

# What's Happening in My Watershed?

How Implementing a GIS system to Utilize Spatial Data and Digital Collection Techniques can help Solve Watershed Issues.

Mindi J. Parsell  
City of Tulsa - Stormwater Quality

# Overview

- Where did we come from?
- What was the Process to get started?
- What are we doing now?
- Where are we going?
  - Utilizing our collected data to target education and enforcement to improve the health of the watersheds in our community.

# Where did we come from?

- Full Paper Copies of all work.
- No digital data collection.
- No useable interactive Maps
- Not utilizing the Spatial data available.
- Using what has always worked.

# Where did we come from?

- Full paper copies of all work.
  - This leads to ...
    - Filing cabinets full of data
    - Lost data
    - Data that is hard to utilize
    - Data that is forgotten
  - Prevents easy access, and utilization

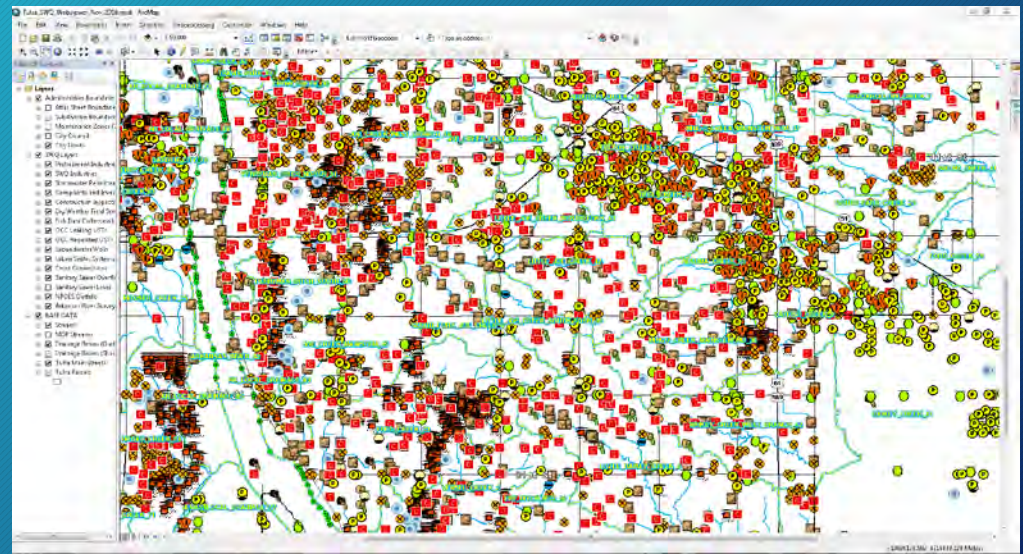


# Where did we come from?

- No digital data collection.
  - Cumbersome to collect data
    - Carrying extra equipment
    - Lack of ability to take pictures and directly attach to location/ data being collected
  - Causes data to be collected via unusual means
    - Cell phone pictures of instrument read outs to fill out paper work later.

# Where did we come from?

- No useable interactive maps.
  - Had a map prepared by a contractor.
    - Limited data analysis.
- Not utilizing the spatial data available.
  - Not even using the limited analysis available.



# Where did we come from?

- Using what has always worked.
  - Not necessarily a bad thing
  - Sometimes things are done a certain way for specific reasons
  - It is comfortable for people already trained
  - This can lead to working harder not smarter

# What was the process to get started?

- Looked through what had been created.
- Assessed the data needs of the group
- Assessed the data needs per our permit
- Assessed the available technology
- Assembled the data that was readily available in city databases
- Collected open source data needed
- Started contacting people to address missing data needs



# What was the process to get started?

- Looked through what had been created.
  - Looked at the contractor map
  - Looked at in house created data
  - Looked at how things were stored and formatted

# What was the process to get Started?

- Assessed the data needs of the group
  - What will help my field personnel?
  - How can I make their job easier or more efficient?
  - The smarter not harder mentality

# What was the process to get started?

- Assessed the data needs per our permit

WebMap DB

## INTERNAL

Watersheds - IP need to compare DNR, USGS, NOAA, Central/Southern Ohio  
 Habitat Assessment Plans - Need to compare the methodology used (Specialized or 2P)  
 - Fish Shoals - Build Tools  
 - Macro Inverts - Build Tools  
 Water Sampling - Need Plans  
 - Direct, Indirect, Indirect, Indirect  
 - Indirect - Tools to be built  
 Dry Weather Field Assessments - Atmospheric Quality Connected  
 Flow Metrics Monitoring - Needs (Knowledge & properly placed)  
 INVESTIGATIONS - Data needed from Geomorph - To be built  
 - Events  
 - Sediment Sampling  
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 - Sediment Sampling  
 HAP Assess - Work on being done mostly (some already - To be updated)  
 SWQS - Build your own Site specific Tools - Update 4304  
 Erosion Control - Connectable  
 LID / P??

