DeKalb County, Georgia Evolution of Municipal Wastewater Asset Management Program

From Paper to CAD to ArcGIS and Beyond

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Brown AND Caldwell

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Overview slide

- About the County
- Where they started
- Where they are now
- What we see in the future

DeKalb County
Data management at the turn of the century

- Rolls of maps on the wall

DeKalb County
Unique Challenges & Opportunities

- Third largest County in Georgia
- Population of 700 thousand
- Even mix of older urban and new development
- Some sewers more than 100 years old

DeKalb County's Department of Watershed Management:

- Manages Water Distribution / Wastewater Collections Systems
- Sanitary Sewer
  - 225,000 customers
  - Over 60 sewage lift stations
  - 31 miles of forcemains
  - 2,600 miles of gravity main (b/w 6" & 54")
  - Approx 70K manholes
  - Currently under $1.2 billion dollar consent decree

Asset management in the “good old days”

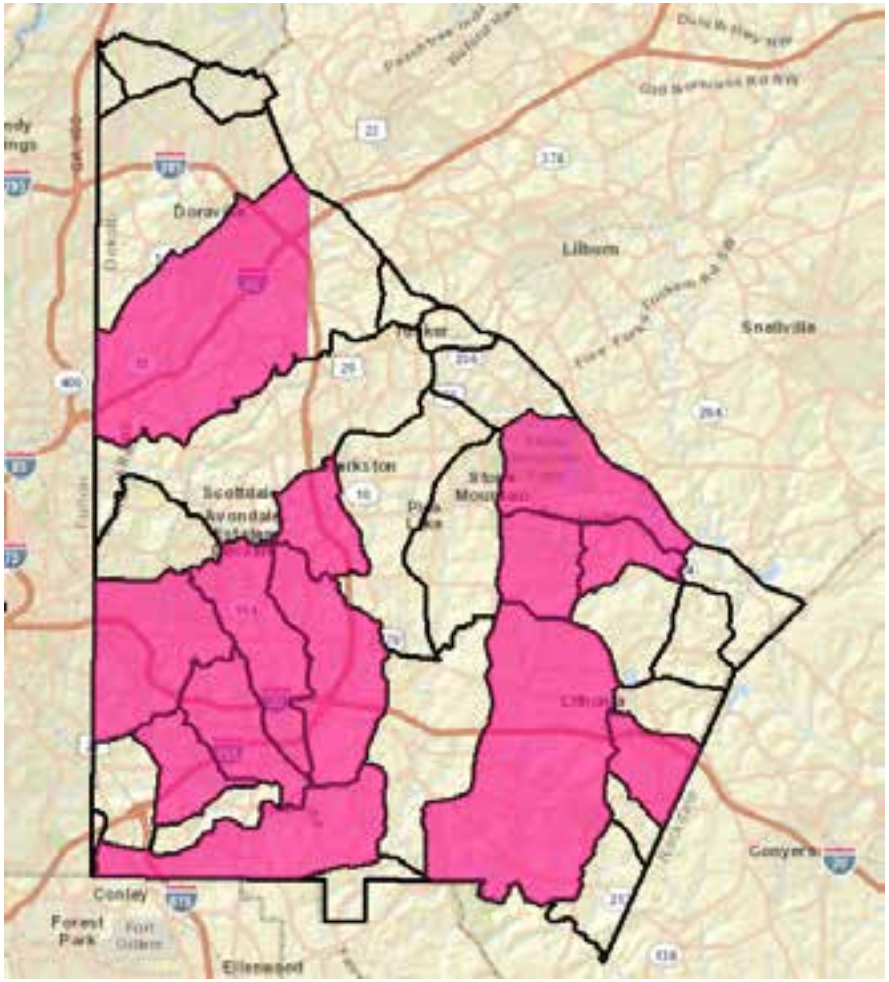
- Microstation SDE
  - Microstation mapping
  - Oracle database backend
- Record drawings on Microfiche
- Crews used large (36x48 in) printouts to work in the field
- Where are those manholes?

