

Agile Information Management with EQuIS

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Imagine the result



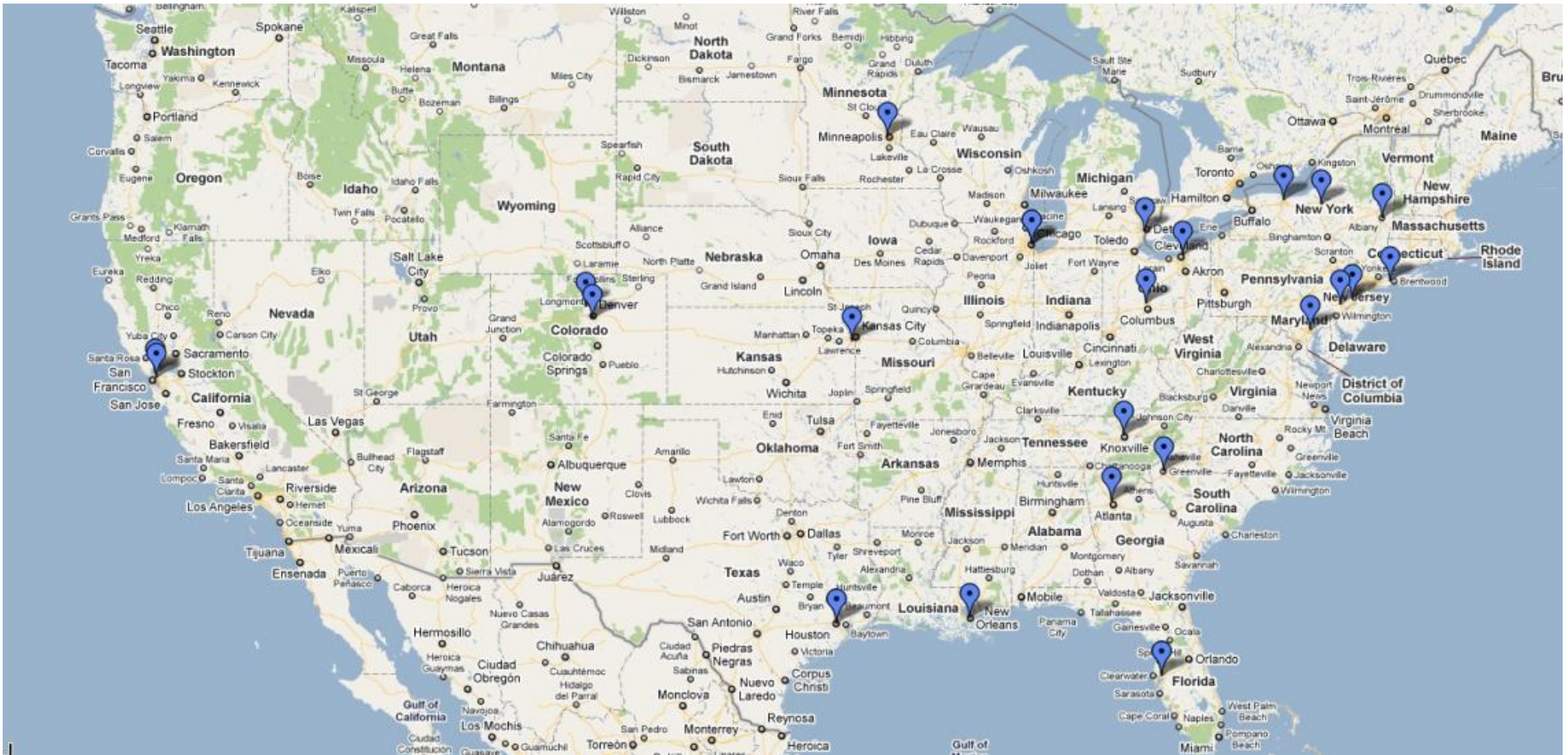
Presenter Bio



- B.A. Geology
- 19 years at ARCADIS, 22 years as a consultant
- Former field geologist, task manager, project manager
- Currently Technical Director for Information Management group in U.S.
- Based in Newtown, Pennsylvania office

Outline of Presentation

- Brief Overview of EQUIS footprint at ARCADIS US
- Our Information Management Philosophy and how EQUIS fits in
- Gap Analysis and Solutions
 - Data Collection
 - Data Validation/Verification
 - Reporting
 - Document Management
- Case Study



