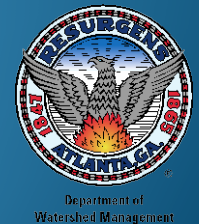
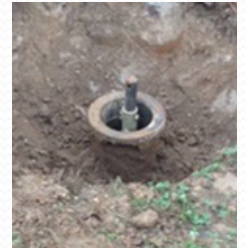


# GIS Speeds Up Response Time While Eliminating Paper



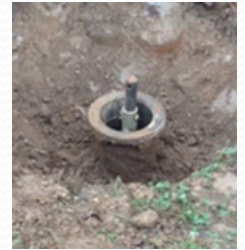
## Utility Background:

- Atlanta is the ninth largest metropolitan area in the US
- One of the oldest and largest water systems in the country
- More than a million customers
- 1,900 miles of wastewater mains and over 3,000 miles of water mains
- 24,000 hydrants, 62,000 valves, and 47,000 manholes



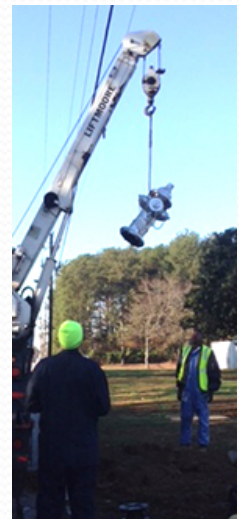
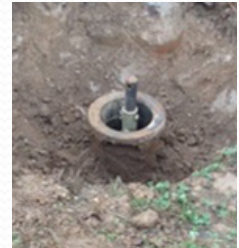
# Atlanta's Watershed GIS:

- Water, Wastewater, Stormwater
- ArcGIS Online – 2013
- ESRI Enterprise License Agreement - 2016
- 19 staff members



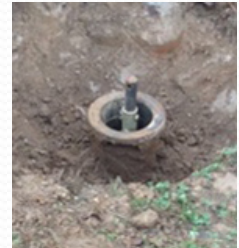
## Atlanta's CMMS:

- Infor IPS/Hansen 8, Maximo 7
- Infor IPS/Hansen – linear assets – not customized
- Maximo 7 - vertical assets
- 99% still paper based for field
- Mobile application not part of Hansen upgrade - 2012
- 35 Service Level Agreements (SLA) – manual data pulls



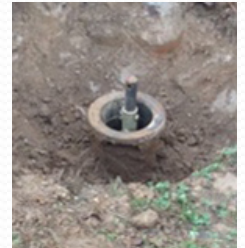
# Watershed Service Level Agreements:

Erosion Complaint	SR	Hansen
Erosion Control Final Inspection (Commercial)	SR	Hansen
Erosion Control Final Inspection (Residential)	SR	Hansen
Erosion Control Pre-Construction Inspection (Commercial)	SR	Hansen
Erosion Control Pre-Construction Inspection (Residential)	SR	Hansen
Existing Grease Trap Inspection	SR	Hansen
New Facility Grease Trap Inspection	SR	Hansen
Illegal Grease Dumping	SR	Hansen
DW Quality Complaint	SR	Hansen
Sewer Overflow/Spill Clean Up	WO	Hansen
Suspected Illicit Discharge to Waterway (discolored, etc.)	SR	Hansen
Readjust/Replace Street Plate	SR	Hansen
Missing/Damaged WW Manhole Lid/Cover	SR	Hansen
Possible Sewer Overflow/Spill	SR	Hansen



## Sept 2015 Task:

- Improve SLA's – spreadsheets with limited distribution
- Report, track, and resolve workorders and service requests utilizing GIS
- Move field teams away from paper and more towards electronic format
- Save time, be more efficient – resolve complexity
- Pilot program for hydrant field teams



# Paper Work Orders

- Duplication
- Legibility issues
- Manual distribution
- Data capture
- Tracking issues

CITY OF ATLANTA - DEPARTMENT OF WATERSHED MANAGEMENT  
BUREAU OF DRINKING WATER  
ACTIVITY SHEET

Work Order No: 774997 Report Date: 10-Jun-2014  
LABOR: Start Time: 11:45 AM End Time: 6:45 PM Total Hrs (reg.) 7hrs (OT):  
Travel Time Hrs: 30mins