Mapping of Collection System Scope of Work

BC has been mapping DeKalb since 2006:

- County requires inventory and mapping of all sewer assets
- Consent-driven project
- Cornerstone for management of sewer system

DeKalb Mapping Phase 1

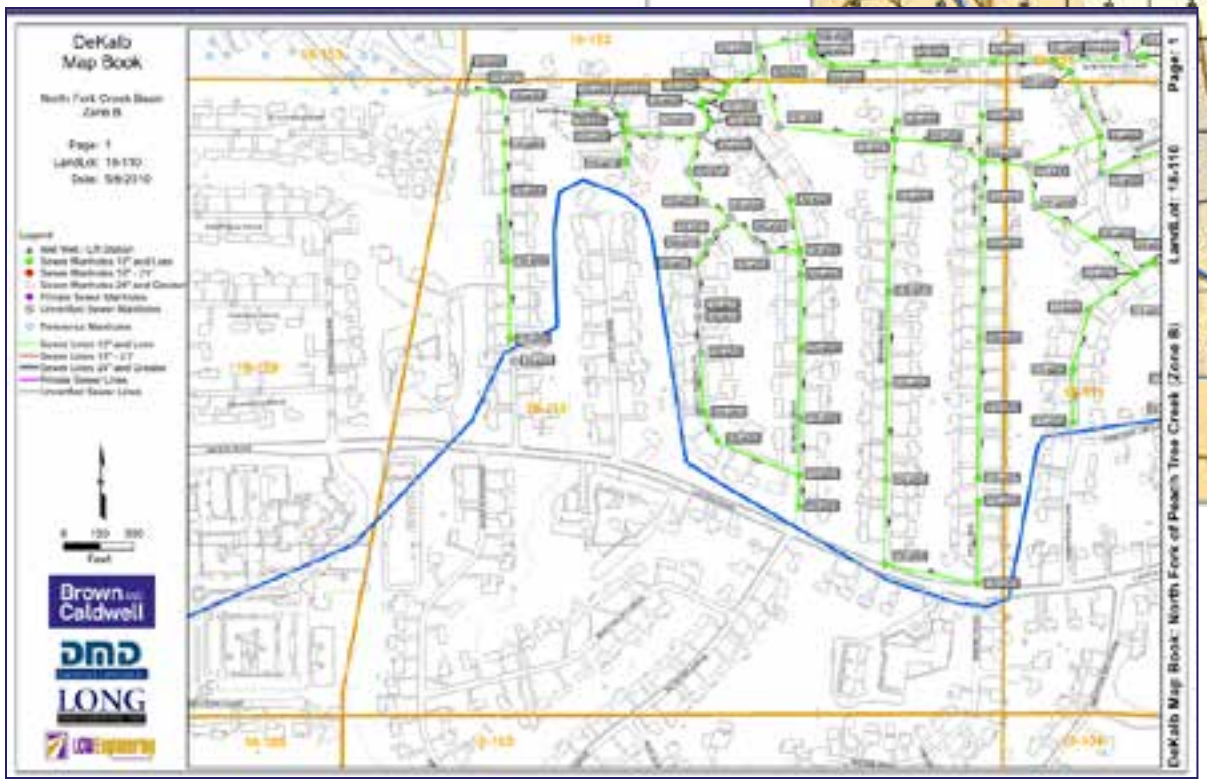


- 2006-2011
- Brown and Caldwell responsible for:
  - Inventory and condition assessment of 30,000 sewer manholes
  - Inventory and survey of 62 sanitary sewer lift stations
- Covered about half of the County