Distribution of Staff
65 staff nationwide

Global Collaboration



- Collaboration with the other ARCADIS Operating Companies to support clients
 - UK – Karl Daines /Zoe Braven-Giles
 - BE – Maaïke Bilau
 - BR – Claudio Lemos / Andre Hori
 - NL – Dick-Jan Van Driel / Geert Wijn
 - GR – Christine Reha/Stefan Fachmann

EQuIS Footprint

- Using EQuIS since 1997
- Started using EQuIS 5 in 2008
- EQuIS 5 sits on a 2-blade SQL Server 2008 R2 cluster
- EQuIS Enterprise highly leveraged for loading of data (80-90%)
- SPLA in very limited use

Database Statistics (as of 8/1/2011)

Total Facilities	889
Total Results	10,316,161
Total Enterprise Users	163
Total Power users	30
Total SSRS Users	2,600
Facilities using validation form	52

What's our philosophy?

- A successful Information Management (IM) strategy is at the core of every successful project.
- IM is a key area for **quality, efficiency and cost saving** improvements.
- Adaptability and agility are key skills in the environmental data management marketplace.
- Project stakeholders need access to their data.
- How does EQUIS fit into this?

Agility with EQuIS



- Given the size of our US Env division (3000+ personnel) drove us to look at fewer Pro licenses and an unlimited Enterprise license.
- Pro offers read/write capabilities and complex reporting, but has a steeper learning curve and a significant cost.
- Enterprise offers ease of use for casual users and consistent interface, but basic reporting and less flexibility introduced limitations.

EQuIS Schema



- We believe that the EQuIS database schema is the critical part of the equation
- The custom interfaces to that schema generally need to follow the following principles:
 - Import
 - Verify
 - Export
- Changes to the database schema have to be modular to allow for upgrades from Earthsoft and have to make business sense.

Gap Analysis



- We did a gap analysis and identified four areas for improvements
 - Data Collection from the field
 - Validation/Verification
 - "Canned" reporting
 - Document management

Data Collection



- Focuses on building and deploying tools for field staff to record the data at the point of collection
 - Spatial and Non-Spatial Data Collection
 - Produce paper field forms
 - Make data available for use in other IM tools.

EDGE Solution

EDGELite - Water_Level

Edit View Record Help

Record 1 of 1

Water Level / NAPL Meas.

ABCFacility_01 | ABC Facility | Anywhere, CA

Facility Code: ABCFacility_01

Sys Location Code: MW-01

Measur. Date: 3/ 2/2011

Measur. Time: 10:55:39 AM

Technician: Mary A McKenzie

Recorded by: Mary A McKenzie

Well Info

Dry?

Meas. Well Depth (ft bmp): 34.28

Install Well Dth (ft bmp): 34.5

Install Well Dth (ft bgs): 34.5

Bottom Status: hard

Water Level Measurement

WL Depth: 18.52

Top of Casing: 791.87

WL Elevation: 773.35

Water Remarks

ddor

Next Well Enter NAPL

Water NAPL Well Integrity

OK Cancel

- Electronic Data Gathering Environment (EDGE)
 - Ruggedized field equipment
 - Database on an ARCADIS server
 - Desktop connection to server to support development and data review
 - Internet to transfer data
- Standard applications
- Custom-built applications for specialty services

EDGEsoil - Drill_Activity

Edit View Record Help

Record 1 of 1

Drill Activity

ABCFacility_01 | ABC Facility | Anywhere, CA

Sys Location Code: Location Name 1

Location Name: Location Name 1

Start Date: 9/30/2010

End Date: 9/30/2010

Personnel

Geologist: Mary A McKenzie

Technician: Patrick H Short

Weather

Cool, Windy, Light rain, 60 deg F

Purpose

Drill Event: Investigation

Location Purpose: testing

Edit Location Record

New:

Repaired:

Deepened:

Abandoned:

Replaced:

Public:

Drill Setup

Subcontr. Code: 123456

Diameter: 8

Diameter Units: in

Casing Size: 2

Remarks

Enter any remarks here.

