

Presentation UC 725

Improved Stream Inspection Workflow Using ArcGIS Online

**2014 ESRI User Conference
The Office-to-Field Connection
3:15-4:30 pm – Room 28D
July 15, 2014**

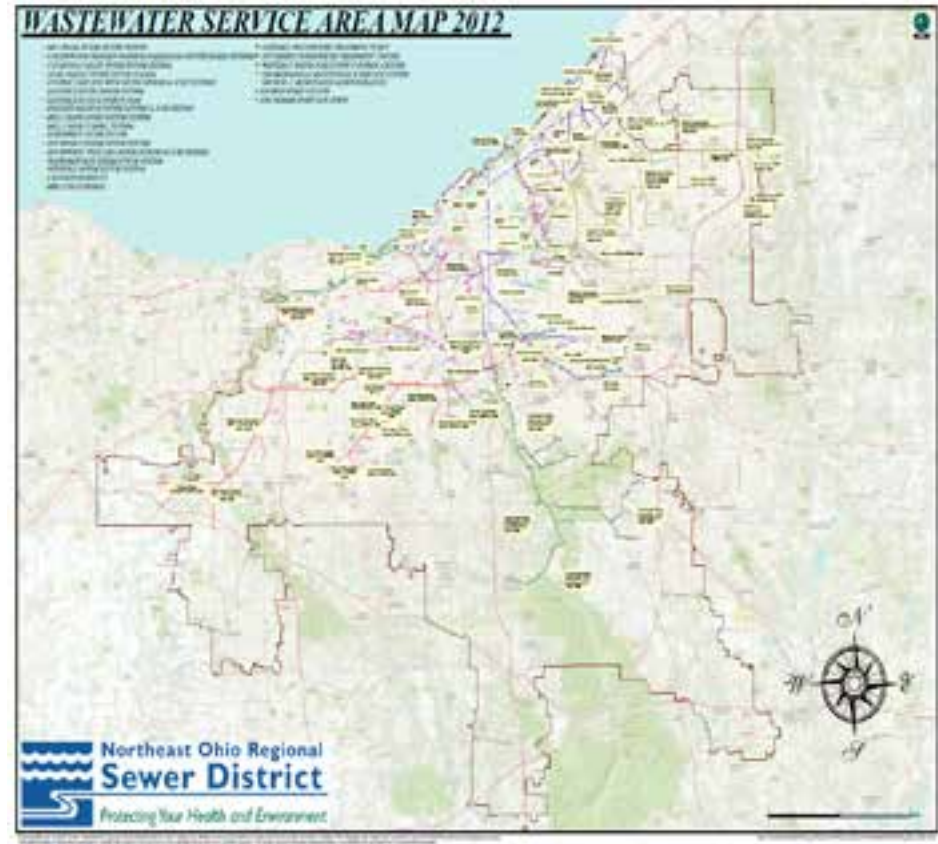
Jeffrey Duke, P.E. GISP
dukej@neorsd.org