Crew Supervisor: Corey Green Crew Member 4: Willie McKinney  
Crew Member 2: Curtis Byrd Crew Member 5: Tommy Bell  
Crew Member 3: Reginald White Crew Member 6: Grant Lipscomb

LOCATION: Address: 881 W. Conway Dr. Between: Broadland Rd. and: Glen Devon Dr.  
Service Location: Existing Meter Reading

GPS: Plat Card No 1: 2538 Plat Card No 2: 2490 Plat Card No 3: 1714  
Asset ID/EX Meter ID: Asset Size: Asset Type:

REPAIR: Size of Cut (L x W): 5x9 Utility Locate #: Permit #:  
(Select All that apply)  Street  Onramp  Sidewalk  Curb  Vegetation  Other:  
 Asphalt  Concrete  Grass (seed/soil)  Brick  Catch Basin  Manhole  Grate

No. of Traffic Plates(s): N/A Traffic Plate(s) Size: N/A  
 Cones  Flagger  DUT Signs  Detour Signage  Other:  
Traffic Control: Hrs Closed: 1 Thru: 1

Start Time	End Time	Hours	Equipment ID	Type	Operator
11:45am	6:45am	7hrs	29770	Crew Truck	Corey Green
2:30am	6:00am	3 1/2hr	28071	Backhoe	Grant Lipscomb

Size	Quantity	Unit	Material/Part No	Description / Meter Reading	Class
8"	8	feet		Pipe	
8"	2			Sleeves	
8"	4			Gaskets and Kits	

Backfill Material: Soil Crush-and-run City 11-dump truck load Soil Depth:  
Comment: Set up traffic control, we closed (1) west bound lane of traffic and locate (2) valve to shut Main off. We dug a 5x9 in the grass area, and the hole was 10 feet deep (wash out) had to put stem crush-and-run at the bottom so we can work. We cut and sleeve

WO Status:  Completed  Incomplete Restoration WO Generated:  No  Yes, New WO No

Signature: Crew Supervisor Corey Green Area Supervisor: Reginald White  
WATERMAIN BREAK DATA: (To be completed by Crew Supervisor) COPY sent to Engineer on: GIS on:

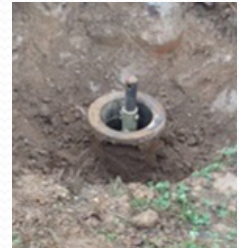
Water Outage (Hrs): 4hrs TYPE OF BREAK:  Circumferential  Longitudinal  Split at Corporation  Blowout  
Break Dimension:  Joint  Tap Sleeve (size)  Other:

PIPE: Wall Thickness (in) Lining Type: DEPTH (ft) Pipe Cover: Road Pavement: Road Base: Frost/Freeze:  
Corrosion:  Yes  No Tuberculation:  Yes  No  
Electrolysis Indicated:  Yes  No Dist. to nearest Utility: (Type)

SOIL TYPE:  Red Clay  Sandy Loam  Decomposed Granite  Rocks  Yards  Compacted  Blue Clay  Other  High Water Table  Subgrade

CAUSE OF BREAK:  Corrosion  Deterioration  Differential Settlement  Other  
 Pipe Defect  Improper Bedding  Hoop Stress  Hoop Stress (from Photo w/ Break Data)

\*\*\* Yard Restoration is needed \*\*\*



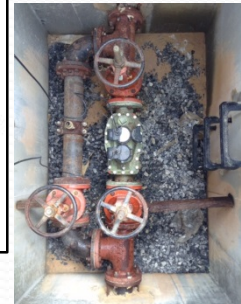
# Phase 1:

- [SLA Dashboards](#)
- ArcGIS Online Collector
- Periodic meetings with internal stakeholders
- Development of internal mobile application/platform
- Workflow discovery
- Pilot - Hydrant Repair and Inspection Teams





# Phase 1 - Collector App for Hydrant Pilot



- Good start
- Displayed all work
- Routing issues
- Needed streamlining
- Platcard view
- Proof of concept

Map showing open WOs and SRs  
As crew personnel taps on item, more information becomes available. Crew would proceed to edit on next window

*Crew member opens editing option from map and continues to fill in relevant information*