Edit PSV Record

Gen Info | Recovery (BC) | PID | Lithology | Sampling | Well | Photos | Approval | Print

OK Cancel

EDGEsoil - Lithology

Edit View Record Help

Record 1 of 1

Lithology

Facility Code: ABCFacility_01

Sys Location Code: Location Name 1

Date/Time: 10/1/2010 8:26:15 AM

Geo Unit Code 1: GeoUnit Code 1

Consolidated:

Depths

Start Depth: 0

End Depth: 2

Color

Munsell Hue: 10.00G

Munsell Color: 10.00G7/4

10992002

General Color: greenish gray

Build Description

Material Name: OH

Primary: Clay

Secondary: some (20-30%), silt

Tertiary: trace, fine sand

Other: med dense, high plasticity, med stiff, dry, organic, other bio, no odor

Final Description

Write Description

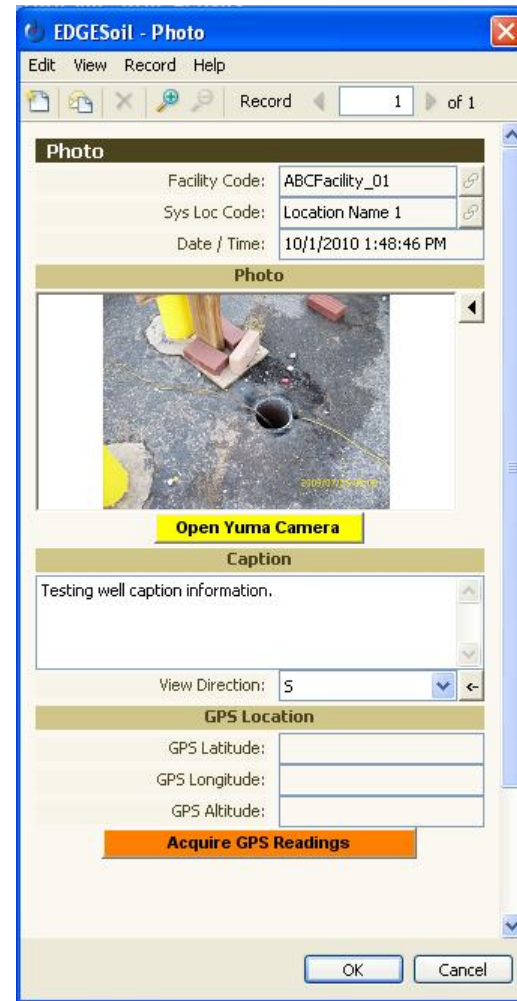
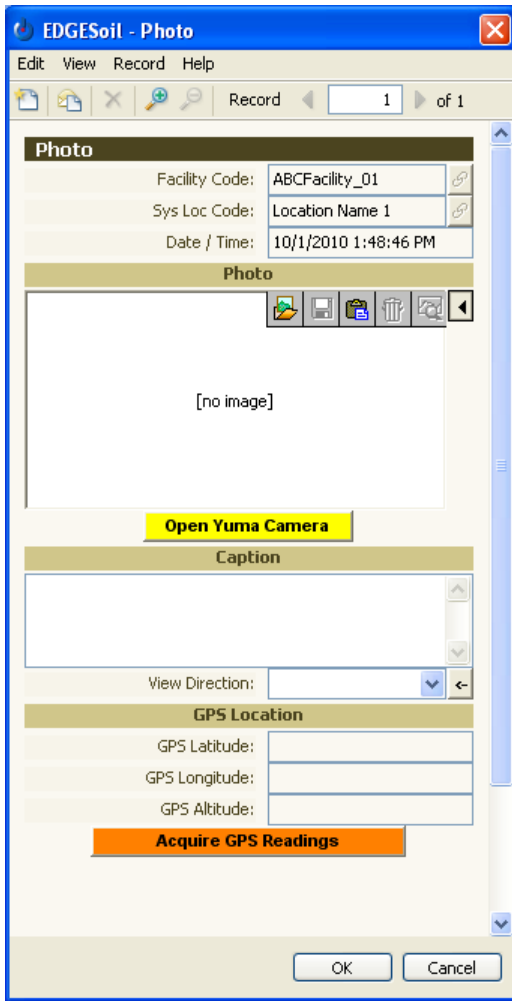
10.00G7/4, Clay, some (20-30%), silt, trace, fine sand, med dense, high plasticity, med stiff, dry, organic, other bio, no odor

Material Standard Description

Organic clays of medium to high plasticity, organic silts.

