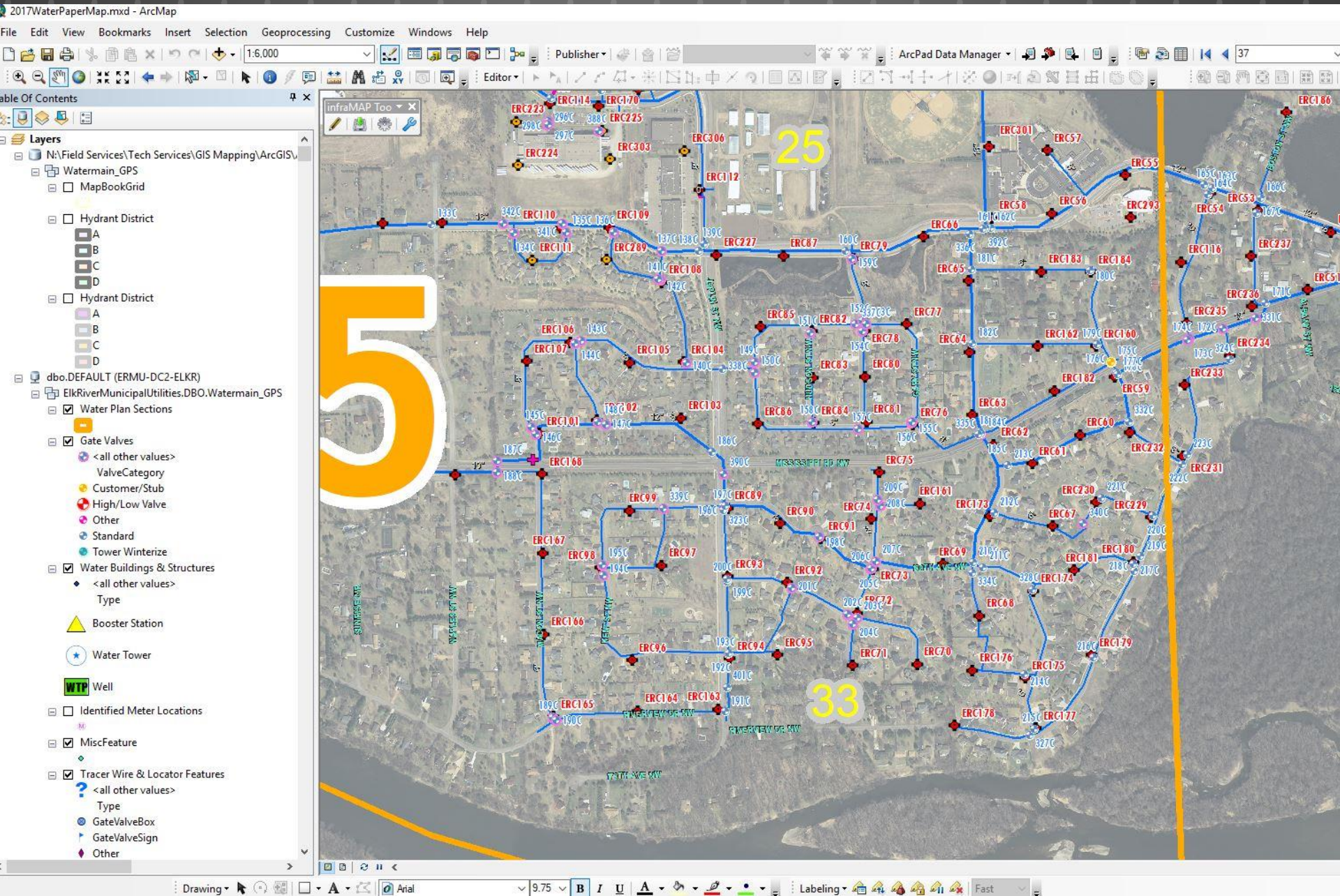
WATER – GIS USE

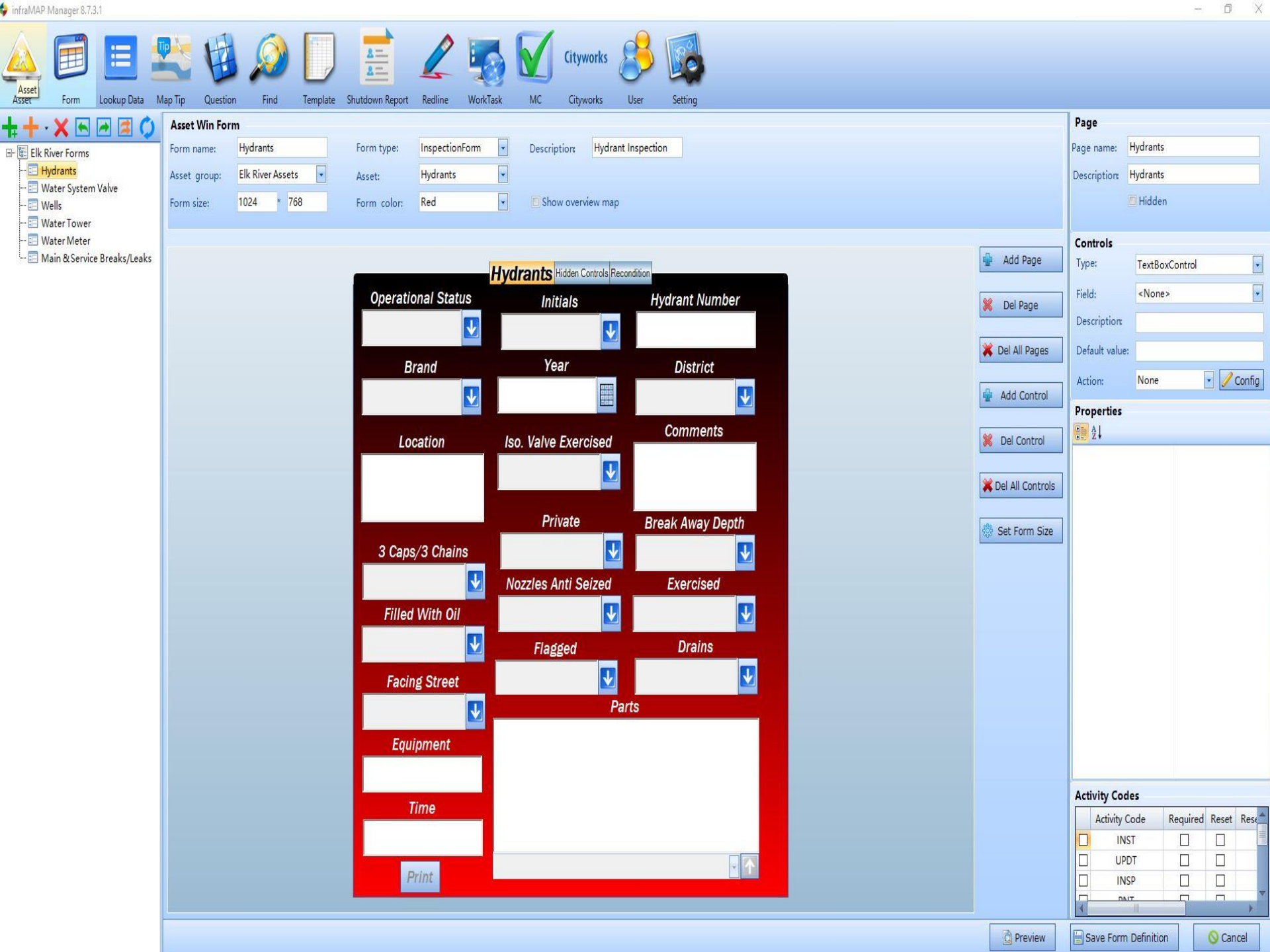
- InfraMap

  - Management, fieldworker & mapping interface
    - Data in Geodatabase on Server
      - Communicates by linking data pathways of feature fields in ArcMap from forms that you create in InfraMap

