

Using GIS to Track and Prioritize Your Assets

What is GIS??

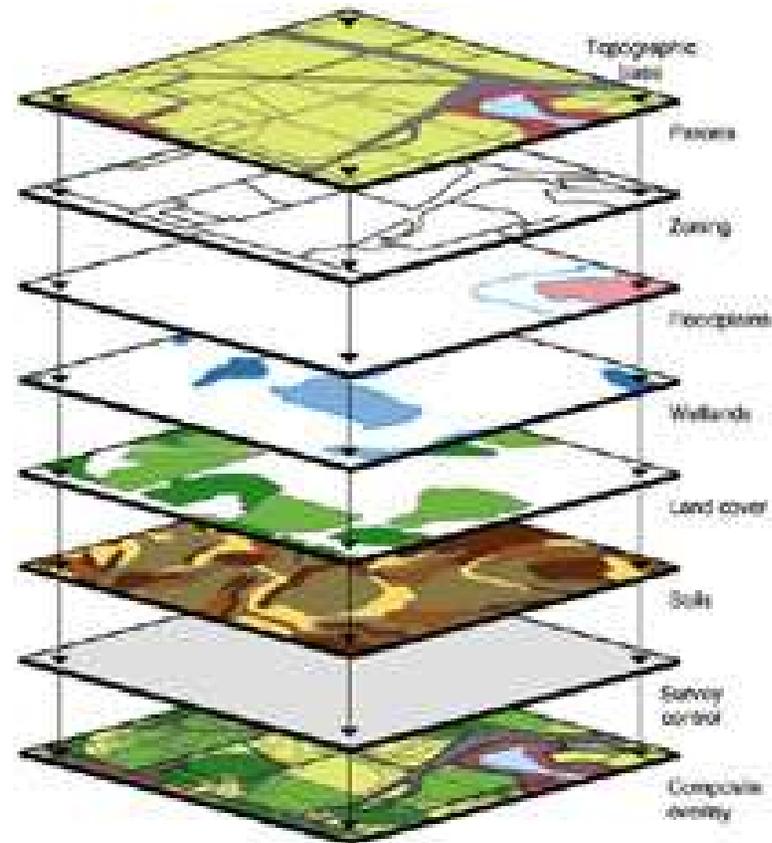
- **Geographic Information System**
- **Geographic** – Location of an asset
- **Information** – Characteristics of an asset
- **System** – Software that allows connection between the mapping and the information.
- GIS = Map + Spreadsheet + Software

Asset Management

ESRI ArcGIS is
foundational software

Leading standard for
infrastructure
management in the U.S.

Starting use was
primarily for planning



Specialized Management Tools

The logo for Roadsoft, featuring the word "Roadsoft" in a blue serif font on a yellow rectangular background with a thin orange border.

Computerized Maintenance Management System (CMMS) for operations and maintenance

The logo for Cartegraph, featuring the word "Cartegraph" in a white sans-serif font on a dark grey rectangular background.

Software usually works in conjunction with with ESRI geodatabase

The logo for Innovyze, featuring the word "Innovyze" in a blue sans-serif font on a white rectangular background with a thin black border.The logo for PubWorks, featuring the word "PubWorks" in a blue and green sans-serif font.

Maintenance and rehabilitation work orders, condition inspection schedules, monitoring programs

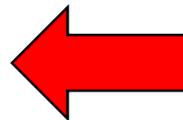
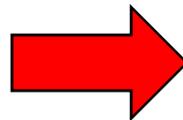
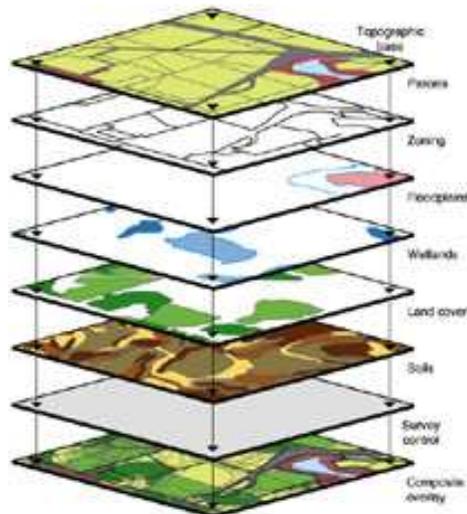
The logo for Cityworks, featuring the word "Cityworks" in a white sans-serif font on a blue rectangular background.