Brian Villers
villersb@neorsd.org



Background: NEORSD

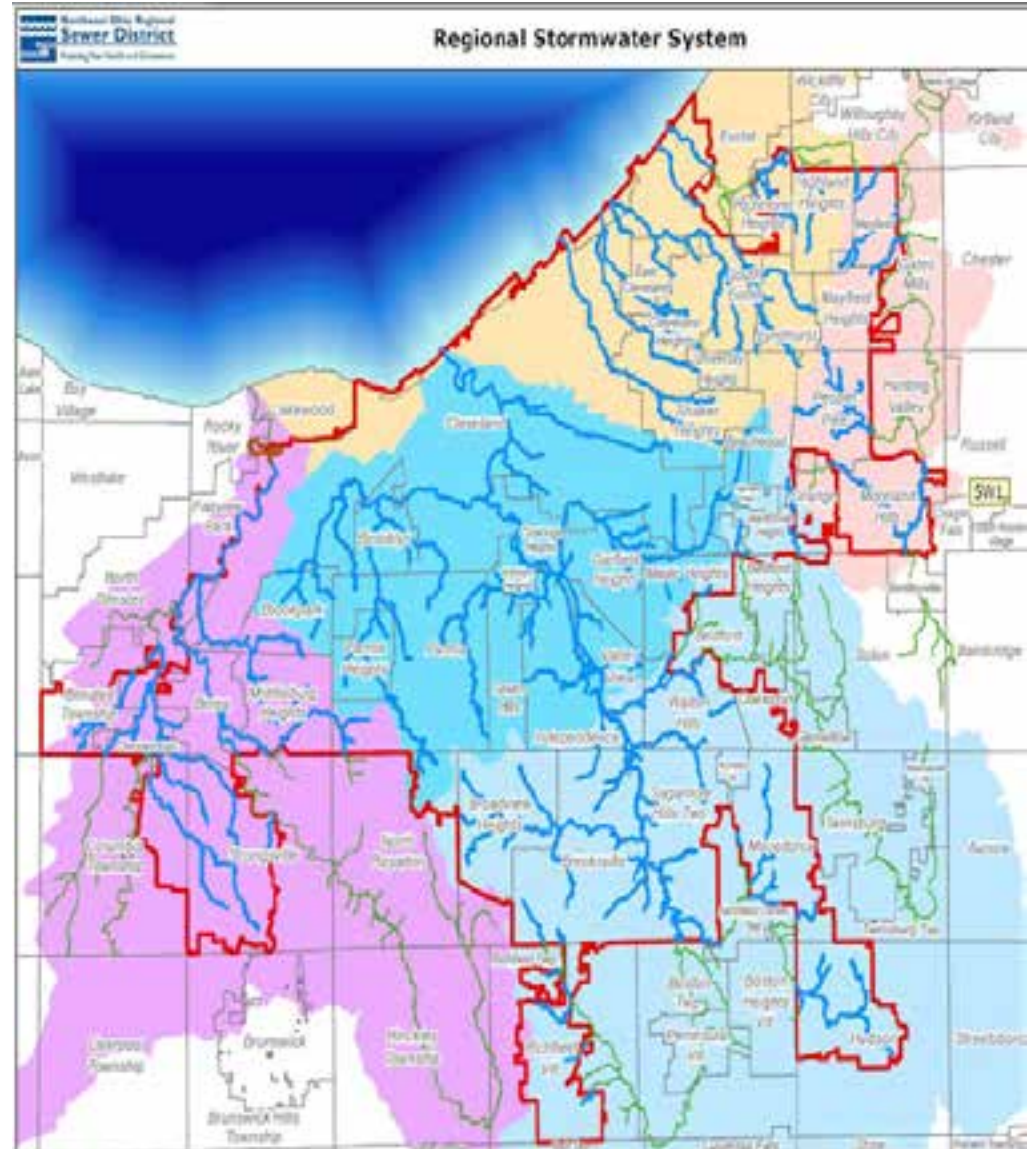
- **Regional Wastewater Utility (1972):**
 - Collect & treat wastewater
 - CSO Control (\$3B Program)
 - Cleveland + All/Part of 62 Suburbs in 4 Counties
- **Not responsible for local sewers**
- **Separate entity from local water utilities**
- **Court Order Mandate**
 - “develop a detailed integrated capital improvement plan for regional management of wastewater collection and storm drainage to identify a capital improvement program for the solution of all intercommunity drainage problems (both storm and sanitary) in the District”



Overview: 2013 Regional Stormwater Utility

TASK:

- Stream Inventory & Inspections
- ~350 Miles
- 1000s of “Assets”
 - Stream Channels
 - Culverts (Crossings)
 - Major Structures)
- Observations
 - Debris
 - Erosion
 - Flooding
- Maintenance Inspections
 - Recommendations
- **Sept. 2013 – Court Decision**



Comparison: 2013 Data Collection vs. 2014 Data Collection

Item	2013		2014
WHO	External (Consultant)	≠	Internal (NEORS Staff)
HOW	FULCRUM (Disconnected)	≠	AGO (Connected & Disconnected)
QC	In-Progress/Stopped	≠	Inspection Workflow Step
WORKFLOW	Handoff of data – minimal NEORS staff involvement	≠	Thorough (using AGO)
DATA ACCESS/DELIVERY	Decentralized, Static/Snapshot	≠	Centralized, Dynamic/Live

Challenges

Process Challenges

- Paper vs. Digital
- Large # of data attributes (140+)
- Analysis, compilation, reports
- New personnel & workflow
- Program needs vs. DB design



Technical Challenges

- Web GIS Platform (AGO)
- Devices/Connectivity
- Resources, Training
- Out of Box (not customized)