## EXTERNAL Data - INTERNAL Build

FOG EDUCATION - Water Quality  
 Ben Sumner  
 FID + HAZMAT Response - Camp Tarr  
 Water Use - Water  
 Water Use Checks/Leaks - Water  
 Torment Lines - Water  
 \* Need to find out  
 - Highway - Parking - Water/FID?  
 \* Weekly Updates  
 - Sewer/Sewer Check/Flow - Sewer, Resiliency  
 \* Sewer Data  
 - Silt/Sand Application - Streets, User Knowledge  
 \* Need to know  
 - Impervious Surfaces Data - SW Engineering  
 - Underground Storage Tanks/Leaking - Customers, Tank Monitors  
 \* Sewer Data  
 - CoT Pesticides (Non-Sewer) - Streets, Sewer Lines  
 \* Sewer Data  
 - Septic Tanks - TMSU/Sewer  
 \* Sewer Data  
 - Industrial A/C Treatments - Water Quality, Water Jobs  
 \* Need to find out  
 - Mosquito Spraying ???

## EXTERNAL

- Streets - Tracer
- Parcels - CoT DB
- Stormwater - SW DB
- Water - Water DB
- Sewer - SS DB
- Water Quality - TQM, SWQS, USGS, etc.
- Municipal Ordinances - CoT DB
- City Council Ordinances - CoT DB
- HOA/Municipal Ordinances - CoT DB
- Streets Maintenance Data - GPSes
- Brown Fields - Superfund Sites DB
- DPDES Permits - OES Data
- LAND USE - CoT/ENR/COG
- ZONING - CoT DB
- Regulating Flood Plan - CoT DB
- FEMA Flood Plan - FEMA
- Lead Data - ?? ?? USGS?

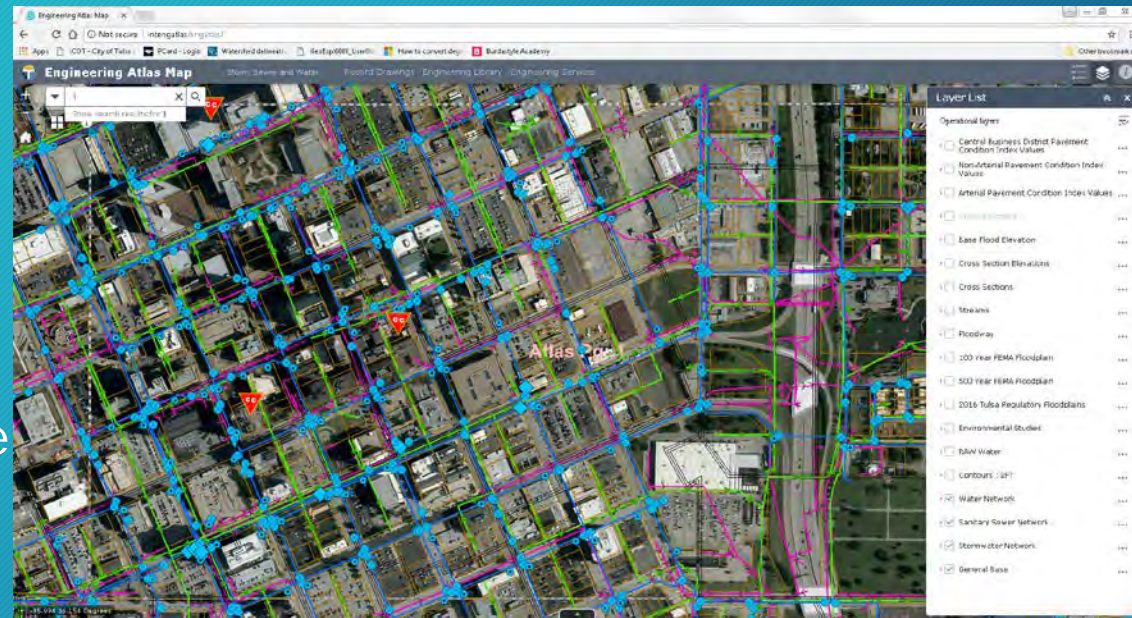
Storm Water Quality

# What was the process to get started?

- Assessed the available technology
  - What do we have at our disposal to use?
    - Computers
    - Cell Phones
    - GPS Units
  - What all will we need training on to be able to use easily?
    - Consider personnel
    - Consider previous training

# What was the process to get started?

- Assembled the data that was readily available in city databases
  - Streets Data
  - Water Infrastructure
  - Sanitary Sewer Infrastructure
  - Stormwater Infrastructure
  - Municipal districts
  - City Council Districts
  - Parcel Data
  - ETC.