Asset Management

GIS is the backbone used to develop applications for improving operations and data mining.

CMMS applications are used to schedule, track and archive all activities and costs.

CMMS should interface with the GIS and would ensure the GIS is used on a daily basis as part of your business process.



Cartegraph

Cityworks®

Innovyze®

Roadsoft

Geographic Information Systems (GIS)

Know where things are and information about them.

Record your documents and make them accessible.

- Paper files, drawings, spreadsheets, reports, manuals, etc.

How can GIS help?

- Greater efficiency, reaction time and confidence
- More effective collaboration
- Assist in documenting regulatory compliance
- Better customer service
 - Are you being reactive or preventive?

Start simple - Get organized – Use right away – Use daily

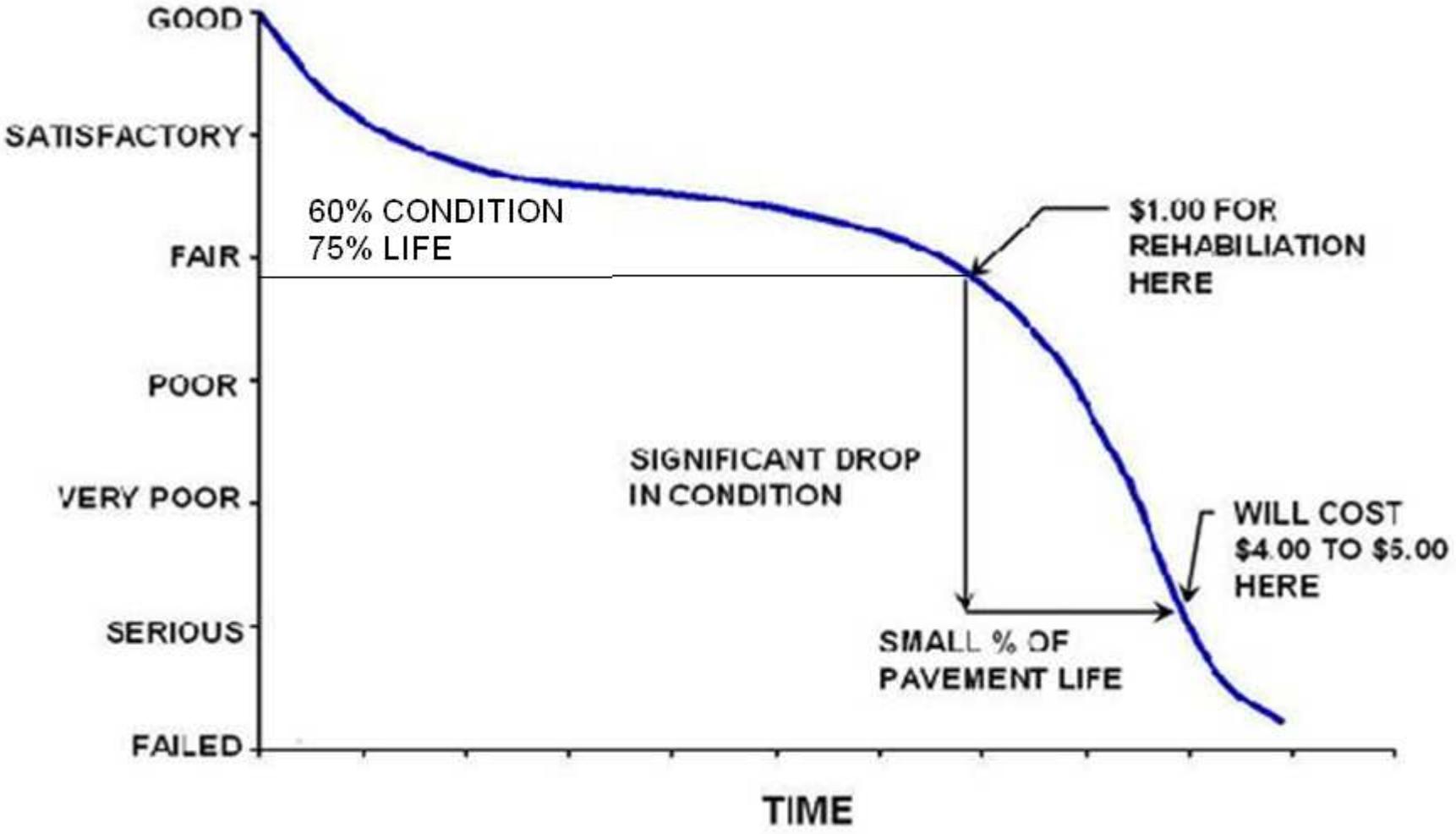
Infrastructure Assets

What do infrastructure and opossums have in common?

They both get no respect.



Design Life Cycles



Step 1 of Infrastructure Management

- Inventory your Assets
 - Identify assets
 - Mapping
 - Condition assessment



Identify Assets

- ❑ Sewer system
 - ▣ Collection and treatment
- ❑ Water system
 - ▣ Supply and distribution
- ❑ Streets
- ❑ Storm sewers
- ❑ Sidewalks/pathways
- ❑ Buildings
- ❑ Parks/facilities



Create a Map of Assets

- Utilize geographic information system (GIS) to create asset maps
- Identification of individual asset segments
 - Roads – block by block
 - Sewers – segments between manholes
 - Water mains – segments by block

Asset Maps - Roads



- Surface Condition
- Structural Integrity
