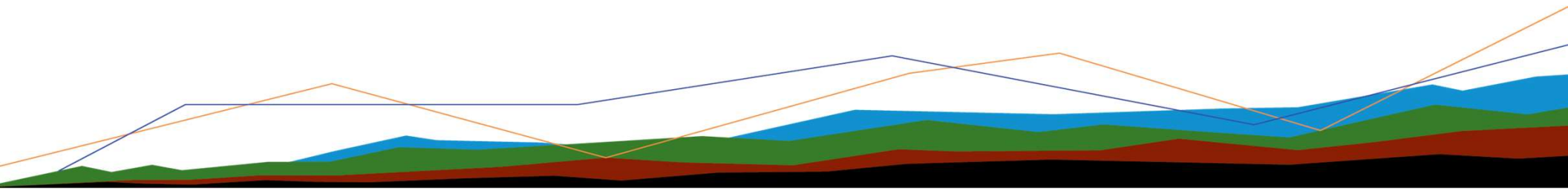


Taking the DATA MANAGER out of DATA MANAGEMENT

The ability to scale implementation of data management systems is often limited by the need for dedicated data analysts and system administrators' involvement throughout the data lifecycle. Using automated workflows and process improvements we can put the work back into the hands of project teams and effectively limit the involvement of data professionals. A discussion of scaling data management workflows, approaches to develop standard tools, templates, and dashboards along with process improvements, automation and challenges.

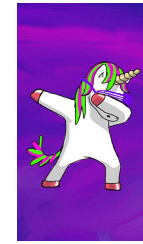
With a fresh start how can we reimagine data management?



Concept

- One web interface (dashboard) for all projects
- Create a STANDARD table reporting template
- Capture project data in an Enterprise database
- Work with PMs to standardize lab requests
- Work with labs to standardize data submittals
- Project teams able to manage their own data
- Data managers for support only
- Snapshot visualization of data

Challenges



- Unique project needs (every project is a)
- Capture, manage and maintain state/federal screening levels
- Creation of a flexible/dynamic table template for reporting
- Education (training teams to own their data)
- Scaling UP!

Technical Challenges Flexible Crosstab

Problem: Flexible Number of Action Levels

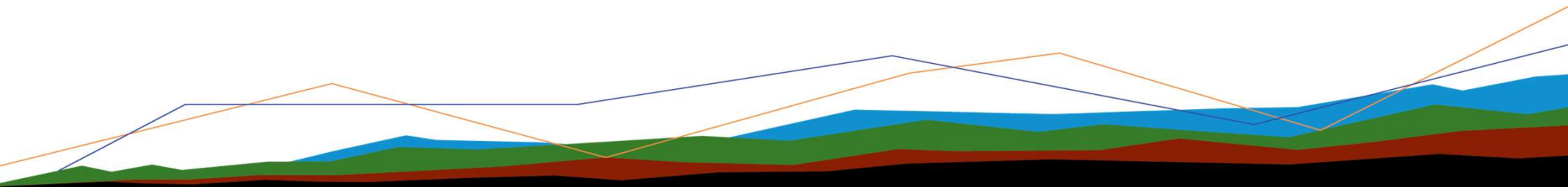
- Different sites need different numbers of action levels
- "Action Levels II with Parameters" report allows for flexible action levels – but number of action levels must be the same for a given crosstab template

Solution: Not yet identified

- Current workaround is to have a different crosstab template for 1 action level, 2 action levels, 3, 4, etc.

Template Has Fixed Number of Action Levels

		Eagle Industries				
		Location:	DEQ1	DEQ1	DEQ1	DEQ1
		Date:	3/18/2020	11/2/2020	3/4/2021	7/13/2021
Analyte	Unit	USEPA GW RSL	USEPA GW RSL TAPWATER			
SW6010						
Arsenic	mg/l	0.01	0.000052	0.0172	0.0124	< 0.0100 U < 0.0100 U
Lead	mg/l	0.015	0.015	0.0177	0.00550 J	< 0.0100 U < 0.0100 U