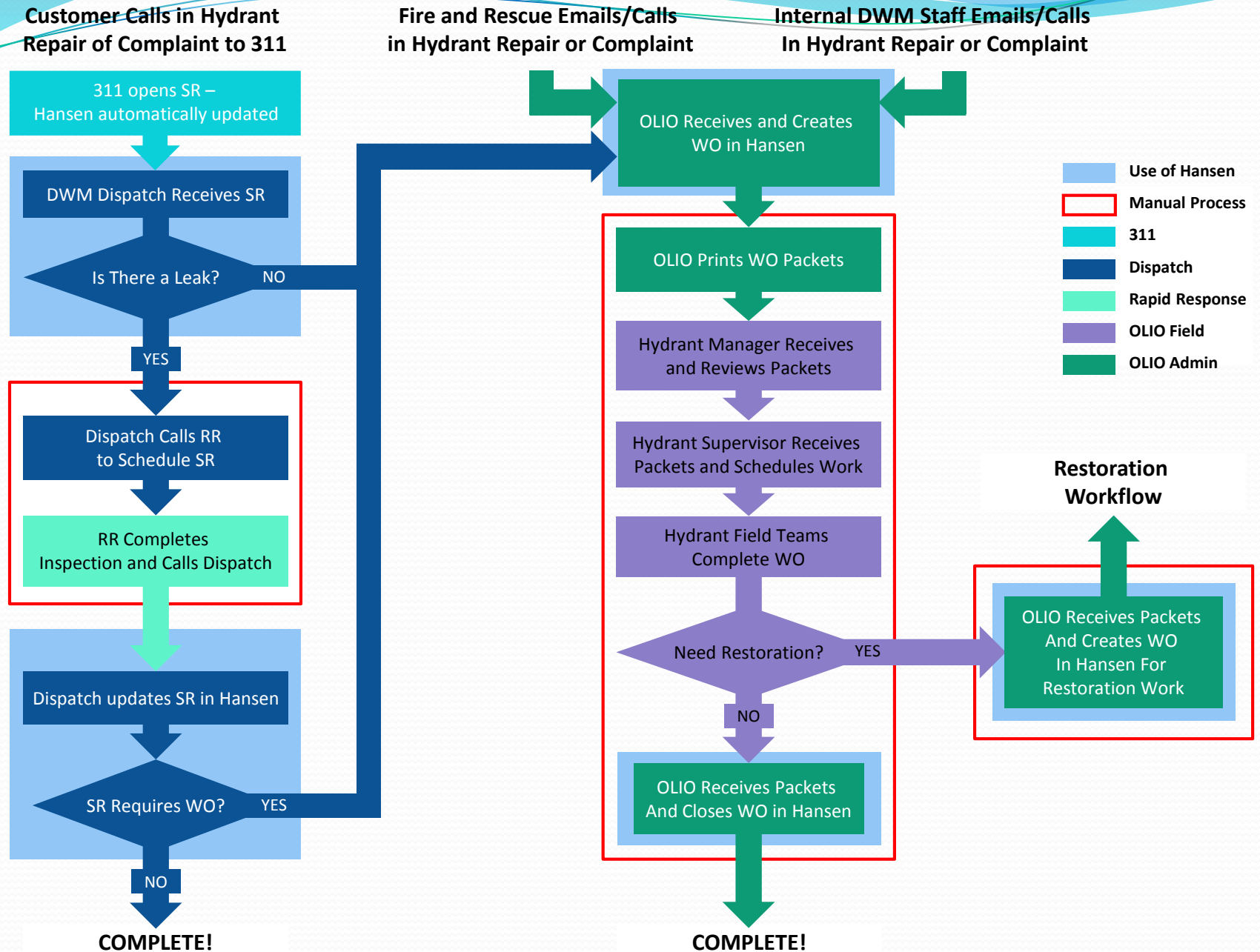
*Crew member names (among other fields) available in drop-down format in order to speed up time of data entry in form*

## Method:

- Weekly meetings
- Workflow process discovery
- App development
- Training
- Procurement of hardware
- Field testing