User Challenges

Improvements: Stream Inspection Workflow

Trigger Events

- Observations
- Trouble Spots
- Customer Service
- Storm Response

Create/Assign WO

- Work Order Created
- Field Crew Assigned
- Field Activity Scheduled

Field Activities

- Perform Inspection
- Photos
- Condition Assessment
- Develop Recommendations

Review/Finalize

- QA-QC
- Follow-up as needed
- Refine Recommendations

Close WO

- Field Activities Complete
- Reports Generated
- Recommendations Shared

Recommendations

- Further Study (Master Plan)
- Inventory Issue (GIS)
- Maintenance Issue
- Monitoring Recommendation
- Utility Issue
- Water Quality Issue



Solution: ArcGIS Online – Inspection Groups

Trigger Events
Customer Service



SWIM Group 1 - ISR

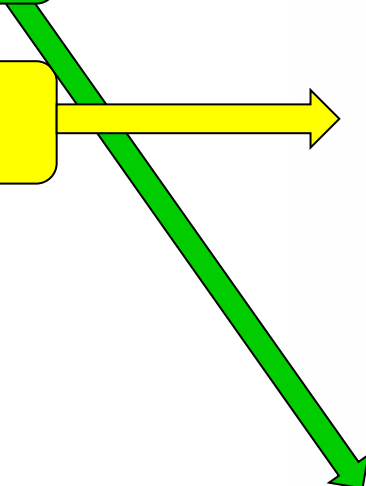
Stormwater Inspections and Maintenance maps for ISR data input to identify proposed field inspections.

created by villersb_NEORS on June 25, 2014

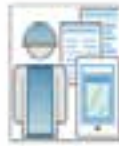
[Details](#)



Create/Assign
WO



Field Activities



SWIM Group 2 - Crew Field Inspections

Stormwater Inspections and Maintenance (SWIM), Collection of Mapping Applications for SWIM Field Inspections.

created by villersb_NEORS on June 25, 2014

[Details](#)



Review/Finalize



SWIM Group 4 - Work Order Management

Stormwater Inspections and Maintenance (SWIM), Collection of Mapping Applications for SWIM Work Order Creation, Reviewing, and Finalization.

created by villersb_NEORS on June 25, 2014

[Details](#)



Close WO



SWIM Group 5 - Analysis

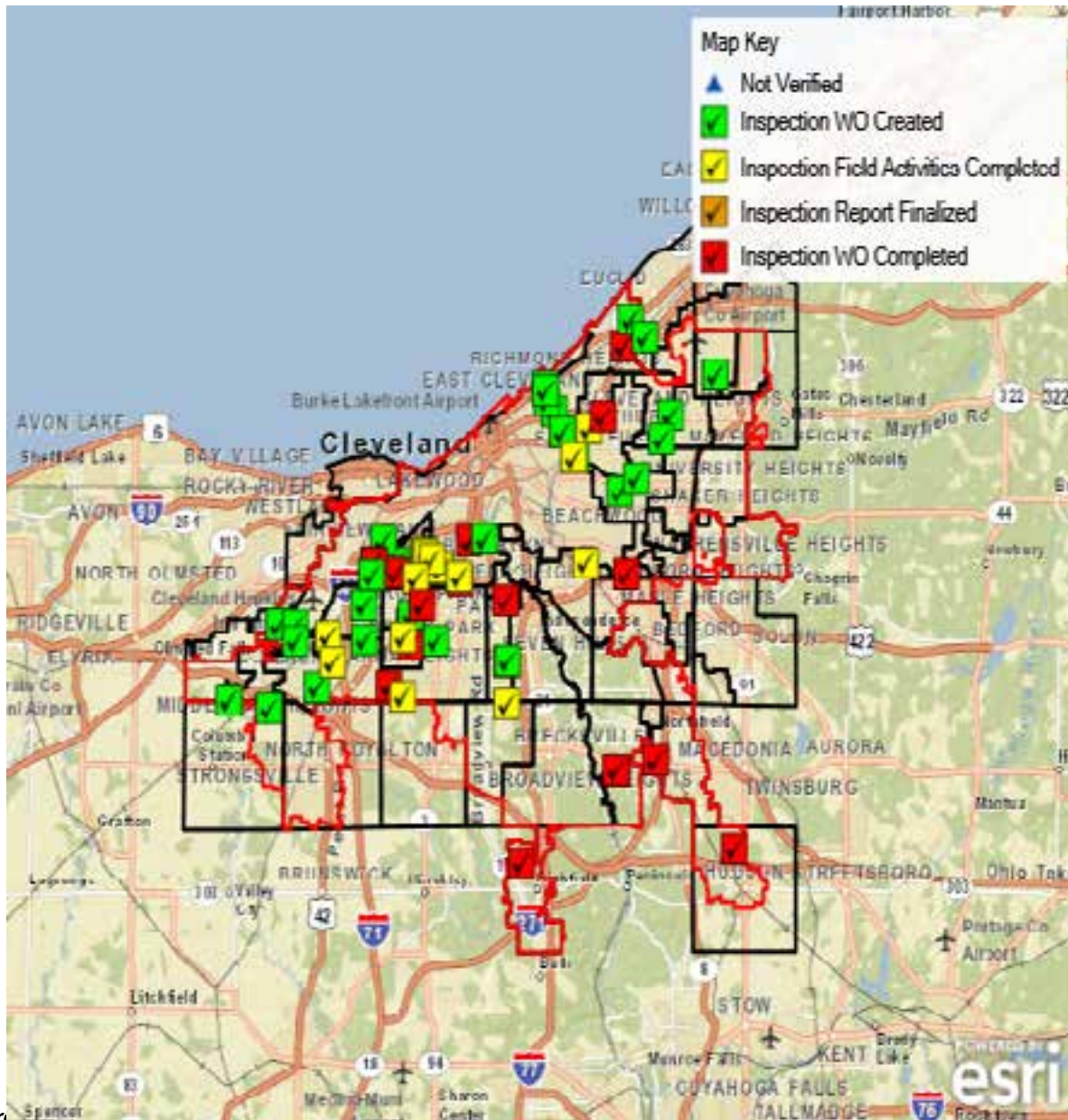
Stormwater Inspections and Maintenance (SWIM), Collection of Mapping Applications for SWIM Inspection Analysis.