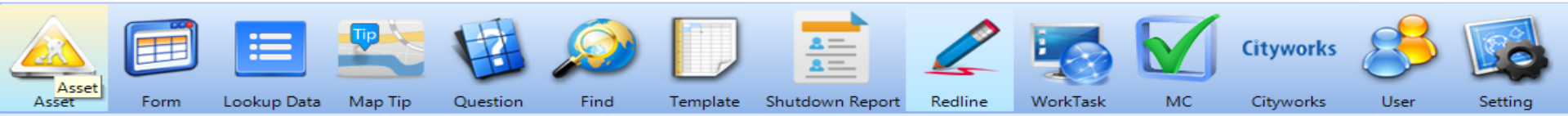


InfraMap


2017WaterPaperMap.mxd - ArcMap
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
Table Of Contents
Layers
N:\Field Services\Tech Services\GIS Mapping\ArcGIS\
Watermain_GPS
MapBookGrid
Hydrant District
A
B
C
D
Hydrant District
A
B
C
D
dbo.DEFAULT (ERMU-DC2-ELKR)
ElkRiverMunicipalUtilities.DBO.Watermain_GPS
Water Plan Sections
Gate Valves
<all other values>
ValveCategory
Customer/Stub
High/Low Valve
Other
Standard
Tower Winterize
Water Buildings & Structures
<all other values>
Type
Booster Station
Water Tower
WTP Well
Identified Meter Locations
MiscFeature
Tracer Wire & Locator Features
<all other values>
Type
GateValveBox
GateValveSign
Other
infraMAP Too
25
5
33


infraMAP Manager 8.7.3.1
Asset
Form
Lookup Data
Map Tip
Question
Find
Template
Shutdown Report
Redline
WorkTask
MC
Cityworks
Cityworks
User
Setting
Asset Win Form
Form name: Hydrants
Form type: InspectionForm
Description: Hydrant Inspection
Asset group: Elk River Assets
Asset: Hydrants
Form size: 1024 * 768
Form color: Red
Show overview map
Elk River Forms
Hydrants
Water System Valve
Wells
Water Tower
Water Meter
Main & Service Breaks/Leaks
Hydrants
Hidden Controls
Recondition
Operational Status
Initials
Hydrant Number
Brand
Year
District
Location
Iso. Valve Exercised
Comments
Private
Break Away Depth
3 Caps/3 Chains
Nozzles Anti Seized
Exercised
Filled With Oil
Flagged
Drains
Facing Street
Parts
Equipment
Time
Print
Add Page
Del Page
Del All Pages
Add Control
Del Control
Del All Controls
Set Form Size
Page
Page name: Hydrants
Description: Hydrants
Hidden
Controls
Type: TextBoxControl
Field: <None>
Description:
Default value:
Action: None
Config
Properties
Activity Codes
Activity Code
Required
Reset
INST
UPDT
INSP
Preview
Save Form Definition
Cancel

infraMAP Manager 8.7.3.1



Template: All Status: New

Type	Description	Created Date	Computer Name	Created By	File Path	Template Name
Contains:	Contains:	Equals:	Contains:	Contains:	Contains:	Contains:
New	add line	8/23/2018 1:23:19 PM	ERMU_MOBILE9	kolson	131795221991811436.jpg	WaterDistribution
New	remove valve	8/23/2018 1:22:55 PM	ERMU_MOBILE9	kolson	131795221755815786.jpg	WaterDistribution
New	remove valve	6/21/2018 2:52:50 PM	ERMU_MOBILE9	kolson	131740843704285434.jpg	WaterDistribution
New	remove valve	6/21/2018 1:54:00 PM	ERMU_MOBILE9	kolson	131740808405435902.jpg	WaterDistribution
New	add gate valve	6/21/2018 1:40:44 PM	ERMU_MOBILE9	kolson	131740800442499688.jpg	WaterDistribution
New	remove valve	6/21/2018 11:15:54 AM	ERMU_MOBILE9	kolson	131740713544735622.jpg	WaterDistribution
New	disregard add valve curbston	6/21/2018 11:01:50 AM	ERMU_MOBILE9	kolson	131740705098251058.jpg	WaterDistribution
New	remove valve it is hydrant isolation v...	6/21/2018 10:33:54 AM	ERMU_MOBILE9	kolson	131740688339735374.jpg	WaterDistribution
New	disregard add valve hydrant isolation valve	6/21/2018 10:26:17 AM	ERMU_MOBILE9	kolson	131740683768868333.jpg	WaterDistribution
New	add lines see sheet	6/20/2018 2:00:00 PM	ERMU_MOBILE9	kolson	131739947998416211.jpg	WaterDistribution
New	add lines see sheet	6/20/2018 1:55:43 PM	ERMU_MOBILE9	kolson	131739945434809876.jpg	WaterDistribution
New	add gate valve	6/19/2018 1:47:28 PM	ERMU_MOBILE9	kolson	131739076479951474.jpg	WaterDistribution
New	move line off of yards see sheet	6/19/2018 11:27:47 AM	ERMU_MOBILE9	kolson	131738992675166619.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 11:02:09 AM	ERMU_MOBILE9	kolson	131738977289888688.jpg	WaterDistribution
New	move line off of house see sheet	6/19/2018 10:59:40 AM	ERMU_MOBILE9	kolson	131738975797915086.jpg	WaterDistribution
New	add lines see sheet	6/19/2018 10:57:23 AM	ERMU_MOBILE9	kolson	131738974429338275.jpg	WaterDistribution
New	remove lines see sheet	6/19/2018 10:53:40 AM	ERMU_MOBILE9	kolson	131738972198231935.jpg	WaterDistribution
New	add lines see sheet	6/19/2018 10:53:09 AM	ERMU_MOBILE9	kolson	131738971889489911.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 10:36:28 AM	ERMU_MOBILE9	kolson	131738961882457726.jpg	WaterDistribution
New	add lines see sheet	6/19/2018 10:31:39 AM	ERMU_MOBILE9	kolson	131738958990843152.jpg	WaterDistribution
New	add line see sheet	6/19/2018 10:28:25 AM	ERMU_MOBILE9	kolson	131738957052862691.jpg	WaterDistribution
New	move valve see sheet and measure...	6/19/2018 10:25:31 AM	ERMU_MOBILE9	kolson	131738955312068536.jpg	WaterDistribution
New	add gate valve	6/19/2018 10:24:18 AM	ERMU_MOBILE9	kolson	131738954587212536.jpg	WaterDistribution
New	move line off of garage see sheet	6/19/2018 8:55:23 AM	ERMU_MOBILE9	kolson	131738901236523823.jpg	WaterDistribution
New	add line see sheet	6/19/2018 8:52:53 AM	ERMU_MOBILE9	kolson	131738899729525178.jpg	WaterDistribution
New	add valve see sheet	6/19/2018 8:49:49 AM	ERMU_MOBILE9	kolson	131738897895549959.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 8:46:44 AM	ERMU_MOBILE9	kolson	131738896046030713.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 8:45:35 AM	ERMU_MOBILE9	kolson	131738895347481489.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 8:44:32 AM	ERMU_MOBILE9	kolson	131738894717572385.jpg	WaterDistribution
New	add line see sheet	6/19/2018 8:43:23 AM	ERMU_MOBILE9	kolson	131738894035871190.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 8:41:57 AM	ERMU_MOBILE9	kolson	131738893169309671.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 8:39:44 AM	ERMU_MOBILE9	kolson	131738891846815350.jpg	WaterDistribution
New	move line off of yard see sheet	6/19/2018 8:37:59 AM	ERMU_MOBILE9	kolson	131738890792081496.jpg	WaterDistribution
New	Add main	6/18/2018 3:21:18 PM	ERMU_MOBILE5	evolk	131738268782431659.jpg	WaterDistribution
New	add valve	6/15/2018 2:00:29 PM	ERMU_MOBILE5	evolk	131735628293382267.jpg	WaterDistribution

infraMAP Manager 8.7.3.1

Asset | Form | Lookup Data | Map Tip | Question | Find | Template | Shutdown Report | Redline | WorkTask | MC | Cityworks | User | Setting