Technical Challenges Flexible Crosstab

Problem: Time Series Reports

- Method variations over time cause grouping issues

Terracon		Eagle Industries			
Location:		DEQ1	DEQ1	DEQ1	DEQ1
Date:		3/18/2020	11/2/2020	3/4/2021	7/13/2021
Analyte	Unit	USEPA	USEPA GW		
		RSL	RSL	TAPWATER	
SW6010B					
Arsenic	mg/l	0.01	0.000052	0.0172	0.0124
Lead	mg/l	0.015	0.015	0.0177	0.00550 J
SW6010C					
Arsenic	mg/l	0.01	0.000052		< 0.0100 U < 0.0100 U
Lead	mg/l	0.015	0.015		< 0.0100 U < 0.0100 U



Solution: Base Method Reporting

- User can select whether to report specific method (6010B, 6010C) or base method (6010)

Terracon		Eagle Industries			
Location:		DEQ1	DEQ1	DEQ1	DEQ1
Date:		3/18/2020	11/2/2020	3/4/2021	7/13/2021
Analyte	Unit	USEPA	USEPA GW		
		RSL	RSL	TAPWATER	
SW6010					
Arsenic	mg/l	0.01	0.000052	0.0172	0.0124 < 0.0100 U < 0.0100 U
Lead	mg/l	0.015	0.015	0.0177	0.00550 J < 0.0100 U < 0.0100 U

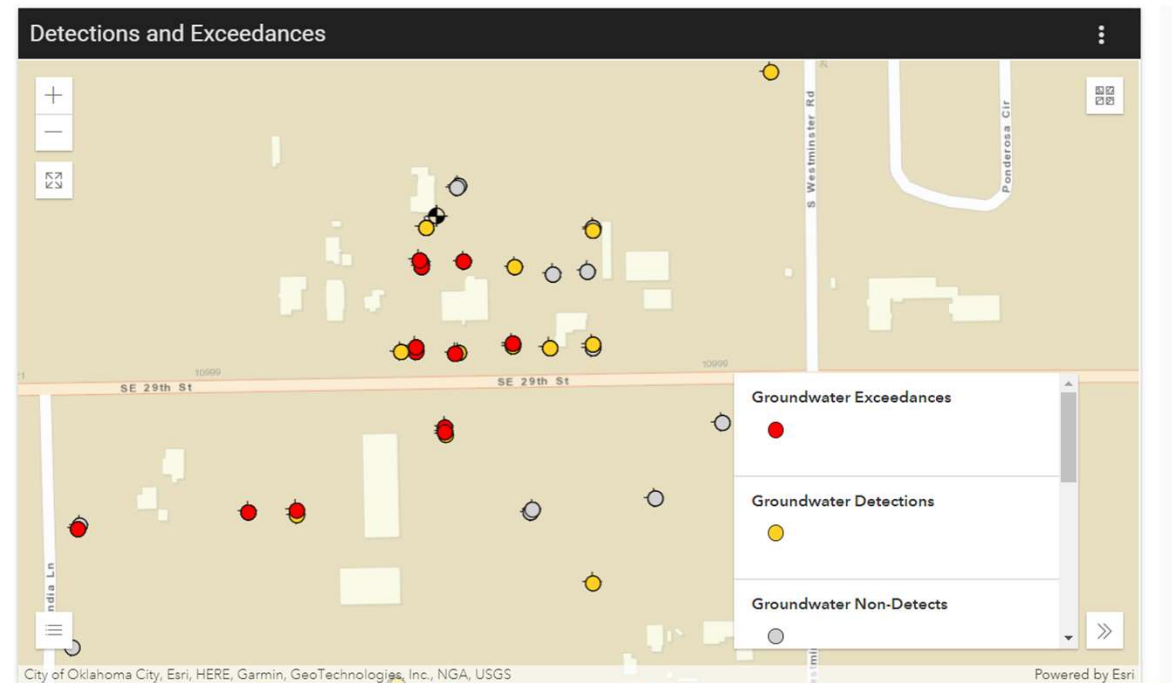
Technical Challenges Map Symbology

Problem: Analytical symbology

- How to display analytical results with a color scale that can be used for any site and any analyte
- How to show 'where the problem is' without defining specific data ranges
- EQUIS Enterprise 'Map Widget' does not allow dynamic ranges

