

Automated Environmental Data Management

with ArcGIS and SQL Server

EEC Environmental

- Environmental consulting
- Wastewater, storm water
- Regulatory compliance
- Soil and groundwater
 - 4 Assessment
 - 4 Remediation
 - 4 Litigation support
- I.T. consulting



EEC Environmental

- Offices:
 - 4 Orange, CA
 - 4 Oakland, CA
 - 4 Annapolis, MD
 - 4 Tampa, FL

- Booth: 1610

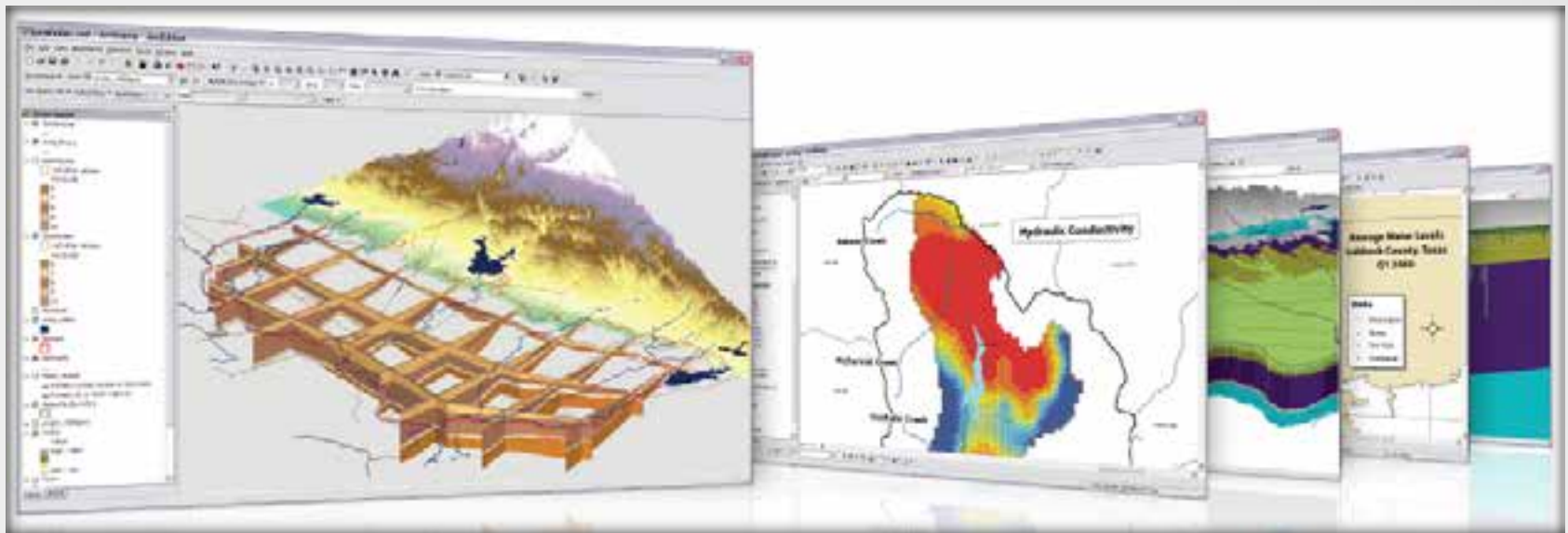
Environmental Data Management



- **Sample Location**
 - 4 Field Parameters
 - 4 Results
 - 4 Samples
 - 4 Lab Tests
 - 4 Results
 - 4 QC Info

Prior Art

- ArcHydro Groundwater
- EQuIS
- Hosts of Others...



In the beginning...

1. Faxed Lab Reports à Excel à Tables
2. Field Data à Excel à Tables
3. Tables à CAD à Figures
4. Tables à Modeling à CAD à Figures
5. Tables & Figures à Written Report
6. **QC Everything!**
7. All data à other formats à regulator

The Problems



- Separate datasets per site
- Inconsistent data formats
- Multiple applications
- Tedious data entry and transfer
 - 4 Copy and paste
 - 4 Manual data entry
- Lots of QC