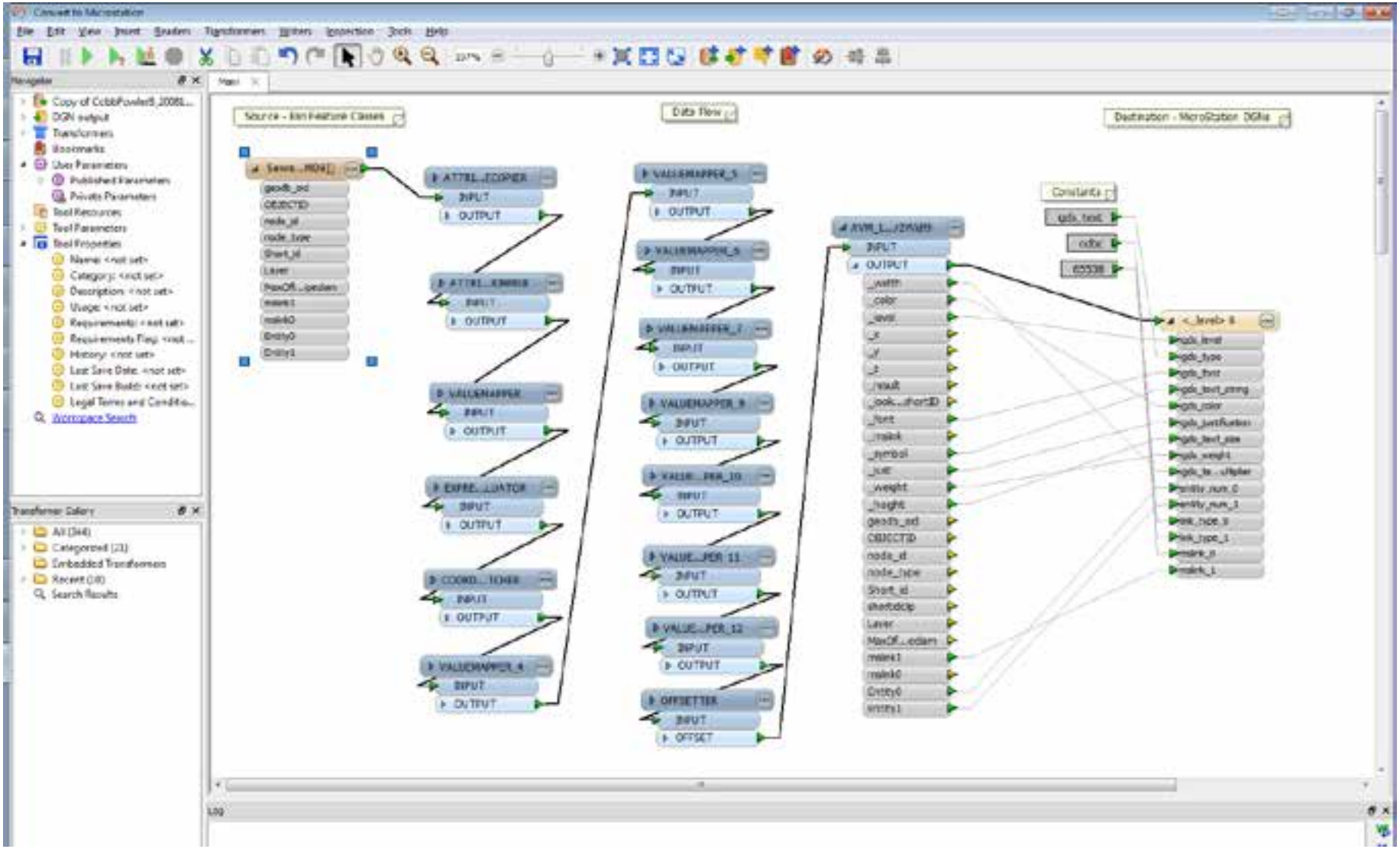
BC's workflow
Phase 1 of the mapping project

- Received as-built data from DeKalb in DGN
- BC converted data to shapefiles – ArcGIS 9.3
  - Used spatial queries to associate manhole ID's with nodes
  - Manually reviewed each map for correctness
- Used precursor to Data Driven Pages to generate mapbooks for field crews
- Two field crews visited, for condition assessment and survey
- Field crews used paper forms
  - Entered into Access DB
- Data scrubbed in InfoNet, then exported to a GDB
- Data run through Data Interop for export to Microstation DGN files
- County received Access DB and DGN files

