Eliminating Data Silos Through GIS: A Water Authority Success Story

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Since 1942...

Services
- Serve over 140,000 customers.
- Provide both water and wastewater services
- Maintain 3 water treatment plants
- Maintains 5 wastewater plants
- Maintain over 2,400 miles of water mains
- George R. Sweeney Treatment plant won top prize in 69th annual American Water Works Assoc.
- American Water Works Association deemed them, “the best tasting drinking water in PA”
- Owns and maintains over 100 properties
Project Goals

» Centralized connected data infrastructure

» A complete asset inventory

» Data available for decision makers at their fingertips

» The data, software, and knowledge to perform effective asset management
Data Challenges

» No standard system utilized by all groups
» Combination of CADD, paper maps, Excel, and personal GDBs used
» Account information stored in mainframe database
  ▪ No spatial component
  ▪ Limited staff members with knowledge to access it
  ▪ Data had known issues
Legacy Data Management System

MAWCMAIN Menu

Select one of the following:
1. Go to System 36 Menu
2. Go to Payroll Menu
3. Hydrant Crew Request
4. Go to Human Resources
5. Print Writers
6. Printer Spooled Files
7. Contract Backhoe Time Entry
8. Contract Backhoe Inquiry
9. MAWC A/P and Inventory
10. Print Tap Replacement Order
11. Assign Note to Crew Orders
12. Display Open Orders by Employee
13. Employee Absentee System
14. Print Vacation/Per/Sick/Exc
15. Print Sick/Sick Occur.-All
16. Print Sick/Sick Occur.-Employee
17. Print Work Order Cost Detail
18. Plant Bonus/Overtime Hours List
19. Search/Inquiry Customer File
20. Ryans Contract Administrator Menu
21. Print Employee Absentee Calendar
22. SwiftReach Upload File Selection
23. Go To Excel Download Menu
24. Frozen Service Call Hist by Date
25. Search Old Leak Reports
26. Water District Codes Menu
27. Leak Detection Summary by Dates
28. Leak Reports # Valves Turned
90. Sign Off

Selection or command
====>
Developing a Plan

» Developed a needs assessment in Fall 2015
» Met with each group at MAWC to determine their issues, what worked well, and what they wanted in the future
» Summarized the assets in place at MAWC
» Set priorities and guidance moving forward
Standardized Data and Processes

The Foundation for Integrating Data
Standard Platforms and Workflow

» Imported Data to the Esri Water Model
  ▪ Eliminated MapInfo data updates
  ▪ One data source
  ▪ ArcGIS for AutoCAD

» Standardized the inspection and data update process
  ▪ Collector for ArcGIS Bluetooth Connected to a Trimble R2 unit
  ▪ Increased confidence in data

» Laid the ground work for expansions and improvements
Collector Applications

» In place for hydrant, valve, leaks, and construction groups

» Eliminated paper maps and duplicate data capture

» Updates are made directly in the GIS and not stored in Access databases
  ▪ Provided information utilized by dashboards

» Has increased inspections by 15%
  ▪ Helped them meet their 2-year hydrant inspection goal
Mapped Service Locations

- Account information used as link between datasets
- Used to accurately display service area
- Symbolically displays service provided
- Implemented standard process for adding new customer information
  - Automated script from AS400 Database
Accessing Information From Anywhere

Mobile Data and Application Improvements
Utility Data Viewer

» A web map that includes MAWC’s water, wastewater, and service area information
  ▪ Eliminated the need for paper maps

» Contains widgets including:
  ▪ Elevation profile
  ▪ Print templates
  ▪ Flag data
  ▪ eSearch
Pop Up Widget

» Integrates with DB2 database

» Provides remote access to:
  - Scanned documents from RVI
  - Customer account info
  - Tap order history
  - Meter information
  - Service history

» Linked via service locations’ GIS data
Right-of-Way Viewer

- Improved access to ROW images
  - Now available remotely

- Eliminated research required to find desired ROW

- Script in place to auto create point and hyperlink based on the files name and storage location
Valve Book Hyperlinks

- Scanned valve books were hyperlinked to the GIS valves via the valve book ID
  - Access through web map

- Script implemented to create hyperlink based on folder it was saved in and file name
  - Autocorrects known spelling errors in file name
Failover Environment

» AWS Cloud Environment
  ▪ GIS is a vital piece of daily workflows

» Dashboards allow for monitoring servers
  ▪ Assists with troubleshooting issues when/if they arise
Improved Workflows

Easy access to data in the office
Valve Planning Application

» Displays percent of valves completed based on the inspection table

» Management can assign crews to inspect a grid

» Grids can be filtered by percent complete and/or crew assigned
Hydrant Billing Widget and Report

» Automated quarterly report to assist with invoicing
  - Shows deltas from previous report

» Web applications that select municipalities via the map or a dropdown

» Exports data as:
  - CSV
  - TXT
  - SHP
  - GDB
Web Editing Applications

- Frees up GIS staff as minor edits can be made by a specific group
  - Assists with addressing QC issues
  - Allows users to snap features after field edits
GeoEvent Server Integration

» Integrates vehicle tracking information with GIS data
  ▪ Realtime vehicle via web map

» Allows for vehicle notification
  ▪ Arrival times
  ▪ Geofencing

» Allows for integration with SCADA data
Asset Management

» Facilitated the implementation of an Asset Management System (Lucity)

» Integrated with GIS data

» Provides improved:
  - Reporting
  - Tracking work activities
  - Customer service
Improved Access to Information

Communication and Public Outreach
Operations Dashboards

- Configured for hydrant, valve, leak, and manhole inspections
- Provides stakeholders with up-to-date information
- Assist with planning and tracking progress
- Acts as QC on field work
Inspection Data

» Linked to GIS data via web applications
  ▪ Data symbolized based on inspection attributes to help with planning and analysis

» Provides dashboard information
Oil and Gas Map

» Script implemented to auto update the third party oil and gas data weekly

» Provides quick analysis for water sampling locations and construction planning

» Referenced for billing information
MAWC Customer List Generator Widget

- Quickly and accurately creates customer notification lists
  - Includes phone, email, and mailing
- Selection by buffer of asset, drawing on map, or municipality
  - Allows users to save and modify selections
- Able to feed into public map
Public Facing Map

Story Map format provides users with key information
- Includes outages and construction project

Data is imported from custom list generator and managed in portal web map
Questions
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