- Hydrant Questions
  - Total Hydrants
  - Hydrants Needing Inspection
  - Hydrants Inspected This Year
  - Inspected Hydrant Date Range
  - Hydrants Needing Repair
  - Hydrants 30 Years Older
  - Private Hydrant
  - Winterize Hydrant
- Valve Questions
- Wells Questions
- Meter Questions
- Main Leaks/Breaks

Name: Hydrants Needing Inspection

Description: Located Hydrants Needing Inspection

Asset Group: Elk River Assets

Asset: Hydrants

Work Task Table:

Asset Display Color:

Button Image:

Query Type: None

SQL Statement:

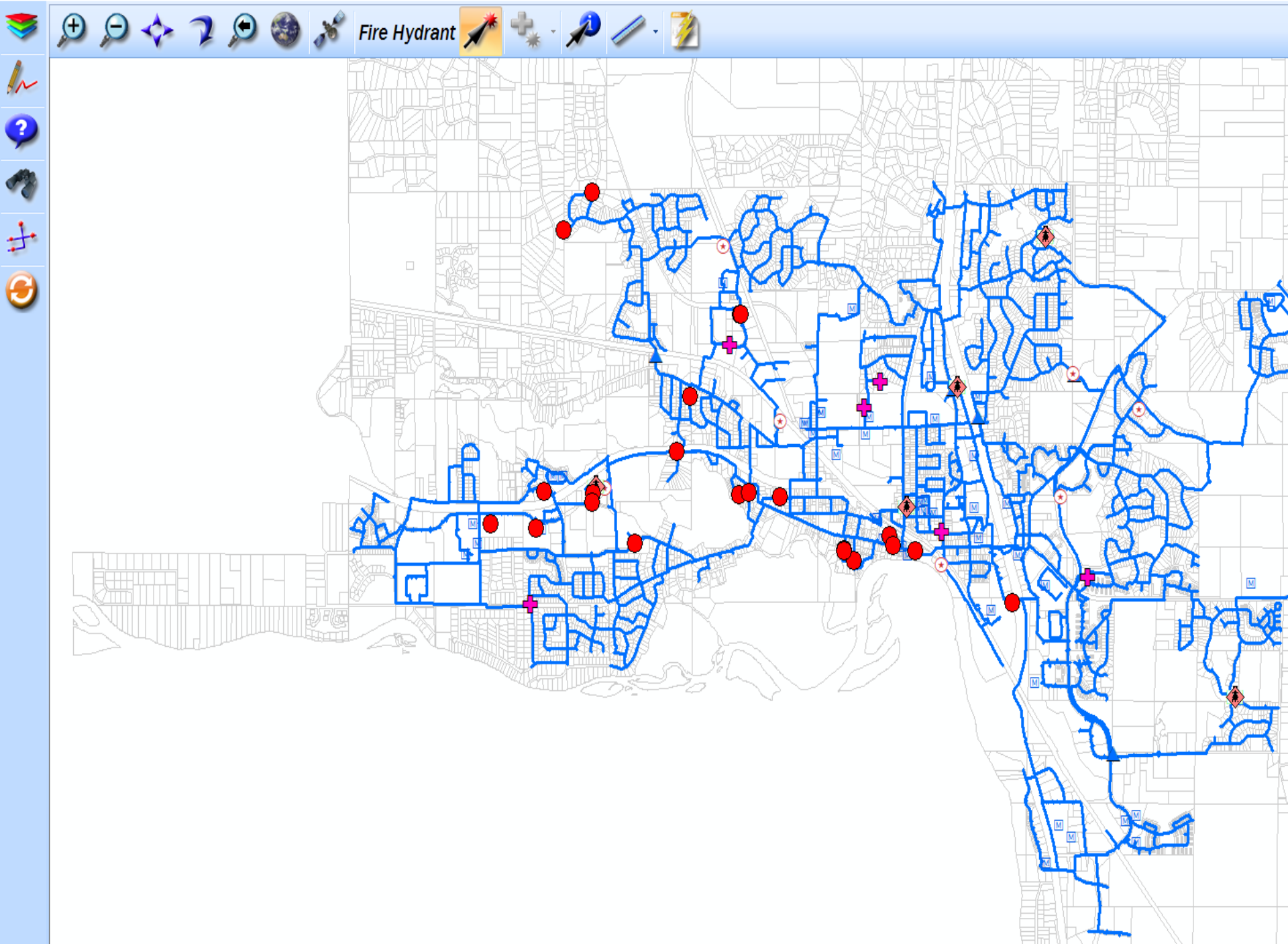
```
InspectionDate <= (Current_Date - 365) OR InspectionDate IS NULL
```

Display the total based on a field

Letter Template:

SQL Query

Save Question Definition | Cancel


Fire Hydrant

Answers and Reports

Show Current View Counts

Hydrant Questions

Create Report

Create Work Task

(1,233) Locate All Hydrants

(847) Located Hydrants Needing...

(366) Located Inspected Hydrant...

(0) Located Inspected Hydrants...