Lithology

OK Cancel



EDGE-Photo Management

Example Output

O&M Task Review

Task: 20110301_ABCFacility

Duration: 3/1/2011-3/1/2011

Gas Meter Reading 5993 Therms
 Technician 2 Tim Stroufakis
 Electric Meter Reading 0088 kWh
 Comments slg/pf/pfg
 Technician Valerie Kull

Treatment System Type: SVE

Data Collection Parameters

=Optimal =Outside Optimal Limits =Outside Permit Limits

SVE MW-1

Parameter	Arrival	Departure	Unit	Arrival Remark	Departure Remark
Air Flow			scfm	Not accessible	Not accessible
Location Remark	Broken				
Percent open			%	Not accessible	Gauge broken
PID/FID Reading			ppmv		Not accessible
Temperature			F	Gauge broken	
Vacuum			H2O	Gauge broken	Not accessible
Velocity			fpm	Gauge broken, plus 1	Gauge broken

SVE MW-2

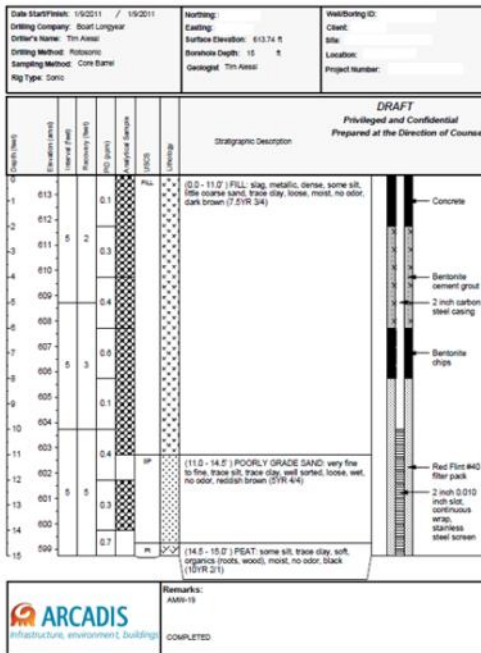
Parameter	Arrival	Departure	Unit	Arrival Remark	Departure Remark
Vacuum			H2O		

SVE SYSTEM

Parameter	Arrival	Departure	Unit	Arrival Remark	Departure Remark
Operating Hours			hrs		
System Status	ON				

Sampling Information

SVE_INF_1	System Sample Code	Sample Date	Sample Time	Matrix
	SVE_INF_1_AE[201103011143]	03/01/2011	11:43 pm	AE
SVE_INF_2	System Sample Code	Sample Date	Sample Time	Matrix
	SVE_INF_2_WIG[201103011103]	03/01/2011	11:03 am	WIG
	SVE_INF_2_AE[201103011103]	03/01/2011	11:03 am	AE
	SVE_INF_2_AE[201103011056]	03/01/2011	10:56 am	AE



Low-Flow Groundwater Sampling Log

Page 1 of 2

Project: ABC Facility Site Location: Anywhere, CA Well ID: MW-01

Project No. 06/25/2010 Date: 06/25/2010

Drilled By: Mary A. McKenzie Cased By: N/A

Sampling Time: Begin 11:47 End 11:59

Weather: Not-humid, Muggy Replicate No. N/A

Instrument Identification: Water Quality Meter #1: N/A Casing Material: N/A Casing Diameter (in): 2.00 Sounded Depth (ft bwp): 22.89 (05/25/07) Depth to Water (ft bwp): N/A P10 Reading: N/A

Field Parameters: Water Quality Meter #2: L/Moist 2009i Purge Method: Geotest Screen Interval (bwp): Top 18.00 Bottom 22.00 Pump Intake Depth (ft bwp): 22.00 Pump Time: 11:47 End 11:58

Time	Minutes Elapsed	Flow Rate (mL/min)	Volume Purged	TEMP (°C)	pH (at 100)	SCond (µS/cm)	DO (mg/L)	TURB (NTU)	DTS (feet)	COLOR	ODOR	Appearance
11:52	05:27	N/A	1.00	18.00	7.80	23.00	23.00	18.00	10.25	clear	no	N/A
11:54	05:29	N/A	3.00	23.00	7.70	24.00	23.00	12.00	10.25	clear	no	N/A
11:55	05:32	N/A	3.00	23.00	7.70	24.00	23.00	12.00	10.25	clear	no	N/A
11:57	05:38	N/A	4.00	23.00	7.70	24.00	21.00	1.00	10.40	clear	no	N/A

