EQUIS CIMS Introduction



30 MAY 2016





What is EQuIS?

<u>Environmental</u> <u>Quality</u> <u>Information</u> <u>Systems</u> EQuIS[™] is the most widely used environmental data management workflow in the world and helps thousands of organizations manage *environmental*, *geotechnical*, *limnological* and "other" sample data.

One Database, Two User Interfaces

EQuIS Schemas



- Data managers, Scientists
- Desktop application (installation)
- Data importing, editing
- Advanced analysis, modeling*
- Ultimate power and flexibility
- * May require additional third-party software

- Managers, Auditors, Executives
- Web application (no installation)
- Same database, same data
- Simple, quick, easy to use
- Workflow Automation





EQuIS Products and Workflows



Own the workflow, make better decisions

EQuIS CIMS Workflow View



EQuIS Data Processor (EDP)

Checks Electronic Data Deliverables, or EDDs, for formatting, logic

Used as a standalone product by consultants, labs

- Find, view, and correct errors
- Easily finds the "needle in the haystack

Standalone EDP and EQuIS Professional EDP





EQuIS Data Processor (EDP)

Automated Workflow receives (via ftp, email, or web) and processes EDDs.

Acceptance and/or rejection notifications are automatically sent.



EQuIS Enterprise EDP

EDD Stat	us				\$?	C	×
Search:								
Status 🔶	File Name	Date		÷	Facility			
	20130916.Springfield.EFWEDD.zip	9/18/2013	8:35:00 AM		Springfield			
• •	NCA1.Springfield.EFWEDD.zip	7/12/2013	12:34:00 PM					
•	E6test.Springfield.EQEDD.zip	7/12/2013	12:33:00 PM					
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EQuIS Enterprise

Highly configurable dashboards and projectspecific widgets for endless flexibility.

Dashboards and Widgets



EQuIS Enterprise

- Export to Google Earth, Excel, GIS and other popular formats.
- Map directly in EQUIS Enterprise with the Map Widget and ArcGIS Online

Reports earths@ft Statistic \bigcirc \odot \bigcirc \bigcirc \bigcirc Chromium Total - All Years - Loc MW1A (depth 15) Upgradient \odot \bigcirc Zoom 1d 1w 1m 1y All From Nov 20, 1997 To Jul 28, 2014 Action Level Line 100 up L NW1A Test Result Yalues \odot \odot \odot \odot Chromium Total - All Years - Loc MW18(depth 52) Upgradient \odot \odot Id Iw Im Iy All rom Nov 20, 1997 To Jul 28, 2014 - Action Level Line 100 ug/L · MWIR Test Repub Value \odot ? C Basemap ✓ Well Labels MGP WILLOW-HAWTHORNE Locations MW107 💽 Zoom In 🚊 Zoom Out 🎧 Full Extent 🍕 Prev 👲 Next 👋 Pan Select Clear Cancel

Basic Concepts and Terminology





What are we going to talk about?

General Database Terms

- Relational Databases
- One-to-Many Relationships
- Parent-Child Relationships
- Primary Keys
- Referential Integrity

EQuIS-specific Terms

- Data Tables
- Reference Tables
- Facilities
- Locations
- Location Groups

- Location Groups
- Analytes
- Analyte Groups
- Action Levels
- Crosstab Reports

Environmental Sampling Terms

- CAS RNs
- Sample Types
- Matrices
- EDDs
- E-Data





General Database Terms





Relational Databases

Relational databases stores their data in tables and can enforce restrictions on the data by a set of rules called relationships.







Primary Keys

A <u>Primary key</u> is a field or a set of fields in a table that constitute a unique record within that table.

<u>cas rn</u>	chemical_name ∇	sort_order		<u>facility_id</u> T	<u>sys loc code</u> ⊽	<u>coord type_code</u> ⊽	<u>identifier</u> ⊽
7440-66-6	Zinc		►	1	B-30	LAT LONG	1
75-35-4	Vinylidene Chloride			1	B-30	STATE PLANE	1
75-01-4	Vinyl Chloride			1	B-30	UTM_17N	HISTORICAL
108-05-4	Vinyl Acetate			1	B-30	UTM_17N	PRIMARY
7440-62-2	Vanadium (Fume Or Dust)			1	B-31	LAT LONG	1
75-69-4	Trichlorofluoromethane			1	B-31	STATE PLANE	1

One primary key field in this table allows for each chemical to be listed only once. A set of primary key fields this table allows for storage of multiple coordinate systems per sampling point.