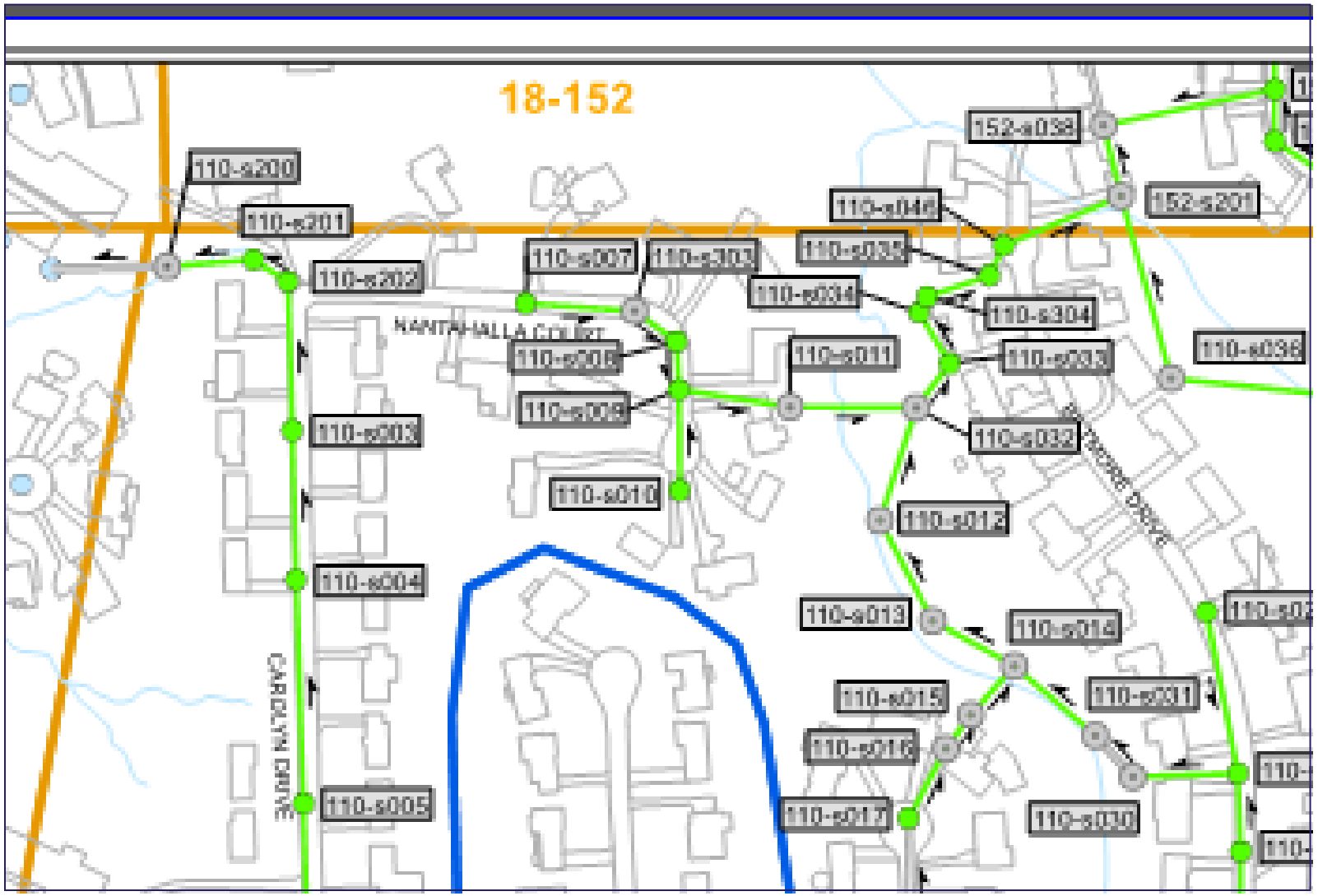
Field crew mapbooks generated
Using third-party Data Driven Pages Extension