Parameter Container Number Preservative

Comments

Sampling Personnel: Mary A. McKenzie Signature: *Mary A. McKenzie*

Well Casing Volumes

Gas./ft.	1-1/4" ± 0.06	2" ± 0.16	3" ± 0.37	4" ± 0.65	1-1/2" ± 0.09	2-1/2" ± 0.26	3-1/2" ± 0.50	6" ± 1.47
bwp	below measuring point	ms	ms	ms	ms	ms	ms	ms
°C	Degrees Celsius	mg/cm	mg/cm	mg/cm	mg/cm	mg/cm	mg/cm	mg/cm
gpm	Gallons per minute	N/A	N/A	N/A	N/A	N/A	N/A	N/A
mg/L	Miligrams per liter	NR	NR	NR	NR	NR	NR	NR

Material Code: AG - Amber Glass, CG - Clear Glass, PE - Polyethylene, PP - Polypropylene, T - Teflon, S - Silicone, O - Other

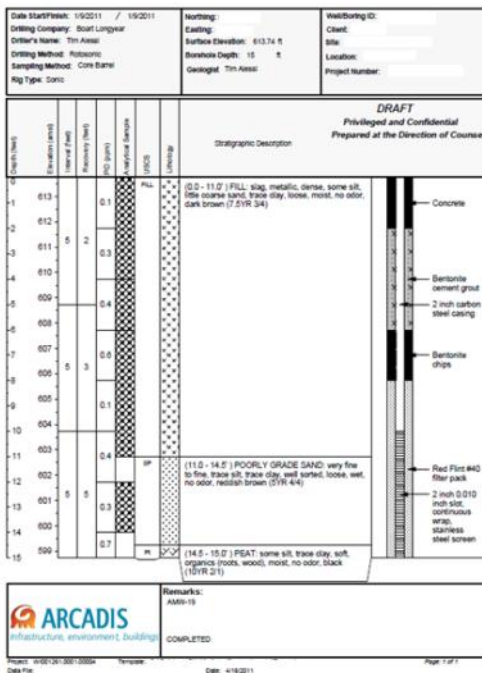
Purging Code: B - Baller, BP - Bladder Pump, ESP - Electro Submersible Pump, PP - Pentastat Pump, O - Other

Imagine the result



Business case for EDGE

- 1021 boreholes drilled in 7 months
- 2050 analytical samples collected
- Stored and tracked 1000+ field photos
- 0.75 hours spent per log produced
- Traditionally 1-3 hours are spent per log
- Includes field support, data quality checking, draft and finalized logs
- Based on lessons learned future projects could expect 0.4 to 0.5 hours per log



Problem

There are no tools in EQUIS dedicated to data validation (ADR/DQM are not universally used)

Pro offers too much access to the database and is a significant cost burden and learning curve for project chemists.

Our goal was to design a tool that would overcome these issues

What did we do?

We designed a webform in ASP.NET that leverages Enterprise login credentials.

We extended the schema to allow rollback to unvalidated state.

We automated the qualifier transfer.

We developed an report to be included with a data validation summary report.



Equis Validation Form

Facility Code: ██████████
 Facility Name: ██████████

[Find Facility](#)
[User Manual](#)
[Logout](#)

Logged in as: tdrumfels

SDG: ITE0562

Sample:
 Analyte Group:

Validation Summary

Validator	Validation Date	Approver	Approval Date
krarley	09/21/2010	krarley	09/21/2010

- [Transfer Lab to Validator Qualifiers](#)
- [Transfer Validator to Interpreted Qualifiers](#)
- [Final Approval](#)
- [Rollback SDG to pre-Validated State](#)
- [Produce Sample Info](#)

[Set Default Qualifiers for Group](#)
[Additional Filters](#)

Page: 1 Records per page: 50 Displaying records 1-50 of 835 For grid level edits: [Update Records](#)