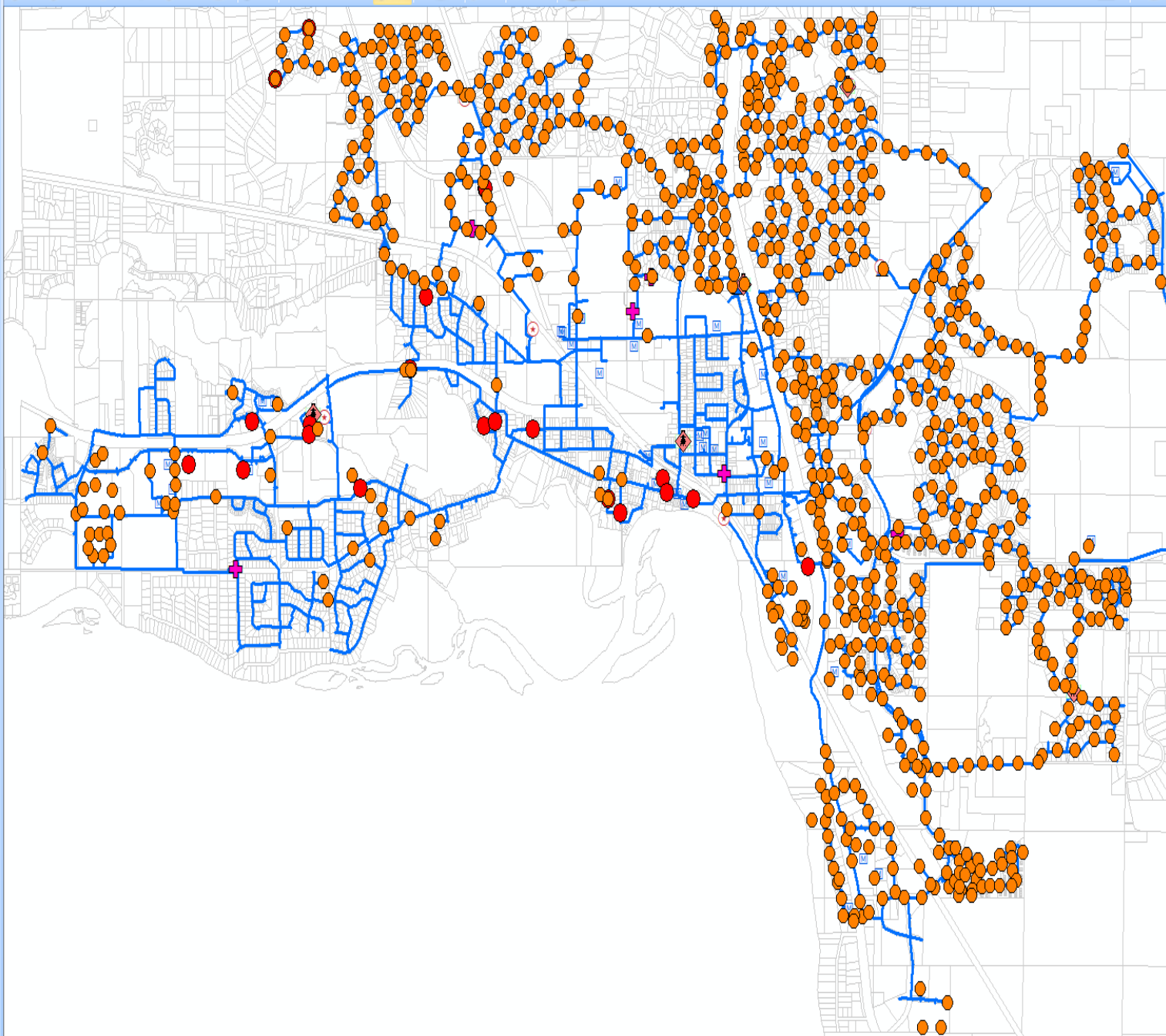
(6) Locate Hydrants Needing Rep...

(0) Locate Hydrants That Are 30...

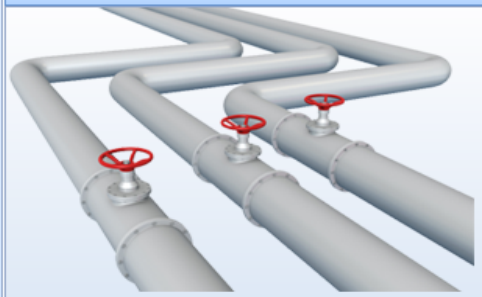
(238) Private Hydrants

(25) Winterize Hydrant

Fire Hydrant



Pipeline Isolation



This tool will isolate a section of pipeline and display the affected assets.

Tap a section of pipe on the map to begin.

Reset Pipeline Trace

Valves to Close:

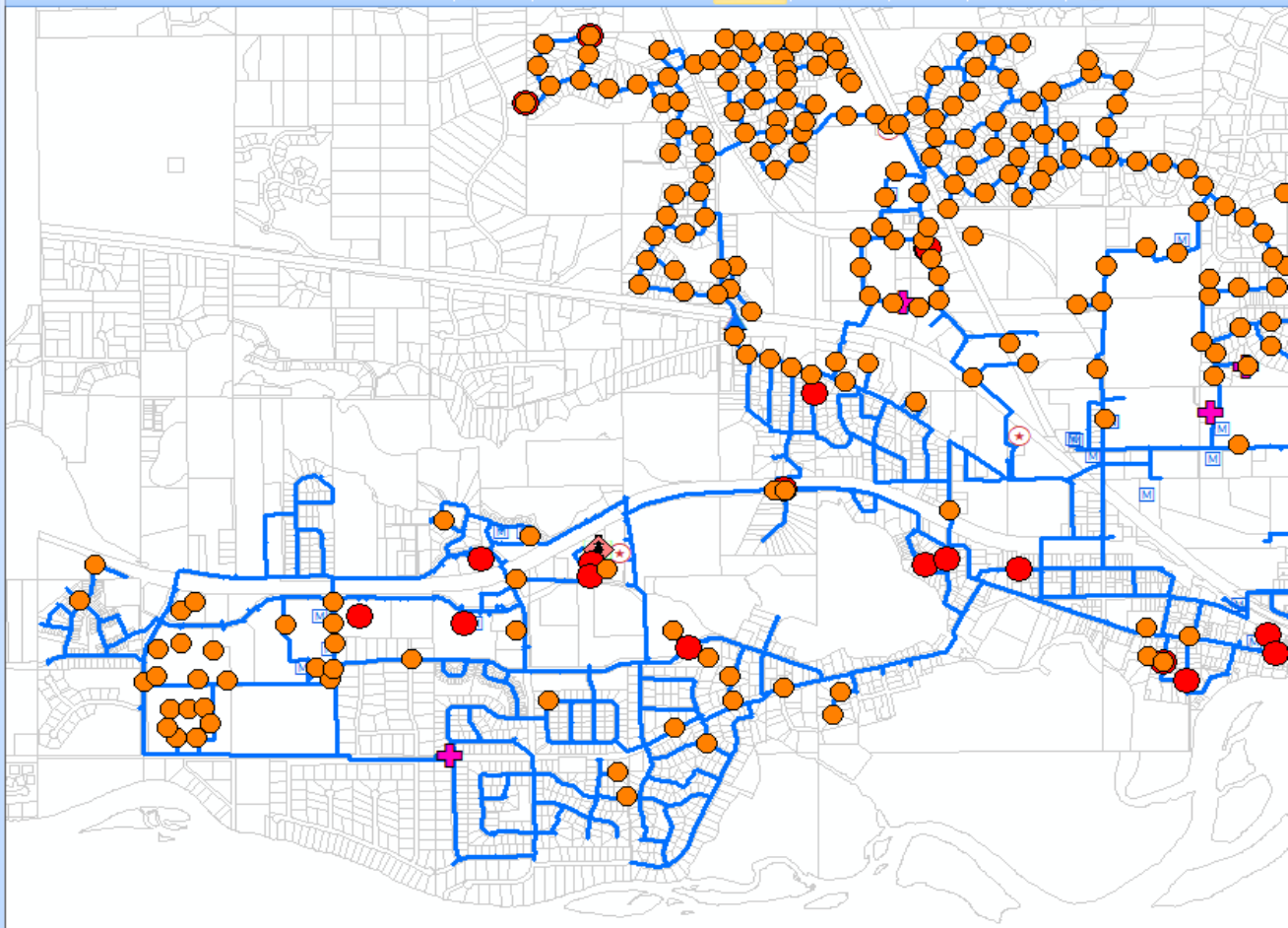
Hydrants Affected:

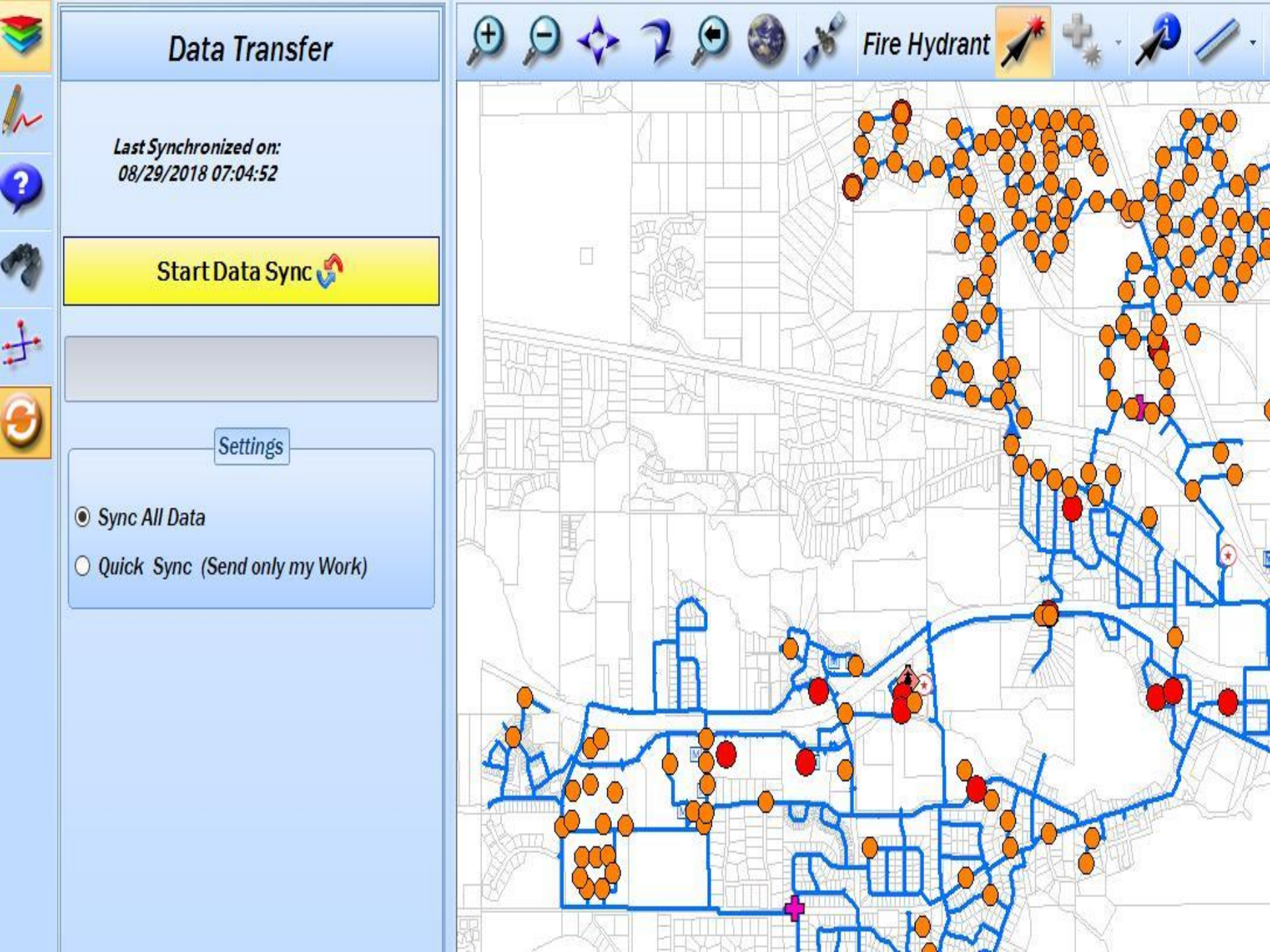
Services Affected:

Main Affected:

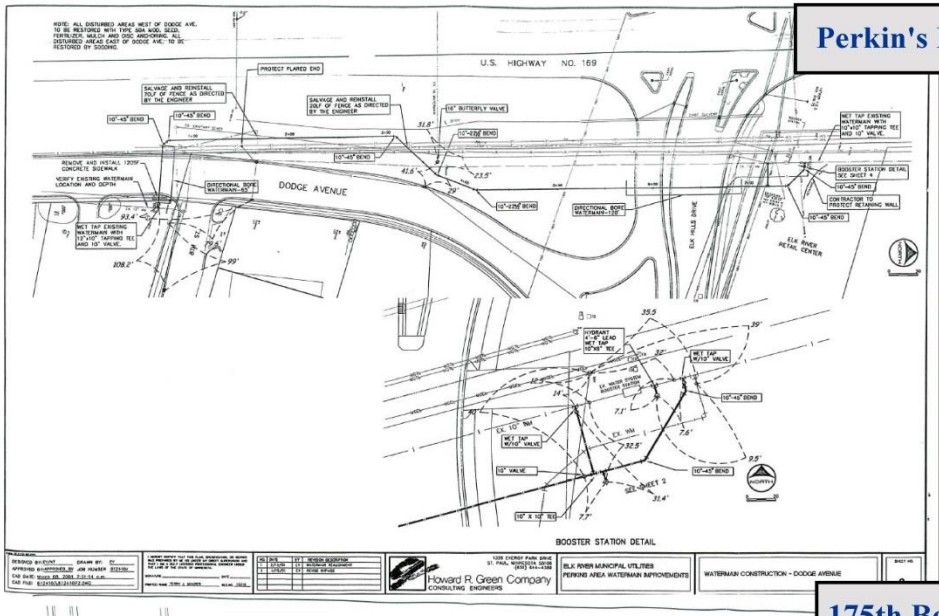
Lateral Affected:

Fire Hydrant



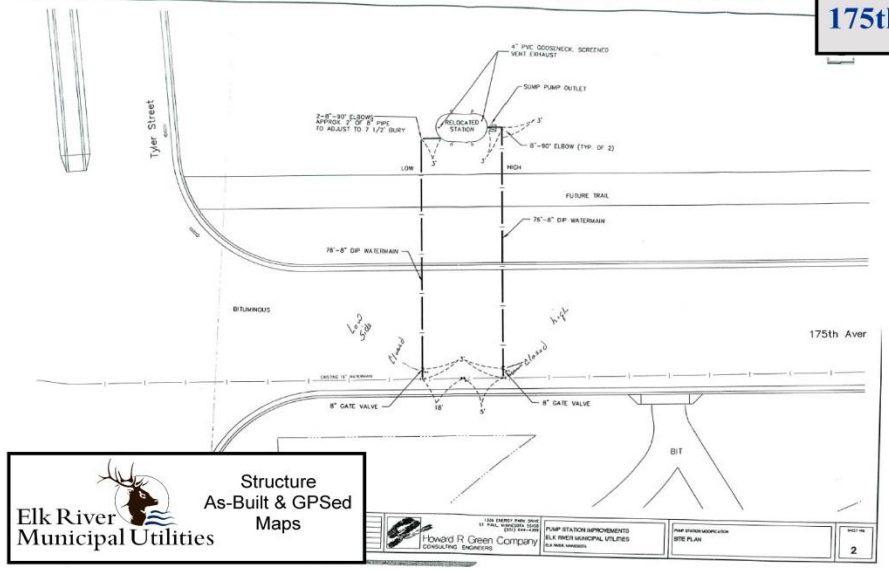

Data Transfer
Last Synchronized on:
08/29/2018 07:04:52
Start Data Sync
Settings
Sync All Data
Quick Sync (Send only my Work)
Fire Hydrant