- Curbs
- Sidewalks
- Drive Approaches

Asset Maps - Water Main

- Age
- Materials
 - Asbestos cement
 - Cast iron
 - Ductile iron
 - PVC
 - HDPE
- Break history
- Capacity (reliability)
- Fire flows



Asset Maps - Sanitary Sewer

- Infiltration and Inflow Study
- Capacity Analysis
- Sanitary Sewer Evaluation Study
 - Manhole Inspections
 - Television Inspection
 - Smoke Testing
 - Dye Testing



Asset Maps – Storm Sewer

- Infiltration and Inflow Study
- Capacity Analysis
- Storm Sewer Evaluation Study
 - Manhole Inspections
 - Television Inspection
 - Smoke Testing
 - Dye Testing
- Green Infrastructure

Facilities

□ Water System

- ▣ Surface Water Intakes and Wells
- ▣ Metering and Chemical Feed Stations
- ▣ Treatment Plants
- ▣ Booster Pumping Stations
- ▣ Ground and Elevated Storage Tanks

□ Storm and Sanitary System

- ▣ Pumping and Metering Stations
- ▣ Storage and Equalization Systems
- ▣ Treatment Plants
- ▣ Surface Water and Groundwater Discharge Systems



Condition Assessment

- Initial assessment can be as straightforward as excellent, good, fair, marginal, and poor
- More detailed assessments can be added later



Infrastructure Catastrophes Happen



Infrastructure Catastrophes Happen



Infrastructure Catastrophes Happen



Infrastructure Catastrophes Happen



Identify Problem Areas



Composite Deficiencies

- Overlapping Issues
- Project Coordination
- Combined Projects
- GIS (geographic information system)

Prioritize Known Problem Areas

- Water system
 - Low-pressure areas
 - Fire flow issues
 - Frequent breaks
 - Water quality issues



Funding

- Where will the money come from?