Data Interop
Crucial to generation of final product



Deliverable mapbooks generated using annotation for manhole labeling



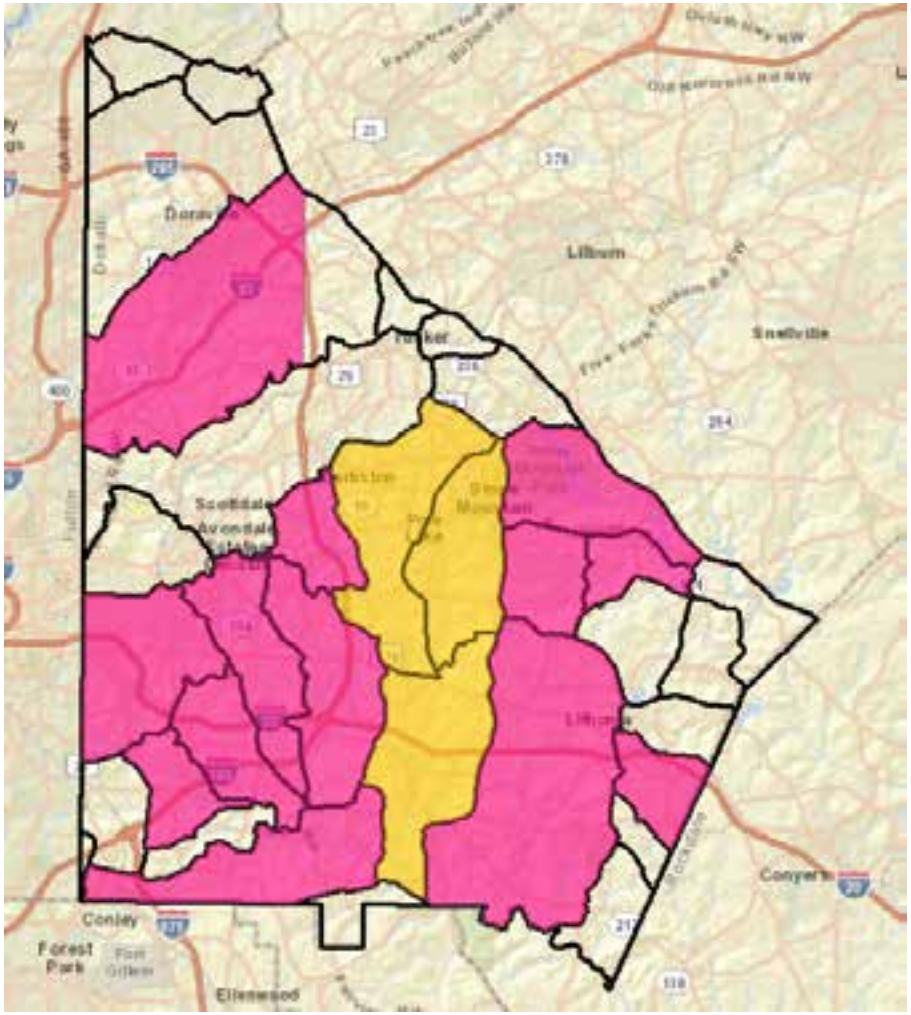
DeKalb mapping: Phase 1
Final results

- At the end of project the County had:
  - Updated manhole locations and connectivity for 30K manholes
  - DGN file with manhole locations & updated ID’s
  - Access database with system info
  - Photos and videos of manhole locations, interiors, and defects
  - Enough information to populate CIP list and make hydraulic models

Imagine pages of a calendar turning quickly: State of data management at Dekalb in 2014