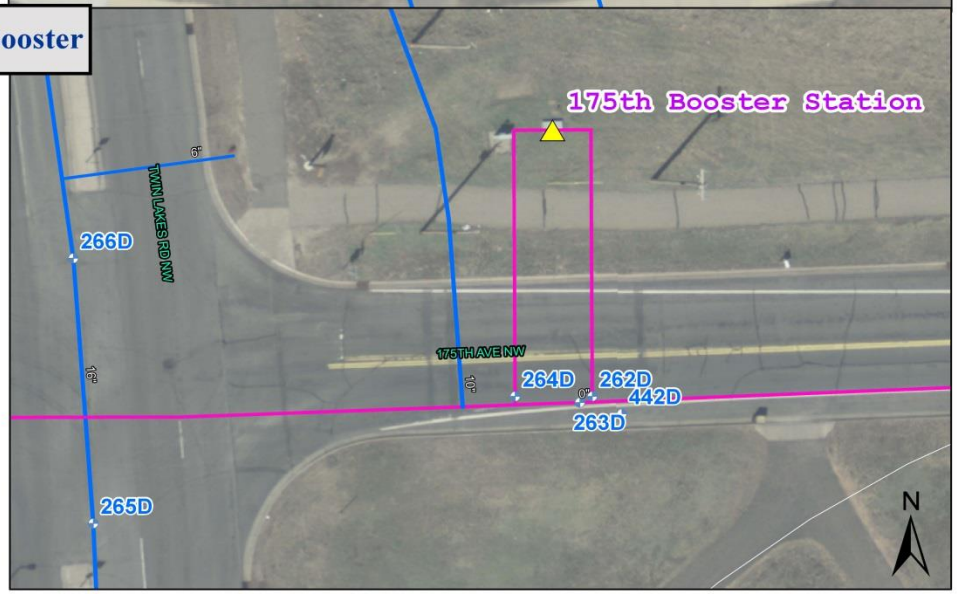
Media – Print/Publishing



Perkin's Booster

175th Booster

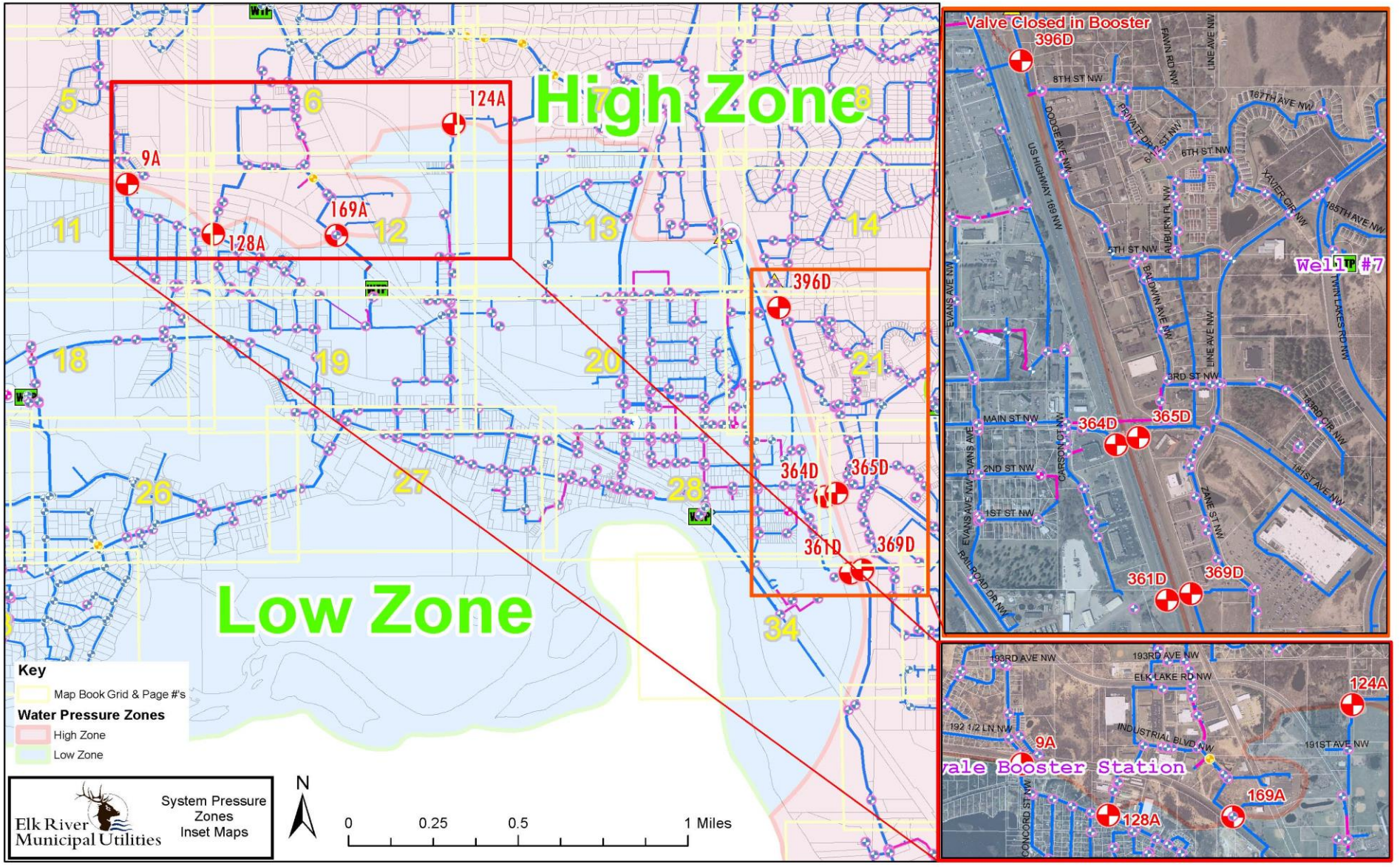




Elk River Municipal Utilities

Structure As-Built & GPSed Maps

ERMU's Water Map Book Page



High Zone
Low Zone
A
B
C
Low Zone
High Zone
Map Key
Pressure Zones
High Zone
Hydrant District
Low Zone
Tracer Wire & Locator Features
<all other values>
Gate Valves
<all other values>
ValveCategory
Customer/Stub
High/Low Valve
Other
Type
GateValveBox
GateValveSign
Other
SnakePit
WaterMainLocatorSign
Watermains
6" RAW
10" - 24" RAW
Abandoned Line
Unknown Size
2"
4"- 8"
10" - 24"
N
ydrants
ivate, Winterize
<all other values>
Hydrant Needs GIS Data Entered
Standard Hydrant
tandard - Winterize Hydrant

BUILD THE FOUNDATION

- Communication is Key
  - GIS opens the door to so many options
    - You have to build it that way
- Field creation & planning will save so much time!
  - Do the groundwork up front!
  - Think about every potential piece of data on each piece of equipment/material/data calculated in the field
    - Domain/subtype creation
      - Write it down
    - Fields for comments/GIS comments/Mtc or repair comments (Flag Users)
    - Organize fields in Portal & Collector
      - ** Keep the order**
        - You'll need it! Trust me ☺
- Damage/Recovery Plan
  - Fail-Safes in place with IT
  - Regular database maintenance
    - Compress regularly, Copy databases for backup & be alert to database signs of corruption
      - VERY Slow, issues with snapping, glitchy items of concern
  - Regular Server maintenance/updates
    - Ours is copied every night automatically – Backup Server
    - Have a plan in place to not forget things that will save you from issues later