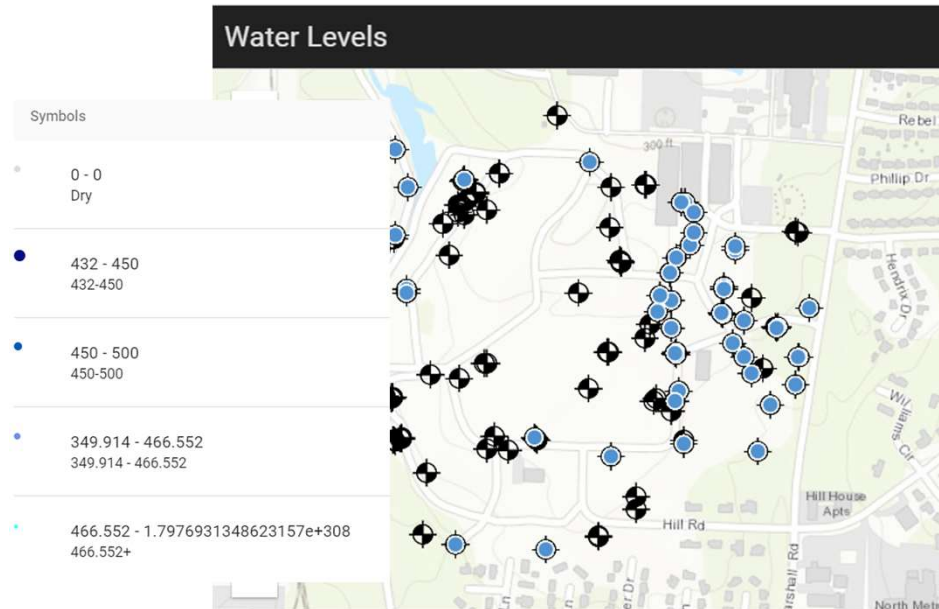
Solution: Uniform 3-Level Symbology

- Non-detects, Detections, Exceedances



Technical Challenges Map Symbology

Map Ranges
Not Dynamic



Problem: Water Level symbology

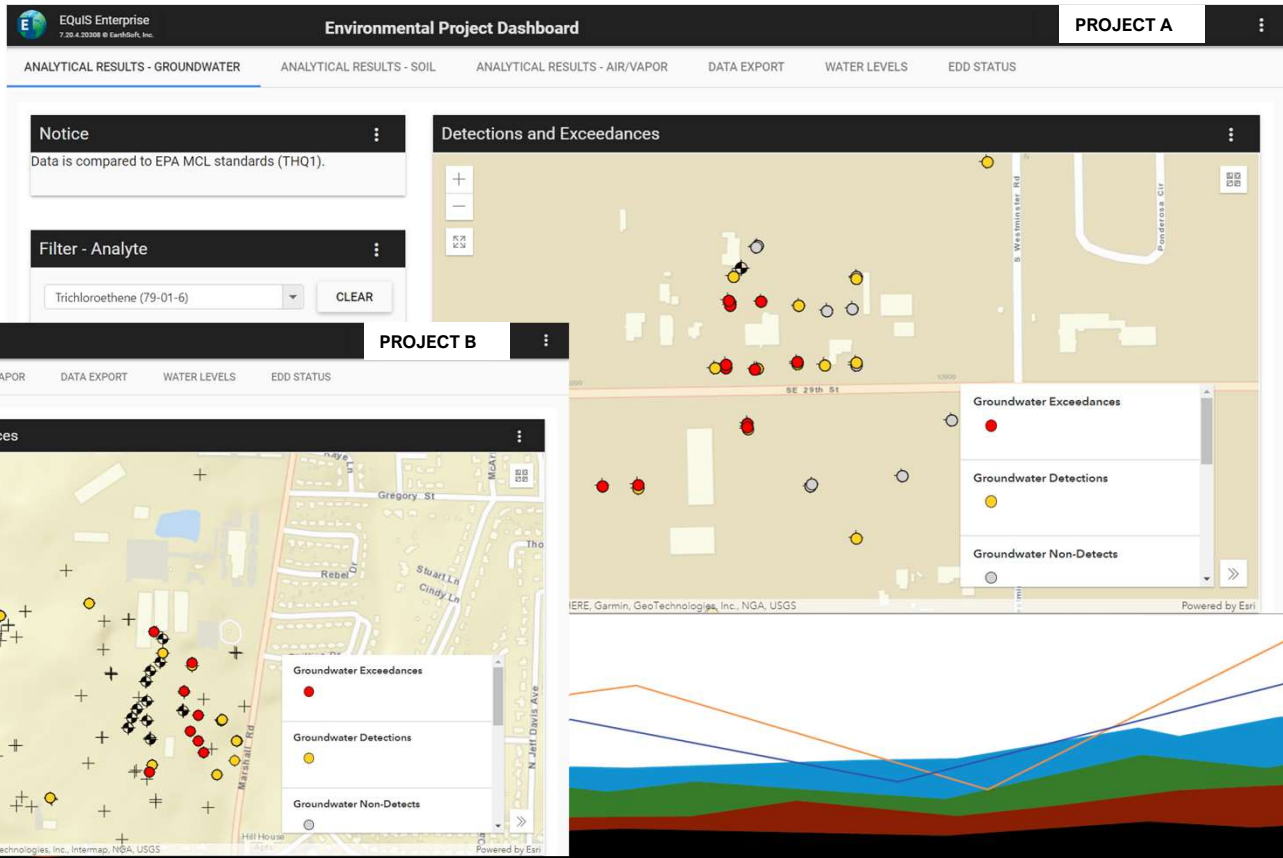
- How to apply one symbology to water levels on any site whether the data range is 10-12 ft or 1000 - 1080 ft
- EQUIS Enterprise 'Map Widget' does not allow dynamic ranges

