

# RBDMS ENVIRONMENTAL

A DIGEST



# WHAT IS RBDMS ENVIRONMENTAL?

## For the Agency:

- A set of tools for
  - Managing laboratory analytical and field data for all environmental matrices.
  - Receiving and vetting electronic data deliverables (EDDs) from industry.
  - Analyzing data through various statistical and charting output formats and integrated GIS.
  - Alerting scientists when laboratories report sample results that exceed acceptable limits for specific parameters are submitted.
  - Displaying monitoring data from multiple sources and agencies
  - Used by Oil/Gas and water agencies

## For the Industry:

- A website for uploading, saving as draft, validating, and submitting EDDs from laboratories to the agency for review under secured login.

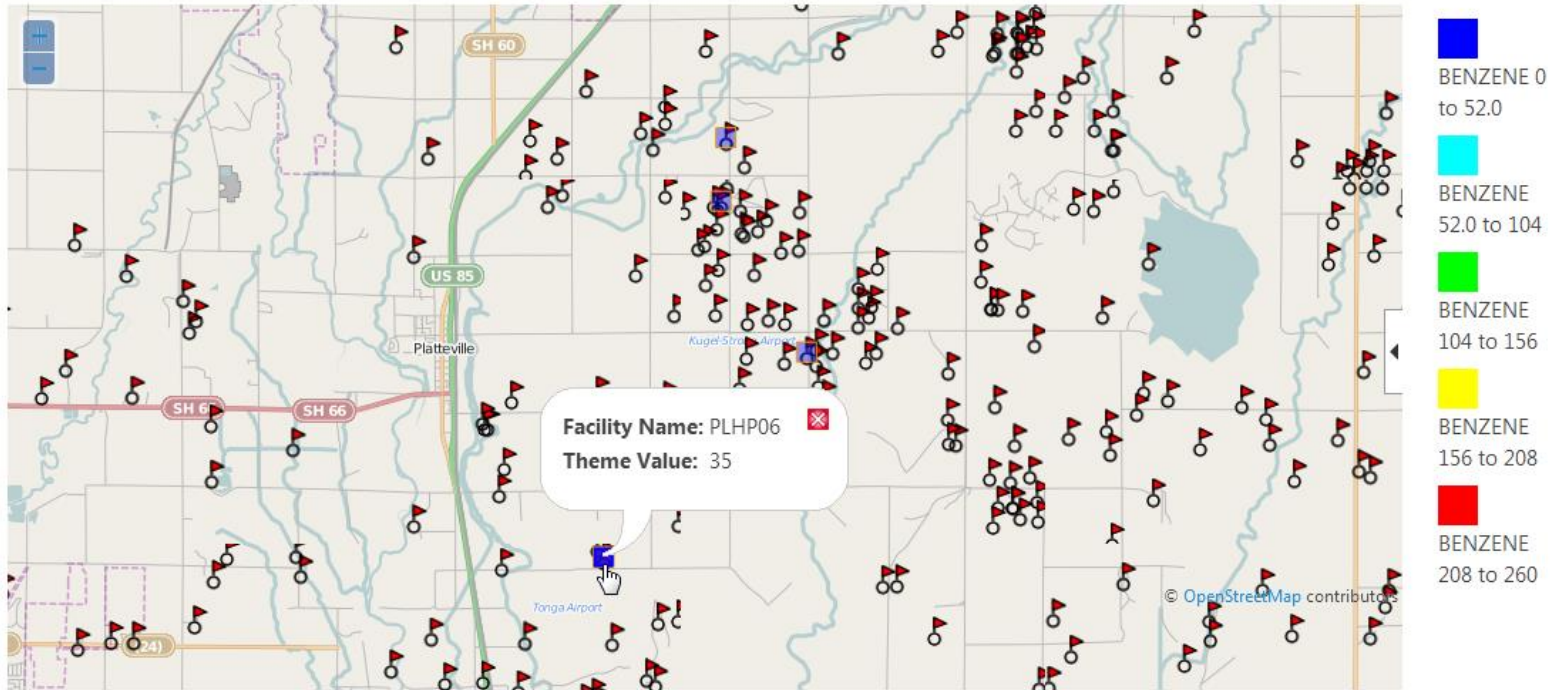
## For the Public:

- A single location to view data vetted by and at the discretion of the agency.