created by villersb_NEORS on June 25, 2014

[Details](#)



Solution: ArcGIS Online – Work Order Management Web Map



Lessons Learned

Process/Tool Perspective

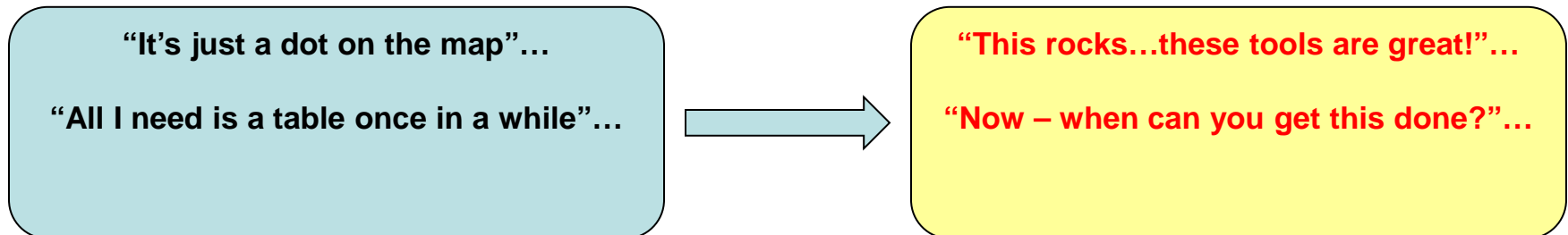
- Adaptable (Flexible)
- Collaborate (Development)
- Continual Improvement
- Evolutionary

Technical

- Data – DB, QA-QC, Synchs
- Development – Cloud/Internal
- Documents – Attachments

User Perspective

- Acceptance
- Benefits
- Functionality
- Limitations
- Manage Expectations



The Road Ahead

- **SWIM Inspections**
 - SURF
 - ANALYSIS
- **Other AGO Apps**
 - WQIS Apps
 - Outreach – Good Neighbor Ambassadors
 - Redline/Markup Tool
 - Public Watershed Viewer



**Jeffrey E. Duke. P.E.
GISP
GIS Services Manager**
dukej@neorsd.org

**Brian Villers
GIS Technician/AGO
Administrator**
villersb@neorsd.org

216-881-6600
www.neorsd.org



The screenshot shows the website's navigation menu (HOME, GALLERY, MAP, GROUPS, BY CONTENT, MY ORGANIZATION) and a search bar with the name 'Jeffrey'. The main content area features a large banner image with the text 'Your Sewer District... Keeping our Great Lake great.' Below the banner are four interactive map tools: 'Regional Project Viewer', 'Public Watershed Locator Application', 'Community TCM Project Viewer', and 'BE 10252 US Project Location Viewer'. A 'PROJECT CLEAN LAKE' logo is also present. A text block below describes the district's role in wastewater management and stormwater management in the greater Cleveland Metropolitan Area, listing three treatment plants (Eastley, Southerly, and Westernly) and mentioning the Regional Stormwater Management Program.