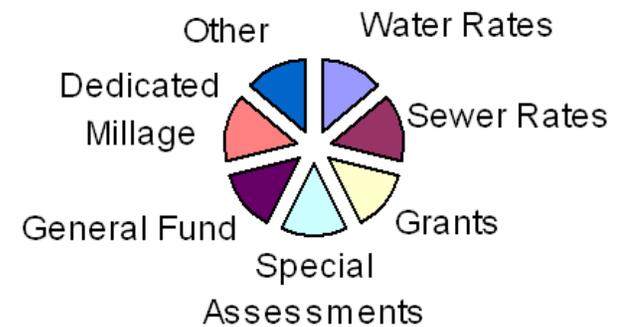
- General Fund

- Bonds funded by:

- Water and Sewer Rates
- Dedicated Infrastructure Millage
- Special assessments

- Governmental Loans (DWRF & SRF) (Lower interest rate than the bond market)

- Grants



Why GIS?

- **What is GIS**
 - System that links data and maps
- **What information do we put into the GIS**
 - System Maps
 - Key system information that allows queries (sorting)
- **What does GIS do for us**
 - Provides storage of institutional knowledge
 - Provided mapping of sorted data

Why GIS?

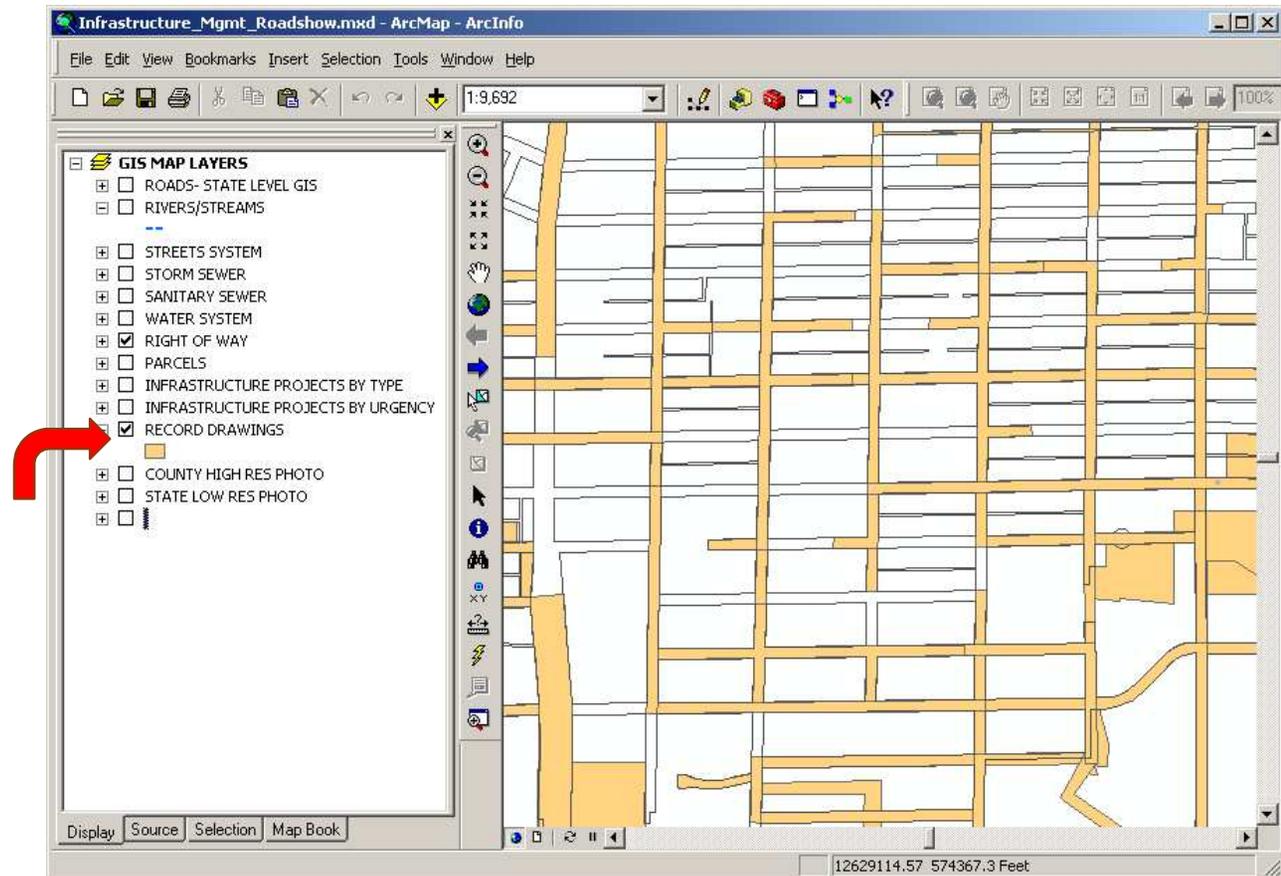
- ❑ GIS condition ratings are edited as assets either decline or are improved
- ❑ Asset layers can be overlaid to identify multiple problem areas
- ❑ GIS viewers can be used by any staff
- ❑ Maps provide a communication tool with elected officials and the public