# USING RBDMS ENVIRONMENTAL: GIS

Theme Map:



# USING RBDMS ENVIRONMENTAL: REPORT FORMATS

## Pivot table:

- Multi-paging, sortable
- Exceedances bolded
- .Csv export to RockWorks

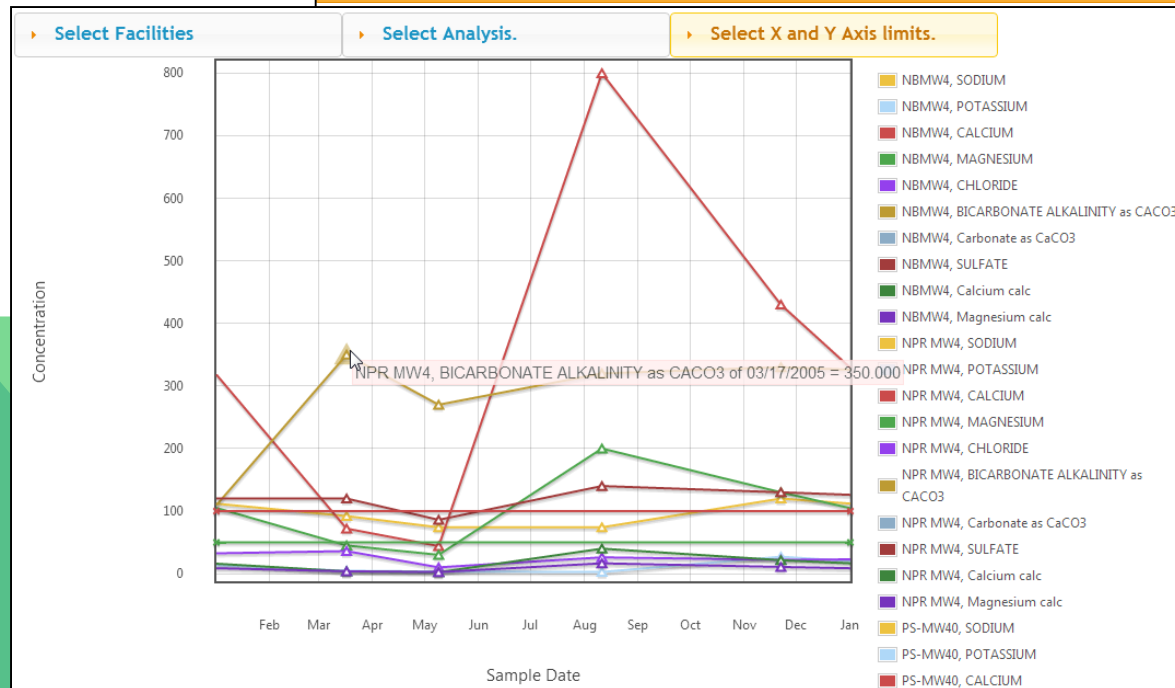
Show 10 entries Search:

FacilityName	Sample Date	Latitude	Longitude	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	CHLORIDE
PS-MW42	11/09/2009	39.517385	-108.196356	62.0	1.00	<b>160</b>	<b>52.0</b>	310
PS-MW42	05/12/2010	39.517385	-108.196356	51.0	0.975	<b>120</b>	38.0	230
PS-MW41	11/09/2009	39.516832	-108.198344	96.0	1.20	<b>130</b>	46.0	300
PS-MW41	05/12/2010	39.516832	-108.198344	50.0	0.895	87.0	28.5	155
PS-MW40	11/09/2009	39.516879	-108.199133	280	3.30	<b>190</b>	<b>80.0</b>	820
PS-MW40	05/12/2010	39.516879	-108.199133	200	1.90	92.0	38.5	425
NPR MW4	12/01/2004	39.58391	-108.11629	120	17.0	<b>420</b>	<b>130</b>	31.0
NPR MW4	03/17/2005	39.58391	-108.11629	92.0	4.50	72.0	45.0	36.0
NPR MW4	05/09/2005	39.58391	-108.11629	74.0	3.40	44.0	30.0	10.0
NPR MW4	08/11/2005	39.58391	-108.11629	74.0	2.60	<b>800</b>	<b>200</b>	26.0