# OLIO Hydrant Workflow: Before

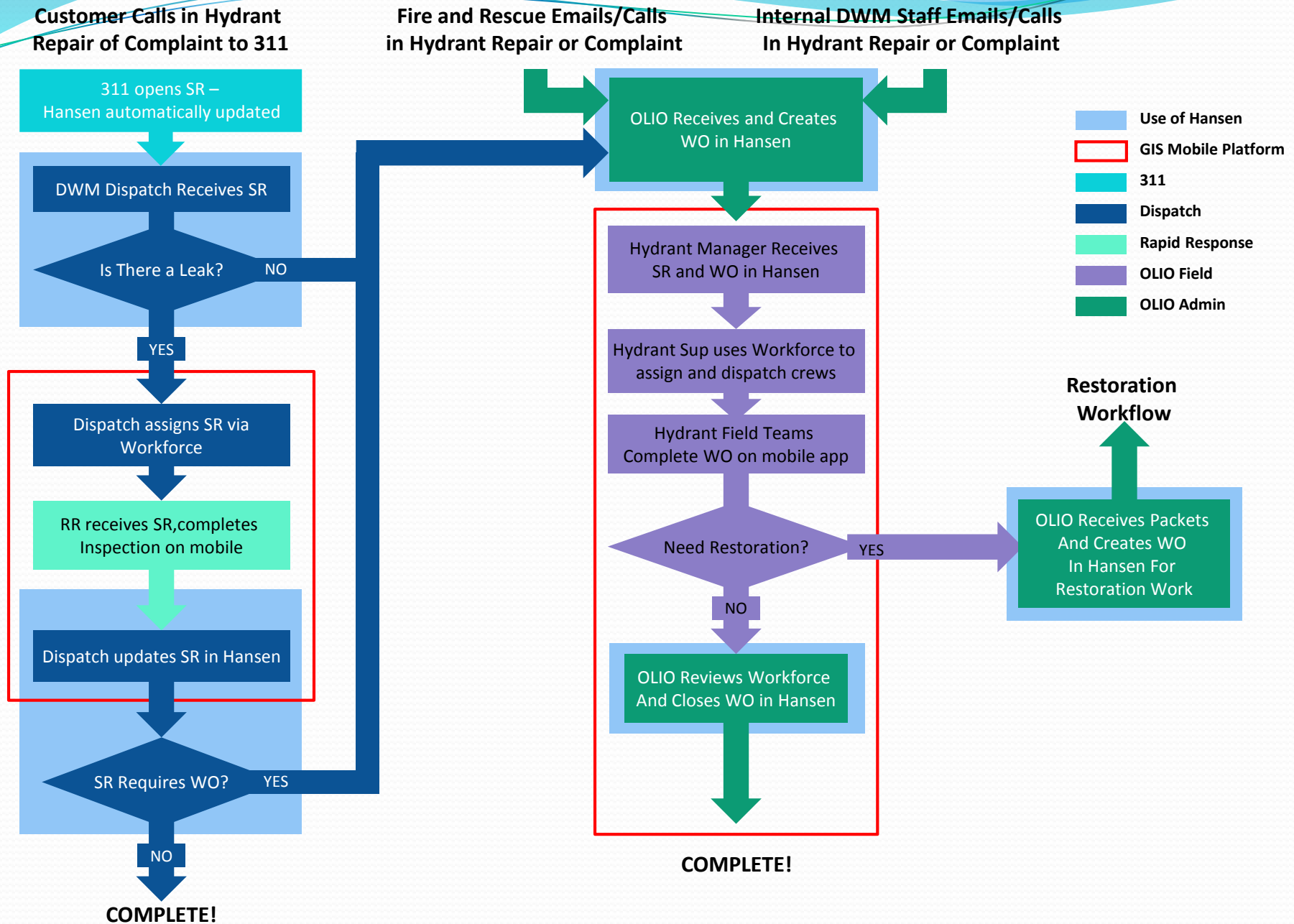


## Phase 2 (Current):

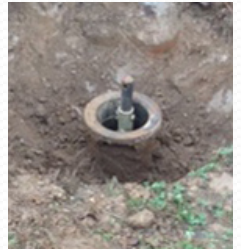
- ESRI WorkForce released in Jan 2016 – solved major hurdles
- Integration of platcards
- Finalized new workflow process
- April 25<sup>th</sup>
- June 13<sup>th</sup>
- Go-Live with hydrants - June 16<sup>th</sup>