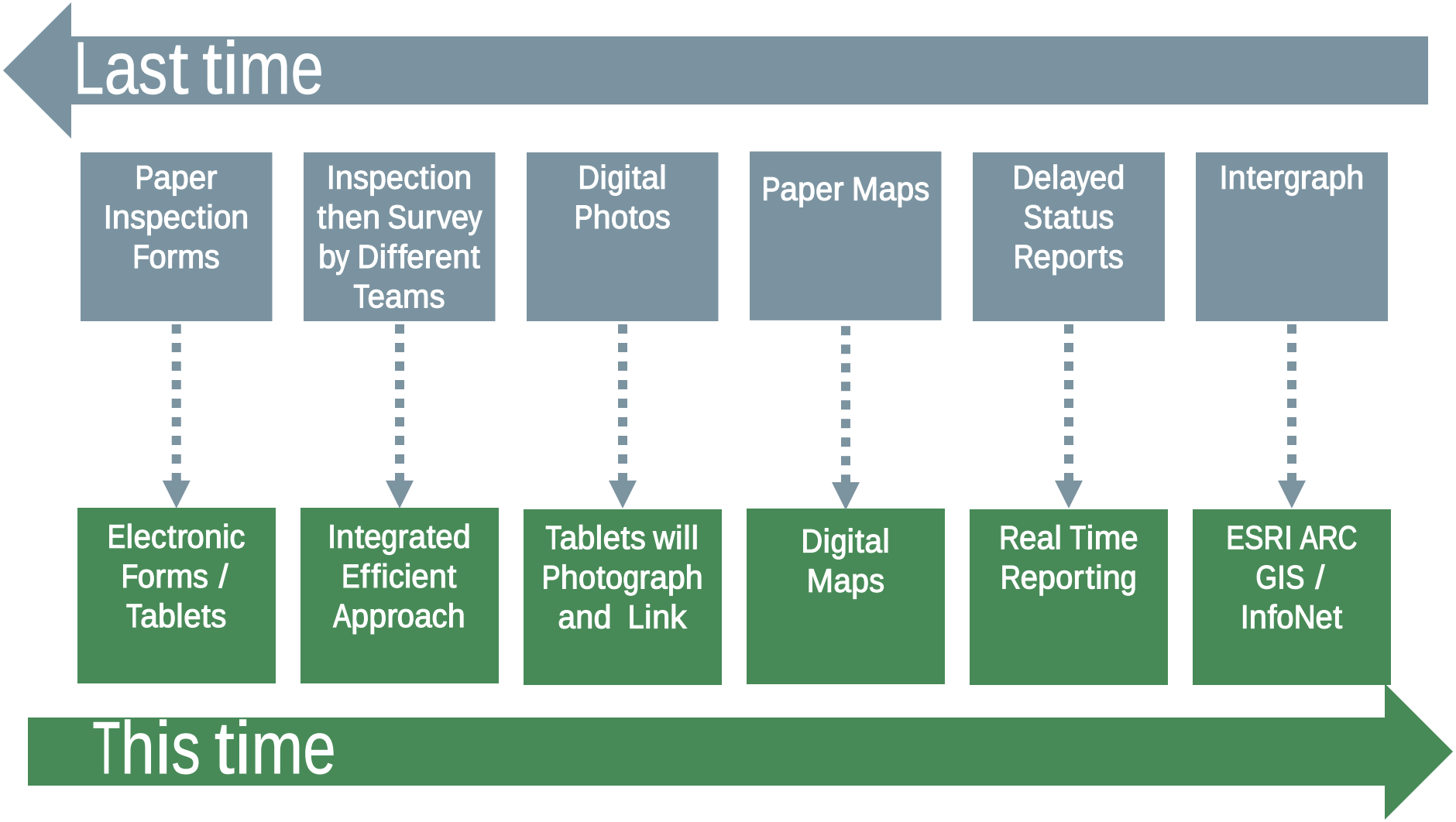
- Desktop and server are 10.1 going to 10.2
- Multiple Flex viewers for different groups and applications.
- GIS now used in all divisions of department
- GIS used in Consent Decree for modeling, capacity, rehabilitation planning, CIP, CMMS, FOG, customer education, overflow prevention.
- ArcOnline account used for damage prevention, and field crews