Addition GIS applications

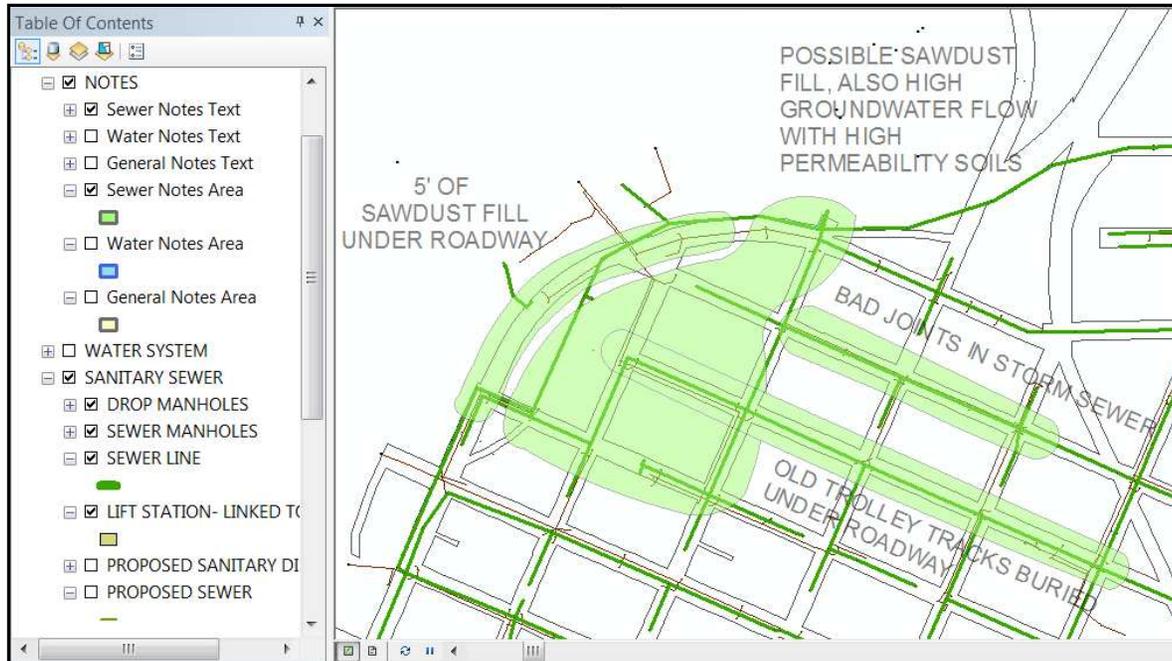
- Record Drawings
- Staff Knowledge

Record Drawings

As-built drawings can be scanned to PDF files then linked to the GIS. Finding record drawings is as simple as point and click.



Handwritten notes layers



Capture knowledge of field crew or transitioning personnel.



Mobile Apps- From the office to the field

Different levels for viewing, collecting or editing information.

- ArcGIS Apps for Smartphones and Tablets
- ArcGIS for Windows Mobile
- ArcPad for handheld GPS



ESRI

Reactive or Proactive

How do you want to manage your assets?



THANK YOU!

Contact for Information or Questions

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