Solution: Not yet found

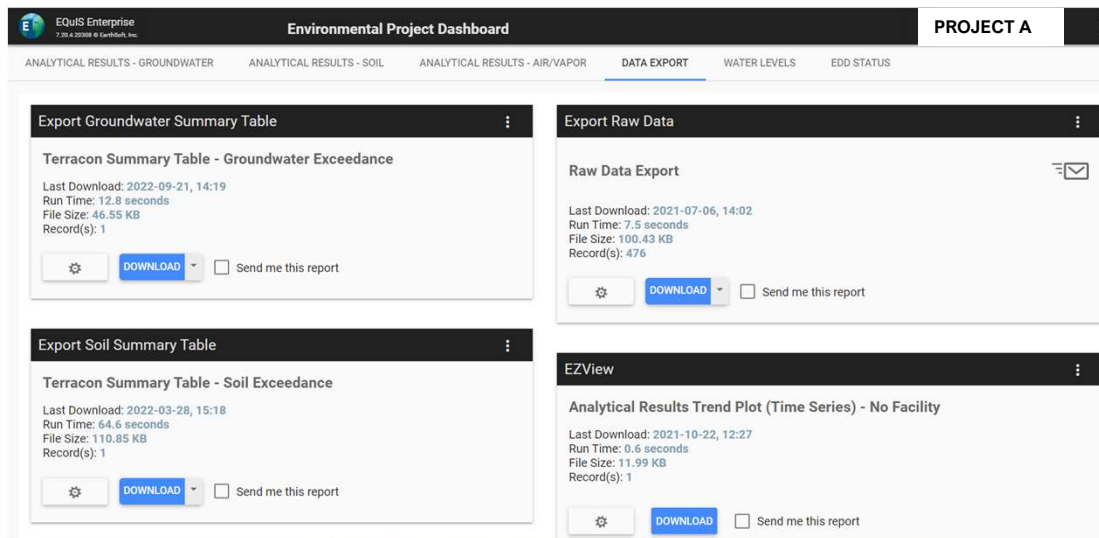
- May be able to normalize data in a 'symbology' field in report (in testing)

Technical Successes Dashboards

Create a single Environmental Project Dashboard for all projects



Technical Successes Dashboards



Dashboard allows project teams to export formatted/screened tables in STANDRAD formats

The flexibility to choose project specific, state or federal screening

Raw Data Export for data visualization

Other Successes

- Automated exporting for data for basic figure creation
 - Site map and locations
- Creation and use of PM short Data Management plan
 - PM Worksheet for sample nomenclature development
 - Data management setup checklist
 - Field Team fact sheet
- Documentation, documentation, documentation

Questions?