Showing 1 to 10 of 16 entries First Previous 1 2 Next Last

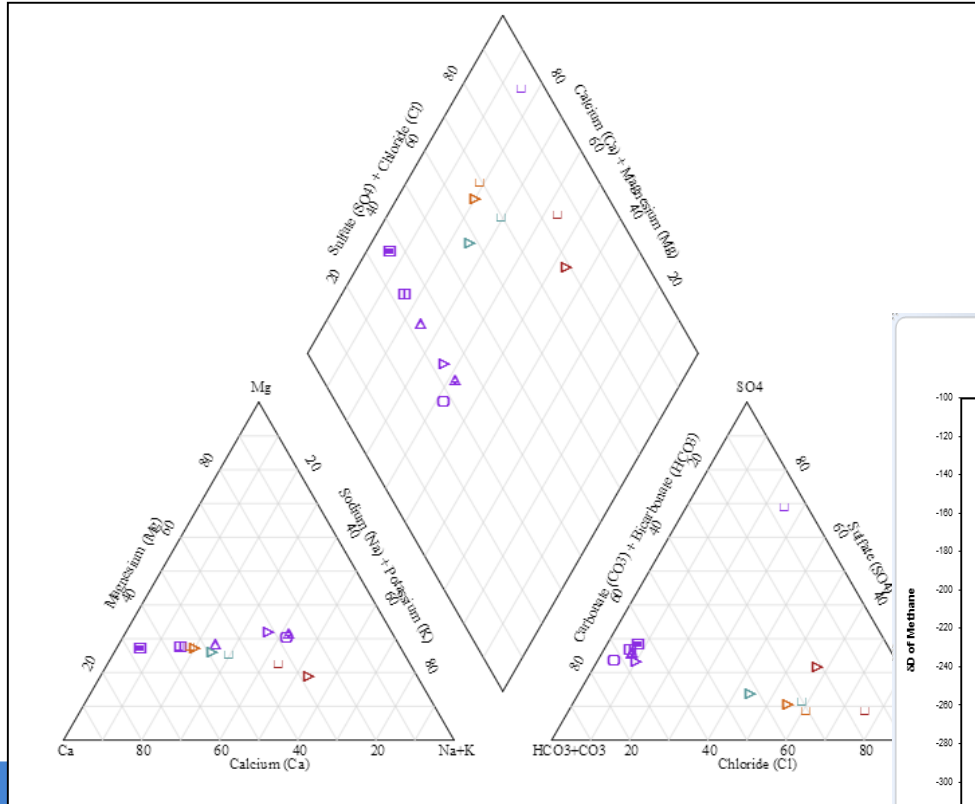
## Trend chart:

- Show/Hide
  - Facilities
  - Analyses
- Selectable axes
- Tool tips

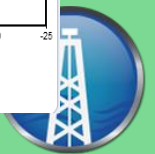
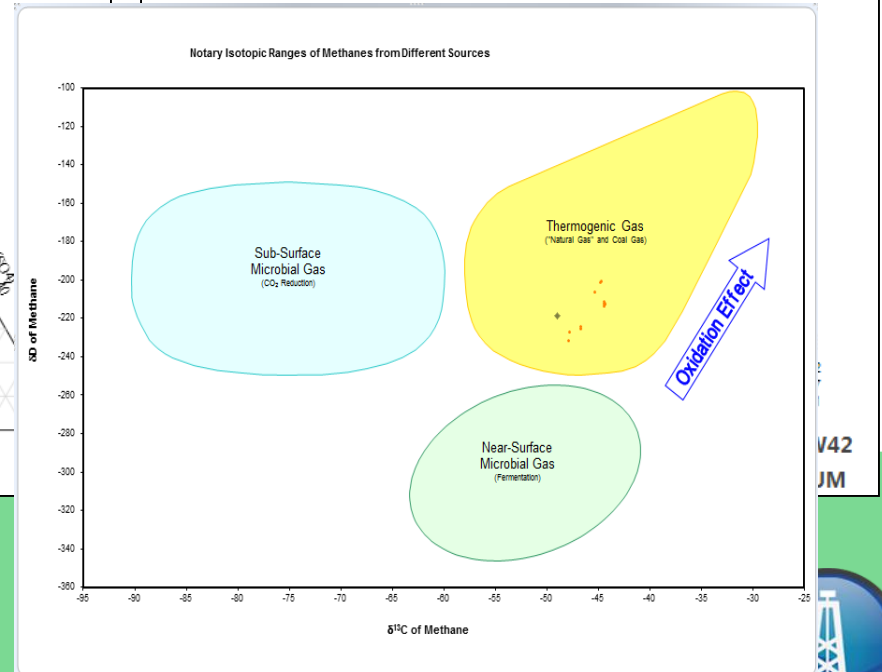
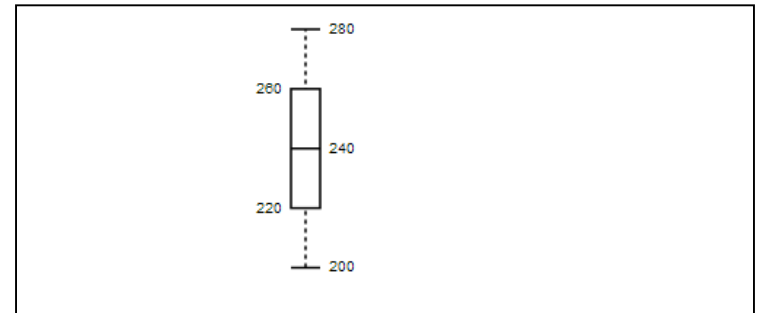