Field ID	Lab ID	Analyte	Analytic Method	Analysis Date	Fraction	Column Number	Test Type	Dilution Factor	Result	Result Units	Lab Qualifiers	Validator Qualifiers	Interpreted Qualifiers	Reporting Limit	Method Limit	Reportable Result	Detect
DB-A7-1-125W(05/05/10)	ITE0562-01	Lead	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	3.8	mg/l				0.025	0.020	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Molybdenum	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5		mg/l	U,RL:1	U	U	0.10	0.010	Yes	N
DB-A7-1-125W(05/05/10)	ITE0562-01	Nickel	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	0.84	mg/l				0.050	0.010	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Silver	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5		mg/l	U,RL:1	U	U	0.050	0.030	Yes	N
DB-A7-1-125W(05/05/10)	ITE0562-01	Thallium	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5		mg/l	U,RL:1	U	U	0.050	0.035	Yes	N
DB-A7-1-125W(05/05/10)	ITE0562-01	Antimony	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5		mg/l	U,RL:1	U	U	0.050	0.035	Yes	N
DB-A7-1-125W(05/05/10)	ITE0562-01	Arsenic	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	0.18	mg/l				0.050	0.035	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Barium	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	7.6	mg/l				0.050	0.030	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Beryllium	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	0.031	mg/l				0.020	0.0045	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Cadmium	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5		mg/l	U,RL:1	U	U	0.025	0.010	Yes	N
DB-A7-1-125W(05/05/10)	ITE0562-01	Chromium	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	2.8	mg/l				0.025	0.010	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Cobalt	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	0.52	mg/l				0.050	0.010	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Copper	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	2.8	mg/l				0.050	0.015	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Vanadium	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	2.4	mg/l				0.050	0.015	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Zinc	SW6010B	5/11/2010 12:00:00 AM	T	NA	DILUTION1	5	3.8	mg/l				0.10	0.030	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Selenium	SW6010B	5/12/2010 12:00:00 AM	T	NA	DILUTION1	5		mg/l	U	U	U	0.050	0.040	Yes	N
DB-A7-1-125W(05/05/10)	ITE0562-01	Mercury	SW7470	5/12/2010 12:00:00 AM	T	NA	DILUTION1	10	0.017	mg/l				0.0020	0.0010	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Gasoline C4-C12	SW6015A/B	5/13/2010 12:00:00 AM	N	NA	DILUTION1	10	2900	ug/l				500	300	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	Diesel C13-C26	SW6015B	5/10/2010 12:00:00 AM	N	NA	INITIAL	1	2.6	mg/l				0.50	0.10	Yes	Y
DB-A7-1-125W(05/05/10)	ITE0562-01	EPH C13-C40	SW6015B	5/10/2010 12:00:00 AM	N	NA	INITIAL	1	2.9	mg/l				0.50	0.10	Yes	Y

Validation Form



Canned Reporting – The Challenge

Problem

Project teams have differing expectations on reporting format.

Even with the tools EQuIS provides, the level of customization required exceeded Professional's capabilities.

Reports had to be consistent, report-ready at the moment of generation and able to be generated by an administrative person.

What did we do?

We leveraged SSRS and a custom stored procedure to query, format and deliver these reports.

CA Historic Analytical With DO

Search for:

View Properties History Subscriptions

New Subscription

Project_Manager Select Facility

StartDate EndDate

Add Footnotes

1 of 20 100% Find | Next Select a format Export

Table 1
Summary of Groundwater Monitoring Data

Well ID	Date	Type	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	DO (mg/l)	Notes
E#-WSW	11/2/2004		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<100	--	
E#-WSW	9/26/2005		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<100	--	
E#-WSW	10/10/2005		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<100	--	
E#-WSW	11/23/2005		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<100	--	
E#-WSW	12/12/2005		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<100	--	
E#-WSW	1/18/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	2/16/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	3/17/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	4/10/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	5/31/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	7/24/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	0.82	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	8/21/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	9/25/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	10/30/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	11/21/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	12/27/2006		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	10.40	
E#-WSW	1/25/2007		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--	<300	--	
E#-WSW	2/27/2007		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	
E#-WSW	3/26/2007		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<300	--	
E#-WSW	4/16/2007		--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<300	--	