The Solution

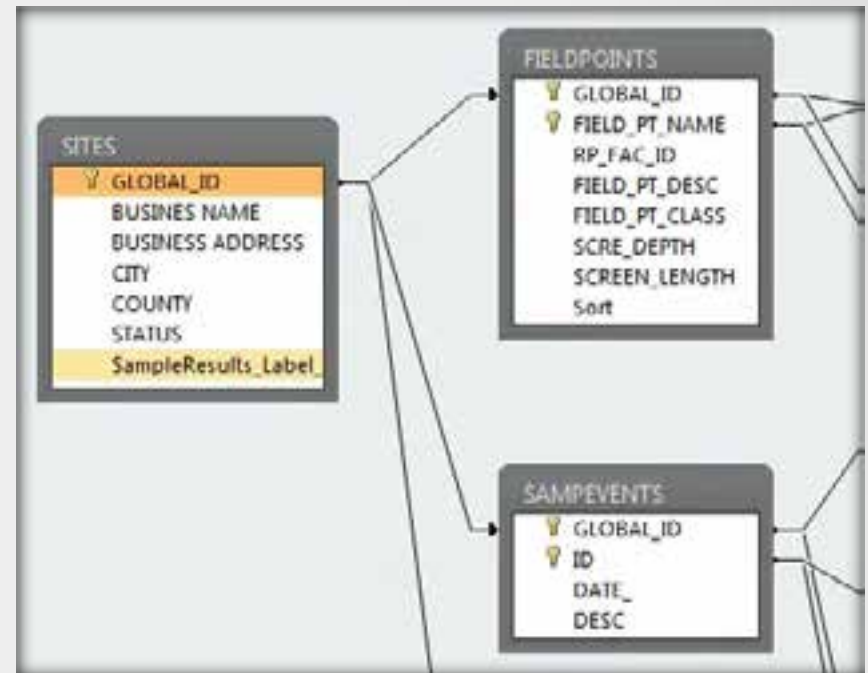


- One central database
- One preferred format
- Integrated with ArcGIS
- Still plenty of QC (but better QC)

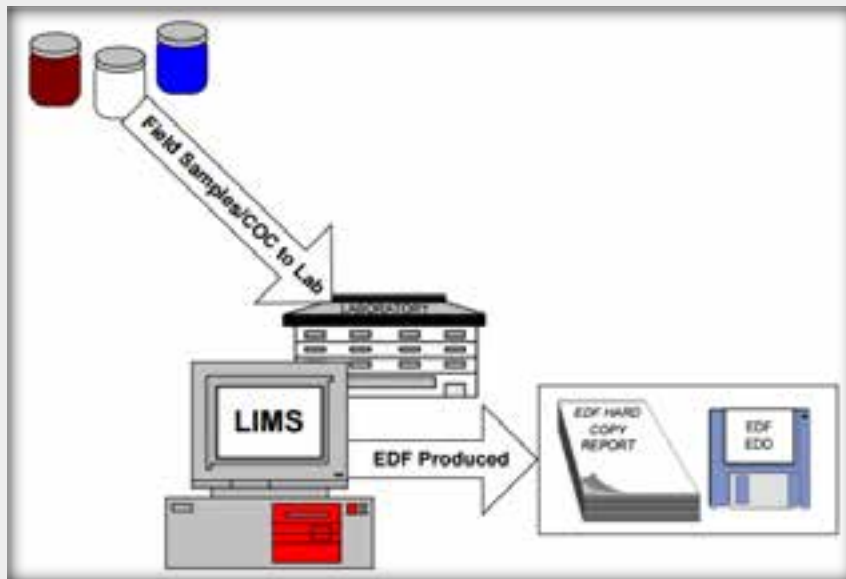
The Solution: Database

One SQL Server **database** for all sites

- Write once, use multiple
- One-stop shop
- Forces consistency
- Separation of concerns



The Solution: Data Format



- Preferred: LabEDF
 - 4 Well documented
 - 4 Standardized (but extensible) valid value lists
 - 4 Logical structure
 - 4 Used by **GeoTracker**
- Define mappings for other formats

The Solution: Applications

- Customized Microsoft Access
- SQL Server
- ArcGIS
- AutoCAD

The screenshot displays a software interface with two main panels. The left panel, titled 'Data Viewer', shows a hierarchical tree structure under 'EEC Environmental [EEC2]'. It includes a 'Data Imports' folder containing three 'Test' entries: 'LPZ-1', 'LPZ-2', and 'LPZ-3'. Each 'LPZ' entry lists several sample IDs with their corresponding IDs in brackets, such as 'A2540C [140307851]', 'D1498 [140307851]', 'SW6010B [140307851]', 'SW7470A [140307851]', and 'SW8260B [140307851]'. The right panel, titled 'Test Data Import', contains a form with the following fields: 'Sampling Event' (Now), 'ID' (540), and 'Description' (Test). Below the form, it states 'Imported on 1/7/2015 12:38:41 PM'. At the bottom of the right panel is a table with the following data:

SAMPID	LOCID
LPZ-1	LPZ-1
LPZ-2	LPZ-2
LPZ-3	LPZ-3
LPZ-4	LPZ-4
RSW-04	Ramon
WS-1	WS-1

The Solution: Data Entry



- Batch import, batch delete
- All data pulled from database
- Scripts to transfer between applications

Live demos are the best!

DEMO

Next!

- Upload data to regulator
- Generate lots of figures!

Using Python to Automate Map Series Creation

- Tomorrow 1:30 PM
- Room 26B

Other Uses

- Works with any analytical data
 - 4 Soil
 - 4 Groundwater
 - 4 Air
 - 4 Water quality
 - 4 Wastewater
 - 4 ...

“Data is data”

Future

- Incremental upgrades
- ArcGIS Server / ArcGIS Online?
- Deploy **outside EEC**
- Auto-upload to regulator

So What?



- Consolidate!
Centralize!
- Use the tools you know
- Make it easy to install **and update**

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