# What was the process to get started?

- Collected open source data needed
  - FEMA Flood Plain
  - Land Cover data - USGS
  - Soils Data - USDA
  - DEQ Data
    - PDES Discharges
    - TMDL's
    - Etc.

# What was the process to get started?

- Started contacting people to address missing data needs
  - Sewer Dept.- Sanitary Sewer Overflows, Fats Oils and Grease Contacts
  - Water Dept. - Flushing, Breaks, Leaks, TOL's
  - Fire Dept. - Hydrant Flushing, Calls, and HAZMAT responses
  - Streets Dept. - Salt & Sand Application, Mowing Collections
  - OK Corp. Commission - UST's leaking and otherwise

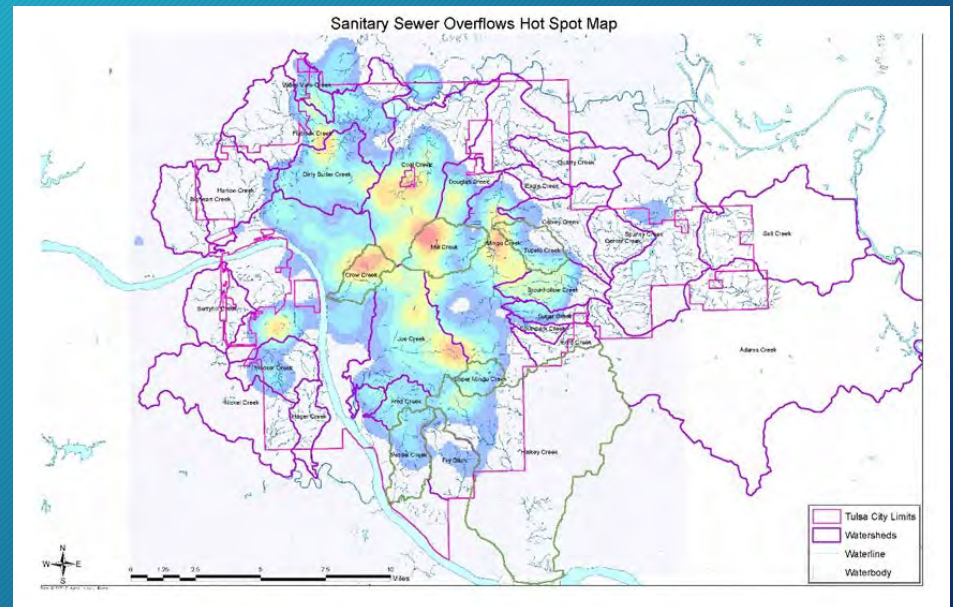
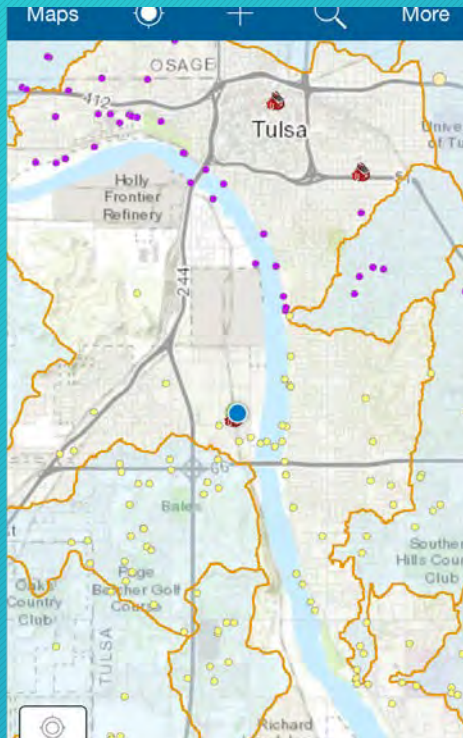
# What are we doing now?