Problem

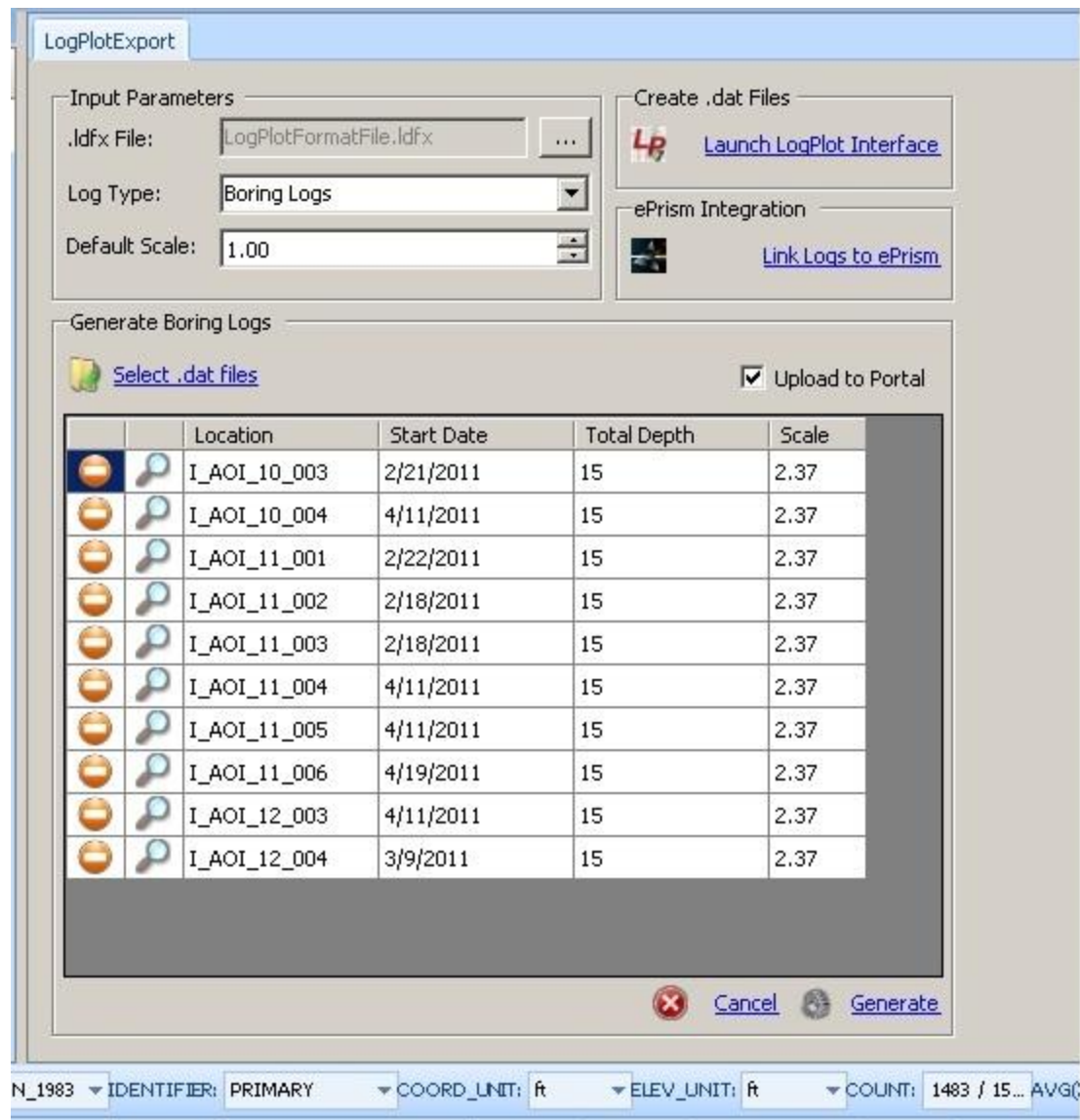
We needed a way to batch generate boring logs and well construction logs efficiently.

The tools available in EQUIS just generate data files for LogPlot.

It's a manual step required to compile the logs.

What did we do?

We wrote a EQUIS plugin that allows us to batch compile LogPlot logs and upload the completed logs with metadata to our Project Portal solution (SharePoint).



LogPlot Compiler

Case Study

- We were asked to develop a solution that allowed us to collect, manage and report remediation system data for a large portfolio in the US.
 - Systems in play at the moment are Air Sparging, Soil Vapor Extraction, Multi-Phase Extraction. Other treatment options are coming on line shortly.

Problem

Every system is different

There was significant pressure to design custom application for each system

Some of the data to be collected didn't really fit into the EQuIS standard schema

One requirement was complex reports with calculated fields.

What did we do?

We came up with a consistent approach to inconsistent designs with respect to the data model

The tool combines data collection/verification with EDGE, management/validation with EQuIS and reporting with SSRS

O&M Data Collection - ABCFacility

Facility Tasks

Facility Task History

Description	Task Type	Start Date	End Date	Approved			
Routine - test	Routine	4/29/2011	4/29/2011	<input type="checkbox"/>			
Maintenance	Maintenance	5/3/2011	5/3/2011	<input type="checkbox"/>			
Routine	Routine	5/3/2011	5/3/2011	<input type="checkbox"/>			
Other	Other	5/10/2011	5/28/2011	<input type="checkbox"/>			