DeKalb Mapping
Phases 2 & 3



- 2013-2015
- Covered remainder of the County
- Phase 2
  - Contract to locate manholes in priority sewer basins awarded to three prime teams
  - Brown and Caldwell responsible for inventory and survey of around 10,000 manholes
- Phase 3
  - Locate as many of the previously buried or inaccessible structures as possible

Innovation


Last time
Paper Inspection Forms
Inspection then Survey by Different Teams
Digital Photos
Paper Maps
Delayed Status Reports
Intergraph
Electronic Forms / Tablets
Integrated Efficient Approach
Tablets will Photograph and Link
Digital Maps
Real Time Reporting
ESRI ARC GIS / InfoNet
This time

DeKalb Mapping
Differences at County between Phases 1 & 2

Phase 1 - 2006

- County stored asset data in Microstation SDE
  - Provided collections system data to BC in .DGN format
  - Limited access to other planimetric basedata
- Aerial photos provided regularly, with limitations
  - File sizes were unwieldy
  - Resolution not always great
- Consultants needed to provide data in DGN format to import back into system

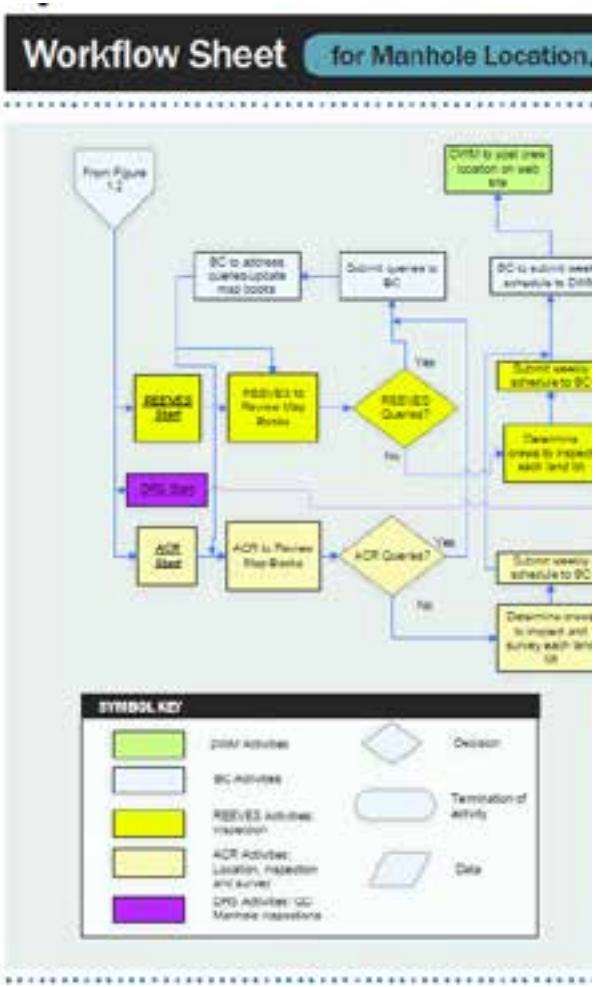
Phase 2 - 2013

- County had converted to ArcGIS for all mapping data
  - Able to provide all data in ESRI format
- Consultants able to use streaming aerials via ArcGIS online
- Consultants provide ArcGIS geodatabase as final deliverable
  - Much easier to integrate back into main database

DeKalb Mapping
Phase 2 Improvements

Much easier with everything in ArcGIS!

- Data Driven pages built into ArcGIS 10.0 and later –
  - No need for 3rd party extensions like DS Mapbook
- Everyone using ArcGIS
  - Easier for Consultants to start work
  - No more need for Data Interop
  - Easier to share work inside County
- Auto-Labeling tools much stronger:
  - No more manual label adjustment



What does the future hold?

- ArcGIS online
  - Communicating with field crews on tablets
  - Removing extra lines of communication
  - Locating problem areas more easily
  - Looking at integrating with CMM
  - Dashboards and public information
- County has mapping of system substantially complete
  - Locate 5% buried / CNL structures
  - Repair structures identified as defective
  - Hydraulic modeling to be completed 2015

Questions?

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