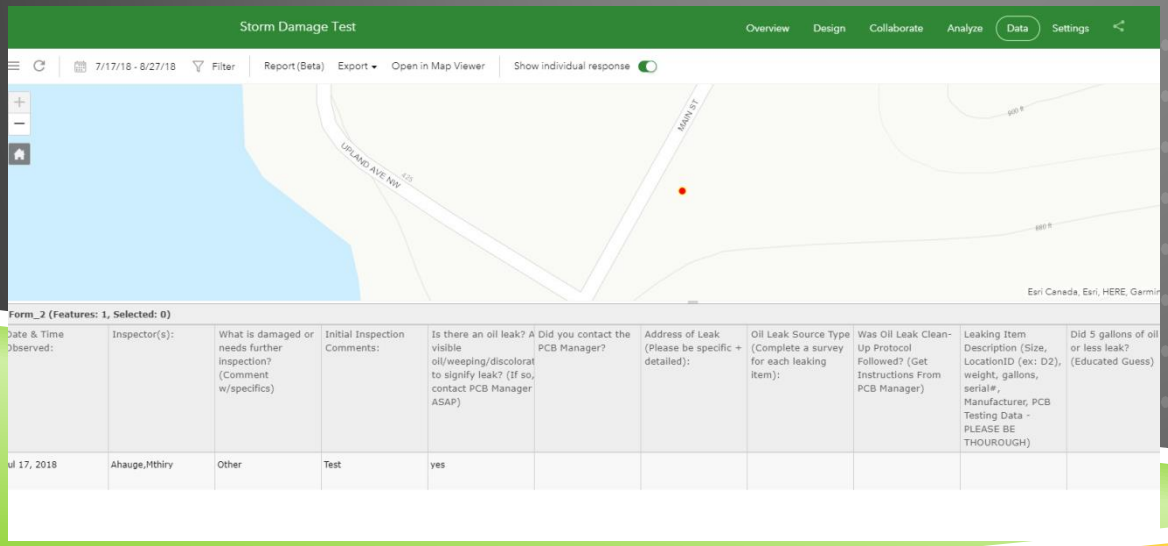
MAPPING APPS & EXTENSIONS

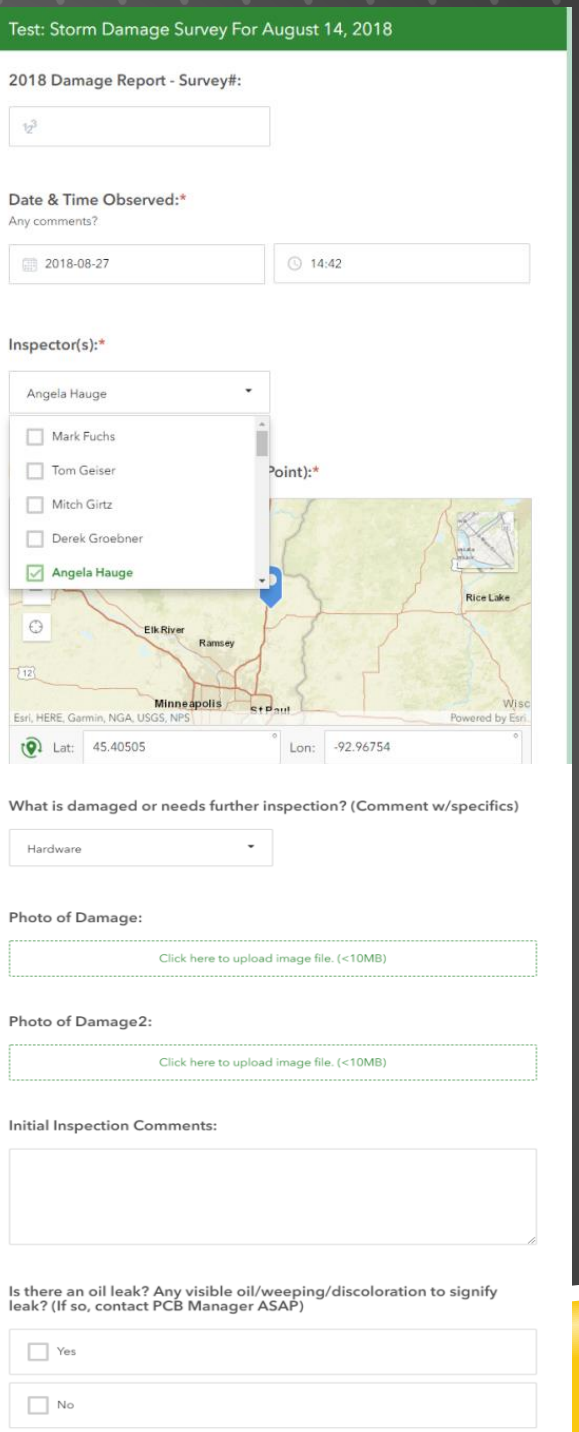
- In Use
  - Collector, GNSS App, InfraMap
- In The Works
  - Survey123 & StoryMaps
- Future Use
  - AppSuite, Sites, ArcGIS Hub, Insights & Dashboard
- Beneficial To Industry
  - Workforce (ERMU won't need – NISC)
    - Assign tasks, locational reference & record maintenance/repair activities