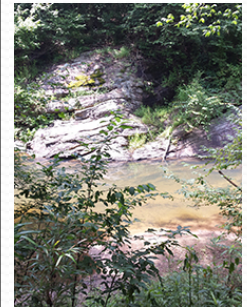
# OLIO Hydrant Workflow: Workforce Integration



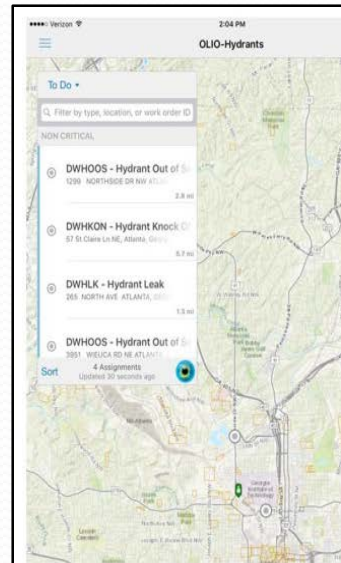
# Atlanta Workforce Dispatch Demo



# Phase 2 - Workforce App for Hydrant Pilot



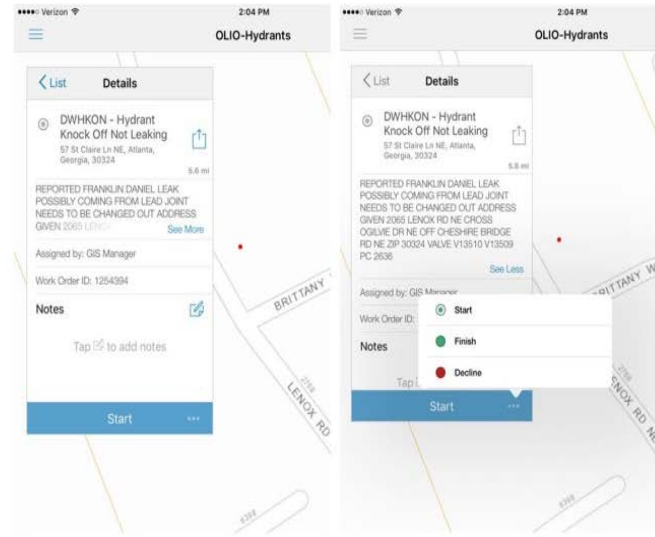
- Displays To Do List
- Routing resolved
- Acknowledgment of assignments
- Access to platcards



Map within WORKFORCE showing each person's To Do list

As crew personnel taps on item, map zooms to location and more information becomes available—including requested timeframe for completion and urgency of work needed

- More detailed information made available once tapping on item
- Crew acknowledges receipt of work and updates status accordingly
- Information reported back to dispatcher in real-time



# Workforce Mobile Application

## Pros

- Ease of use and adaptability
- Fast roll-out
- Reduction in time and paper use
- Low Cost
- Internal ownership and support
- Locations of field teams

## Cons

- Internal staff allocation – development, training, maintenance
- Dependent on IT infrastructure





## Roadblocks:

- Interoperability
  - Web Services
- End-user acceptance
- Email and logins for field crews
- GIS integration is limited
- Proper tools do not exist to manage SLA's



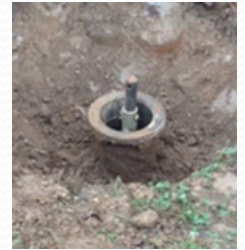
## Cost:

### Phase 1 and 2 – Mobile App Creation

Phase 1			
Resource	Task	Total Cost	Comment
GIS Coordinator	App Development	\$4,150	1/2 Time for 3 months
GIS Coordinator	Data and Integration Backend	\$4,150	1/2 Time for 3 months
Navigator for ArcGIS Online	Routing and Navigation	\$250	5 licenses
iPad Tablets	Hardware for field	\$4,152	6 Tablets
		\$12,702	

## Next Steps:

- Integrating ESRI's Survey123
- Team rollout for valves, rapid response, meters, etc – 2016-2017
- Isolation Trace/Mainbreak Reporting Tool
- Web Services



## Closing Remarks:

- DWM Workforce is a platform solution
- Everyone is invested in it's success – not just GIS team
- Simple can be more difficult than complex
- Versatile and compatible
- Huge impact to response time, closure rates and risk



# Questions?