# USING RBDMS ENVIRONMENTAL: REPORT FORMATS

Piper diagram:



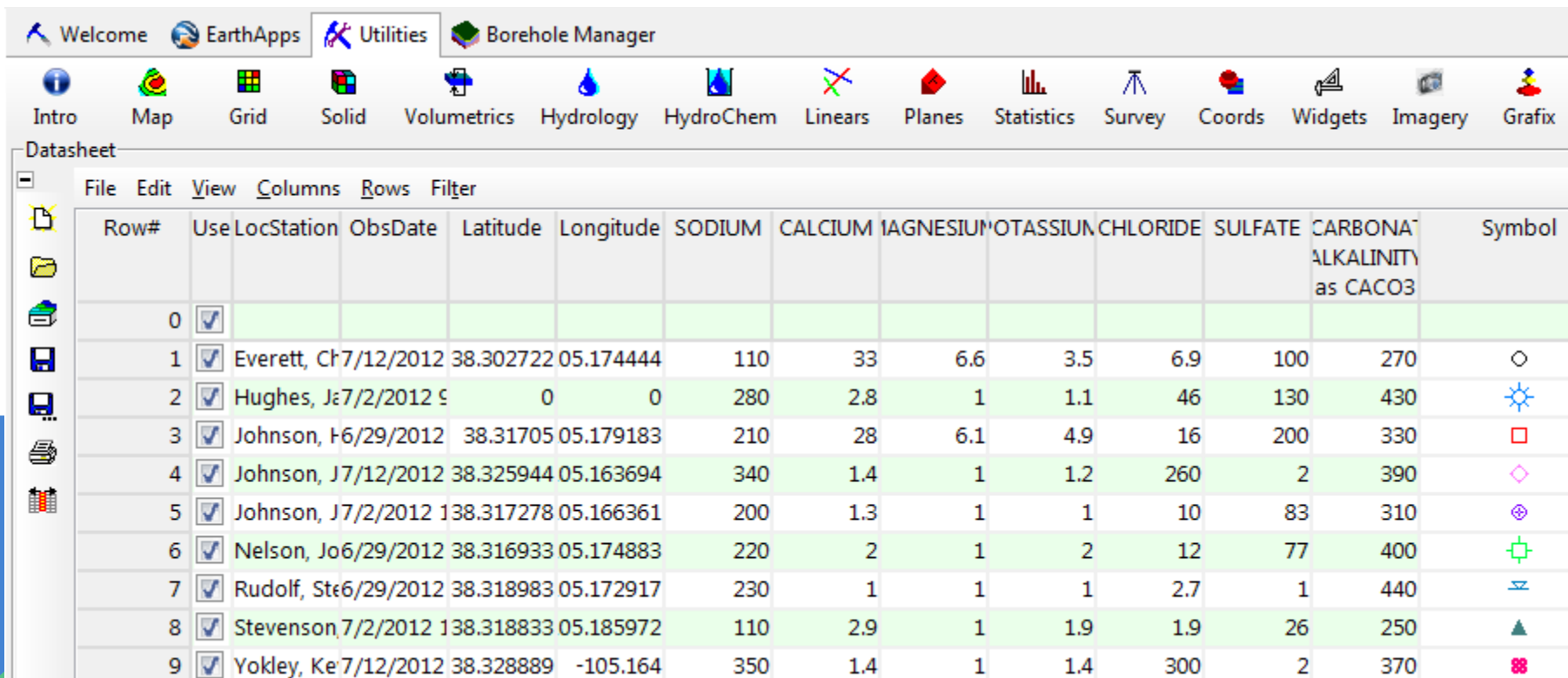
Box-whisker:



# EXPORT TO ROCKWORKS

Export to .csv option on the pivot table report is compatible as an upload to RockWare RockWorks version 16 with several manual steps:

- Match columns to expected cations/anions.
- Specify symbology.
- Specify units for each column, although spreadsheet row 2 can be used to import units.



The screenshot shows the Borehole Manager software interface. The top menu bar includes Welcome, EarthApps, Utilities, and Borehole Manager. Below the menu bar is a toolbar with icons for Intro, Map, Grid, Solid, Volumetrics, Hydrology, HydroChem, Linears, Planes, Statistics, Survey, Coords, Widgets, Imagery, and Grafix. The main window displays a Datasheet with a menu bar (File, Edit, View, Columns, Rows, Filter) and a table of data. The table has 14 columns: Row#, UseLocStation, ObsDate, Latitude, Longitude, SODIUM, CALCIUM, MAGNESIUM, POTASSIUM, CHLORIDE, SULFATE, CARBONATE ALKALINITY as CaCO3, and Symbol. The data rows are numbered 0 through 9, with row 0 being a header row. Each row contains data for a specific location and date, including coordinates and chemical analysis results.

Row#	UseLocStation	ObsDate	Latitude	Longitude	SODIUM	CALCIUM	MAGNESIUM	POTASSIUM	CHLORIDE	SULFATE	CARBONATE ALKALINITY as CaCO3	Symbol	
0	<input checked="" type="checkbox"/>												
1	<input checked="" type="checkbox"/>	Everett, Ch	7/12/2012	38.302722	05.174444	110	33	6.6	3.5	6.9	100	270	○
2	<input checked="" type="checkbox"/>	Hughes, Je	7/2/2012	0	0	280	2.8	1	1.1	46	130	430	☀
3	<input checked="" type="checkbox"/>	Johnson, H	6/29/2012	38.31705	05.179183	210	28	6.1	4.9	16	200	330	□
4	<input checked="" type="checkbox"/>	Johnson, J	7/12/2012	38.325944	05.163694	340	1.4	1	1.2	260	2	390	◇
5	<input checked="" type="checkbox"/>	Johnson, J	7/2/2012	138.317278	05.166361	200	1.3	1	1	10	83	310	⊕
6	<input checked="" type="checkbox"/>	Nelson, Jo	6/29/2012	38.316933	05.174883	220	2	1	2	12	77	400	⊕
7	<input checked="" type="checkbox"/>	Rudolf, Ste	6/29/2012	38.318983	05.172917	230	1	1	1	2.7	1	440	≡
8	<input checked="" type="checkbox"/>	Stevenson	7/2/2012	138.318833	05.185972	110	2.9	1	1.9	1.9	26	250	▲
9	<input checked="" type="checkbox"/>	Yokley, Ke	7/12/2012	38.328889	-105.164	350	1.4	1	1.4	300	2	370	⊗

# AUTOMATED ALERTS:

## Alert types:

- CationAnion Ratio
- Exceedance
- Holding Time
- Missing Analysis
- Dissolved vs. Total
- Percent Difference from Baseline
- Sodium Absorption Ratio

## To design a new alert:

- Write new function call (20 lines of isolated code).
- Add record to Alert table.
- Add Alert method; name must match the function call.

## To subscribe to an alert:

- Specify projects, alert collections, frequency, and user name.



# STATES USING ALL OR PORTIONS OF RBDMS ENVIRONMENTAL

- ✓ Colorado COGCC
- ✓ Wyoming DEQ
- ✓ Wyoming Oil and Gas
- ✓ Alabama Geological Survey
- ✓ California DOGGR

Coming in 2020

RBDMS Produced Water

- ✓ Quality/quantity
- ✓ Transportation: trucking/pipelines
- ✓ Storage, Disposal/disposition
- ✓ Norm, T-Norm