SURVEY123

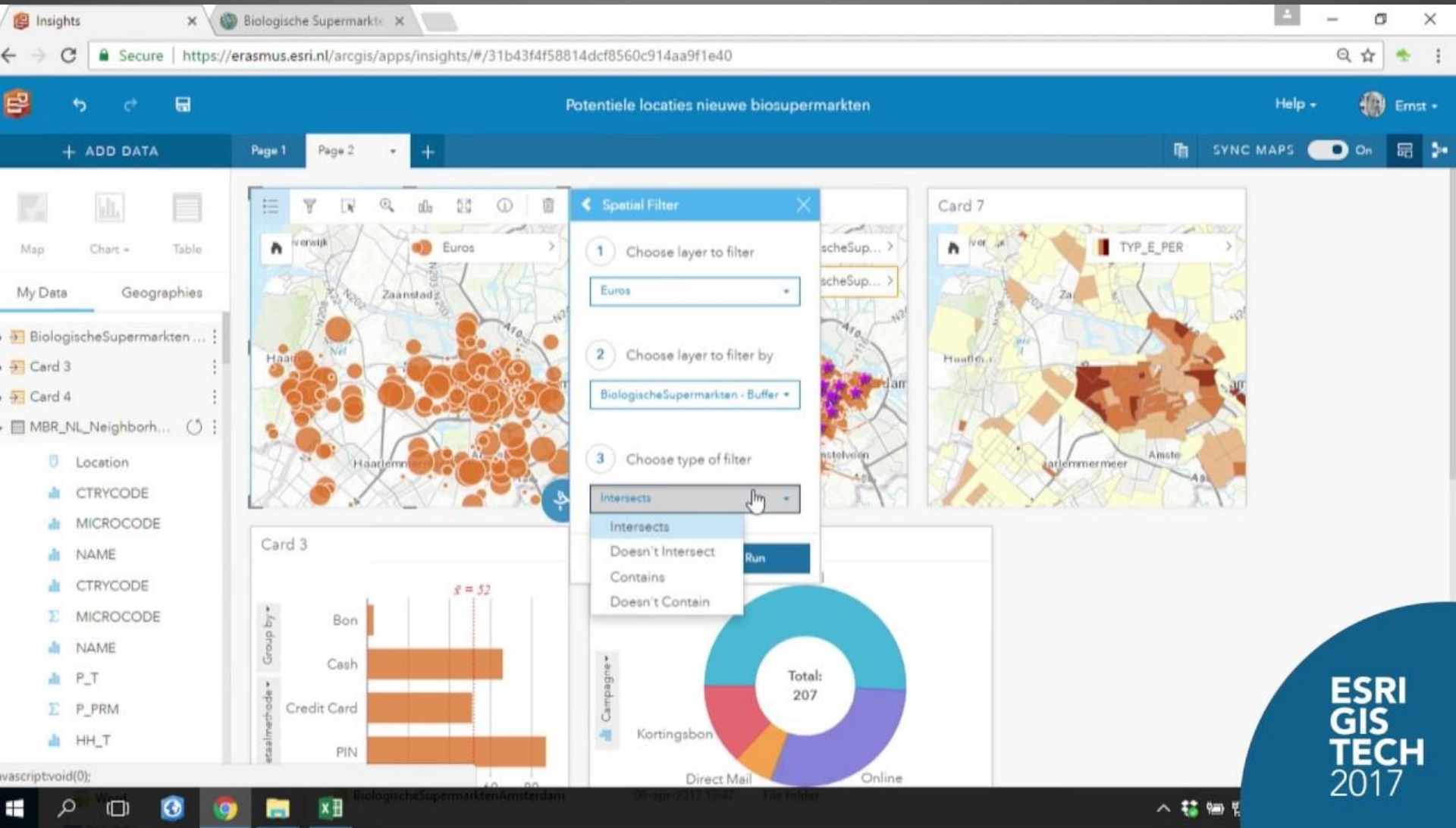
	A	B	C	I	J	K	L
1	type	name	label	appearance	default	readonly	relevant
2	integer	DamageReportNumber_2018	2018 Damage Report - Survey#:	hide-input			
3	dateTime	Survey123DateTime	Date & Time Observed:		now()		
4	select_multiple Employ	Employee	Inspector(s):	minimal			
5	geopoint	DamageLocation	Location of Damage/Concern (Geo Point):				
6	select_multiple Damag	DamagedItem	What is damaged or needs further inspection? (Comment w/specifics)	minimal			
7	image	DamagePhoto1	Photo of Damage:				
8	image	DamagePhoto2	Photo of Damage2:				${DamagePhoto1}
9	text	Survey123Comments	Initial Inspection Comments:	multiline			
10							
11	select_multiple yes_no	OilLeakYNpcb	Is there an oil leak? Any visible oil/weeping/discoloration to signify leak? (If so, contact PCB Manager ASAP)				
12	select_one yes_no	ContactPCBmgr	Did you contact the PCB Manager?				${OilLeakYNpcb}='Yes'
13							
14	begin group	GroupOilLeakPCB	Oil Leak - PCB Management	compact			${OilLeakYNpcb}='Yes'
15	text	AddressOilLeakPCB	Address of Leak (Please be specific + detailed):				
16	select_multiple OilLeak	TransformerType	Oil Leak Source Type (Complete a survey for each leaking item):				
17	select_one yes_no	LeakProtocolAdherence	Was Oil Leak Clean-Up Protocol Followed? (Get Instructions From PCB Manager)				
18	text	LeakingItemDescription	Leaking Item Description (size, LocationID (ex: D2), weight, gallons, serial#, Manufacturer, PCB Testing Data - PLEASE BE THOUROUGH)	multiline			
19	select_one yes_no	AmountOilLeaked	Did 5 gallons of oil or less leak? (Educated Guess)				
20	image	LeakPhotoPCB	Photo of Leak:				
21	image	LeakPhotoPCB2	Photo of Leak2:				${LeakPhotoPCB}
22	image	LeakCleanupPhoto	Photo of Site Cleaned - Final:				
23	image	LeakCleanupPhoto2	2nd Photo of Site Cleaned - Final:				${LeakCleanupPhoto}
24	end group						
25							
26							
27							
28	select_multiple yes_no	CustomerUtilNeedsContact	Does a customer or another utility need to be contacted to resolve an issue/to notify them of situation pertaining to THIS damage survey?				
29	begin group	GroupCustUtilContact	Customer/Utility/Owner Contact	compact			${CustomerUtilNeedsContact}='Yes'
30	text	AddressNameCustomerContact	Address(es) of Customers That Need/Had Contact From Damage of This Damaged Item Location:				
31	select_multiple Custon	CustomersUtilsToContact	Who Needs/Needed To Be Contacted?				
32	select_multiple Custon	CustomerContacted	Customer Contacted?				
33	dateTime	CustomerContactedDateTime	When Was Contact Made/Attempted?				
34	text	CustomerOrRutilityContactComm	Customer or Utility Contact Comments (if other contact methods/attempts were made place detail in comments):	multiline			
35	select_one yes_no	CustomerUtilityFollowUpNeeded	Follow Up or Inspection Needed?				

survey / choices / settings / types





INSIGHTS



ESRI GIS TECH 2017

Palm Springs Map Tour

A selection of cool places to discover in this fantastic desert resort.

A story map

1 Indian Canyons

2 Indian Canyons Golf Resort

3 Elrod House

4 Palm Canyon Drive

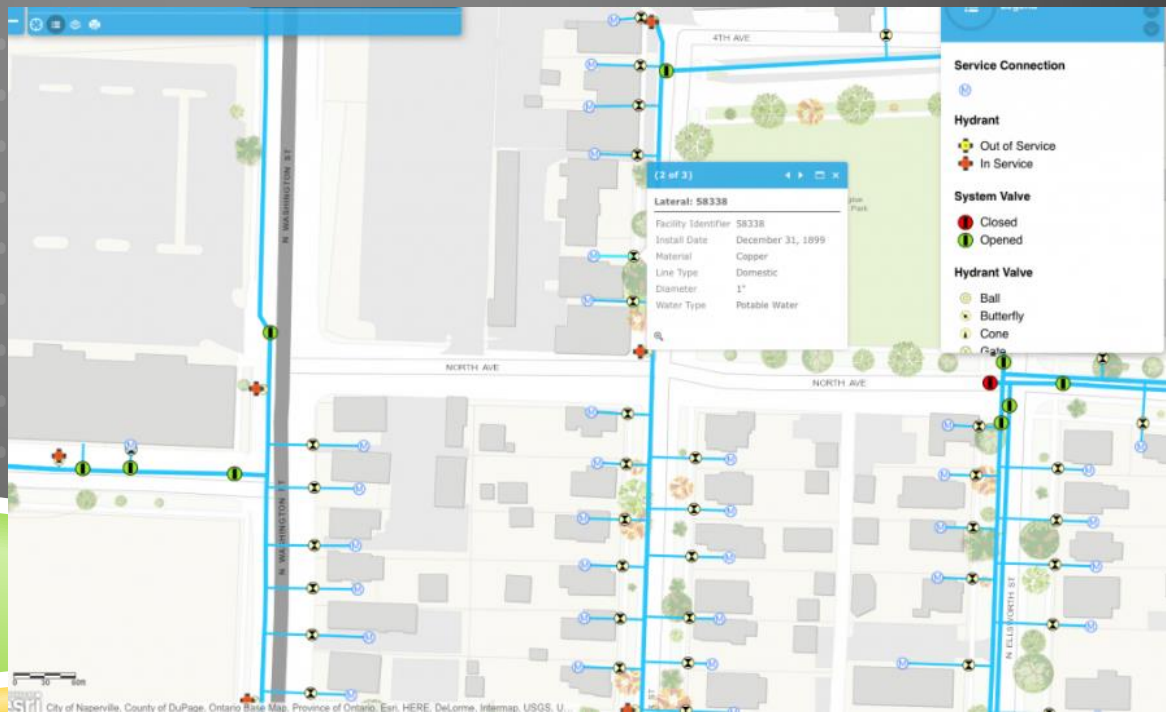
5 Lulu California Bistro

6 Starbucks

7 Palm Springs Art Museum

UP & COMING

- In the next year…
  - Put into use across the company
    - Use out in the field
      - Keep CAD going for another year or two
      - Paper Map books?
    - Management Utilization
    - System analysis & Maintenance Planning
- Customer Utility Network Management
  - Next 5 years for ERMU
- NISC Integration
  - Next 1-2 years
    - * Any pointers??
    - 3 County Territory
      - Service Points



RE-CAP

- Intro
- History of Mapping @ ERMU
- Current Mapping @ ERMU
  - Enterprise
  - GPSing – Hardware & Software
  - Media – Print/Publishing
  - InfraMap (Water)
- Build The Foundation
- Mapping Apps & Extensions
  - In Use
  - Future Use
- Up & Coming
- Re-Cap

THANK YOU!!

ANY QUESTIONS?