Add New System Task

EDGE O&M – Task Management

O&M Data Collection - PDA Test Facility

Task Editor - Collection Points

Treatment System: SVE

System Calculations | I am... Arriving | Departing | Task History

System Collection Points

Status	Collection Point	Description	Notes	Can Sample?	View	History
	MW-01	treatment system #1	never sample	<input type="checkbox"/>		
	MW-02	treatment system #2		<input checked="" type="checkbox"/>		
	MW-03	treatment system #3		<input checked="" type="checkbox"/>		
	MW-04	treatment system #4		<input checked="" type="checkbox"/>		
	MW-05	treatment system #5		<input checked="" type="checkbox"/>		
	MW-06	treatment system #6		<input checked="" type="checkbox"/>		
	MW-07	treatment system #7		<input checked="" type="checkbox"/>		

EDGE O&M – System collection points

O&M Data Collection - PDA Test Facility

Parameters

Collection Point: MW-01

Collection Points Task History

Current Trip: Arrival View Arrival and Departure

Parameter	Arrival	Unit	Arrival Remark	Equipment Min	Equipment Max	Design Min	Design Max	Permit Min	Permit Max
Percent Open		%		0	100	0	100	50	100
Vapor Flowrate		acfm		15	300	20	200	25	100
Exhaust Temperature		C		35	200	42	175	58	125
PID Reading		ppmv		0	1000	2	750	5	25

General Comments about this location:

OK

EDGE O&M – Collection Point Data

O&M Task Review

Task: 20110301_ABCFacility

Duration: 3/1/2011-3/1/2011

Gas Meter Reading 5893 therms
 Technician 2 Tim Strumfels
 Electric Meter Reading 8688 kwh
 Comments sfdgdfgfdsg
 Technician Valerie Kull

Treatment System Type: SVE

Data Collection Parameters



=Optimal



=Outside Optimal Limits



=Outside Permit Limits

SVE MW-1

Parameter	Arrival	Departure	Unit	Arrival Remark	Departure Remark
Air Flow	99	92	scfm	Not accessible	Not accessible
Location Remark Broken					
Percent open	75	88	%	Not accessible	Gauge broken
PID/FID Reading	96	56	ppmv		Not accessible
Temperature	39	66	F	Gauge broken	
Vacuum	96	85	H2O	Gauge broken	Not accessible
Velocity	599	596	fpm	Gauge broken, plus 1	Gauge broken

SVE MW-2

Parameter	Arrival	Departure	Unit	Arrival Remark	Departure Remark
Vacuum	89		H2O		

SVE SYSTEM

Parameter	Arrival	Departure	Unit	Arrival Remark	Departure Remark
Operating Hours	25693		hrs		
System Status ON					

Sampling Information

SVE_INF_1	System Sample Code	Sample Date	Sample Time	Matrix
	SVE_INF_1_AE[201103011143]	03/01/2011	11:43 pm	AE
SVE_INF_2	System Sample Code	Sample Date	Sample Time	Matrix
	SVE_INF_2_WG[201103011103]	03/01/2011	11:03 am	WG
	SVE_INF_2_AE[201103011103]	03/01/2011	11:03 am	AE
	SVE_INF_2_AE[201103011056]	03/01/2011	10:56 am	AE

EDGE O&M - Reporting

SUMMARY OF INDIVIDUAL WELL OPERATION

SVE Well	Date	% Open (%)	Vacuum (wg)	Flow Rate (acfm)	PID/FID (ppmv)	GRO. Removal Rate (lbs/day)
CPV-4	03/01/2011	100	60			
	03/02/2011	100	60			
	03/10/2011	100	63			
	03/14/2011	100	52	15.49		
	03/31/2011	100	60	13.2	145.1	0.63
	04/07/2011	100	58	16.36	137	0.72
	04/18/2011	100	60	17.02	105	0.58
	04/27/2011	100	59	17.02	710	3.89
	05/09/2011	100	56	11.56	607	2.26
	06/07/2011	100	68	9.16		

SUMMARY OF INDIVIDUAL WELL OPERATION

Cumulative Mass Removed (lbs)



Summary

- No data management system is perfect right out of the box.
- A deep understanding of the schema will allow you to adapt to new challenges and requirements
- Having a choice of tools gave us the means to pick the most effective tool for the job.
- Earthsoft's approach to their schema allows us to be adaptable and agile.
- Additionally, opportunities like the Advanced User Training have allowed us to develop tools like these and their staff have been receptive to our ideas about their products.

A vibrant landscape featuring a single, full-canopied green tree standing on a rolling green hill. The sky is a deep blue, filled with scattered, fluffy white clouds. The foreground is a lush green field of grass.

Imagine the result