- Implementing GIS
  - Using Collector Apps in the field
  - Using spatial Analysis to find what is going on in the areas we work in.
- Causing less paper waste
- Moving toward a robust GIS data set for Analysis
- Implementing an Asset management system to track our Investigations, and Inspections.



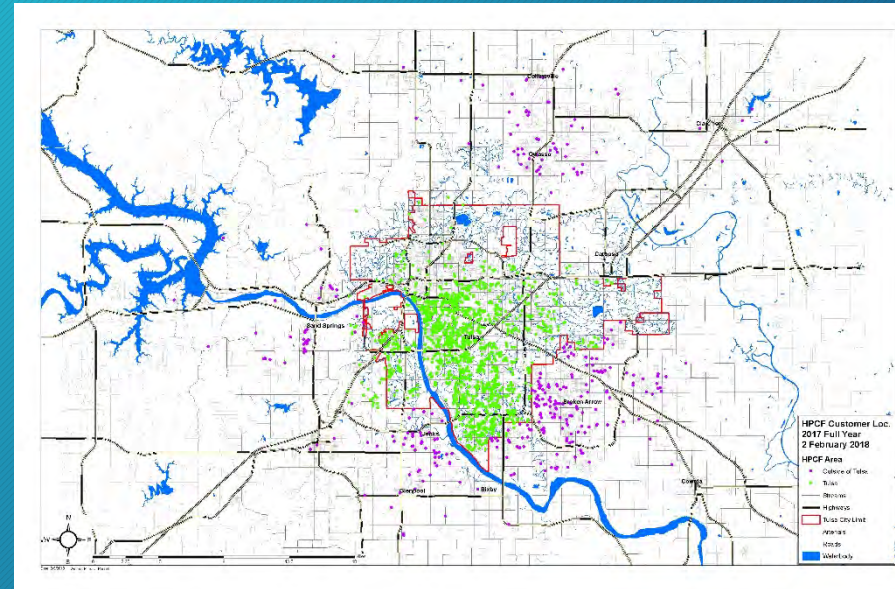
# What are we doing now?

- Implementing GIS
- Using Collector Apps in the field
- Using spatial Analysis to find what is going on in the areas we work in.



# What are we doing now?

- Moving toward a robust GIS data set for Analysis
  - Collecting data in the field
    - Dry Weather Field Screening
    - Habitat Assessments
    - Macro Collections
    - HPCF Patrons
  - Inputting old data and tying to geographic locations
    - Floatables data



# What are we doing now?

- Implementing an Asset management system to track our Investigations, and Inspections.
  - Lucity
    - Investigations work order
    - Inspection forms
      - IHRR
      - Construction
  - HPCF - Household Pollution Collection Facility work order

The screenshot displays the 'HPCF Appointment Form' interface within the Lucity system. The browser's address bar shows the URL 'http://www.lucity.com/WorkOrders/HPCFAppointmentForm.aspx'. The page title is 'HPCF Appointment Form'. The form contains several input fields and dropdown menus for user information and appointment details. A sidebar on the left contains navigation icons. A 'Rejected Materials' section on the right lists various waste types with checkboxes.

Field	Value
First Name	
Last Name	
Municipality*	- Select an Item -
Status	2 - New Work Order
House #	
Apartment/Suite	
Street Name	
Source	202 - Citizen/Resident
City	Tulsa
State	OK
Zip Code*	
Weight (lbs)*	
Appointment Date	
Appointment Time	
Drivers License #	
Voucher Number	
Utility Bill Number	
Vehicle Make/Model	
Vehicle Tag #	
MET Fee Scale	
Assigned Employee/ Who are you?*	- Select an Item -
Outside Community Fee Scale	
Pollutants Collected/Comments	

**Rejected Materials**

- Rejected Latex Paint
- Rejected Unknowns
- Rejected Medicine
- Rejected Ammunition
- Rejected Radioactive Waste

# Where are we going?

- Full Digital Data Collection (barring things required by law)
- Using Spatial Analysis to explain and possibly predict what is going on in individual watersheds.
  - Help target Education activities
  - Help Target Enforcement activities.
- Fully implementing our asset management program for job functions that are able to utilize it.

# Where are we going?

- Creating an Illicit Discharge trace map for the Stormwater infrastructure.
  - Utility for
    - Investigations
    - DWFS
    - Finding Point Source Pollution
- <http://tryitlive.arcgis.com/illicitdischarge/>

Any Questions?