Primary keys must be:

populated (not null)
unique





EQUIS CIMS-specific Terms





Data Tables



Data tables contain information acquired from, derived from, or describing some part of a specific project.

Data tables are designated by the prefix DT_, as in DT_SAMPLE.





Reference Tables

Reference tables contain lists of reference values, valid values or look-up values.

Reference tables are designated by the prefix RT_, as in RT_ANALYTE.

rt_analyte...

<u>Cas_rn</u>	Chemical Name
000056-55-3	
Benz(a)anthr	acene
000065-85-0	Benzoic Acid
000067-64-1	Acetone
000071-43-2	Benzene
000074-83-9	Bromomethane
000074-87-3	Chloromethane
000075-01-4	Vinyl chloride







Facilities

Facilities are the physical (site) or logical (project) extent of data that is made available for reporting or modeling.







Locations

Locations are uniquely designated sampling points, typically on the ground surface, that can be identified spatially by x, y, and z coordinates.

Stored in EQuIS in DT_LOCATION as a "SYS_LOC_CODE".



X coordinate Y coordinate Total depth Surface elevation Driller Start date

...others





Location Groups

Location Groups are collection of locations for reporting and graphing.









'Analytes' are defined as the substance you analyze or quantify by an analytical procedure.

Many different names can be used to mean the same thing: analyte, chemical, compound, constituent, contaminant, determinant...







Analyte Groups

Analyte Groups are collections of analytes for reporting and graphing.







Action Levels

Action levels are values against which results or parameter measurements are compared to. Action Levels may also be referred to as standards, comparison criteria, or other names.



Environmental Sampling Terms





CAS RNs

CAS RNs are abbreviations for *Chemical Abstracts Service* Registry Numbers. The CAS RN, often referred to as "CAS number," is a unique numeric identifier which refers to a chemical substance.

For example, 58-08-2 is the CAS Registry Number for caffeine.

Compare to chemical name synonyms:

661-97-2 ...1,2-Dichloro-1,1,2,3,3,3-hexafluoropropane

NTEGRATED ENVIRONMENTAL SOLUTION

also 1,1,1,2,3, 3-Hexafluoro-2,3-dichloropropane

CFC-216 vs. Freon 216



To find CAS numbers, visit

- http://www.cas.org
- http://www.chemfinder.com



Sample Collection

Classification of samples based on the sampling purpose and procedure.

Sample Method Sample Type Preparation Method Preservatives

Collection





Matrices

The media from which the sample was taken.

matrix_code	matrix_desc
SL	SLUDGE
SLI	INDUSTRIAL SLUDGE
SLS	SANITARY SLUDGE
SLP	PETROCHEMICAL SLUDGE
SO	SOIL
WD	DISCHARGE WATER
WG	GROUND WATER
WI	INJECTION WATER
WIN	INFLUENT WATER
WS	SURFACE WATER
WSEA	SEA WATER
WSTORM	STORM WATER







Action Levels

The media from which the sample was taken.

action_level_type	action_level_type_desc
ALM	Aquatic Life for Metals
SD	Sanitary Drainage
TWW	Treated Waste Water
VAR	Various





Coordinate Types - Elevation

Collection of elevation data

elev_datum_code	elev_datum_desc
MSL	ELEVATION FROM MEAN SEA LEVEL
U	UNKNOWN
elev_collect_method_c	code elev_collect_method_desc
G1	HIGH PRECISION GPS
G2	LOW PRECISION GPS
L1	PRECISE LEVELING FROM A BENCH MARK
1.2	LEVELING BETWEEN NON BENCH MARK
LZ	CONTROL POINTS
L3	TRIGONOMETRIC LEVELING
от	OTHER
P1	HIGH RESOLUTION SATELLITE IMAGERY
P2	GOOGLE EARTH
S1	CLASSICAL SURVEYING TECHNIQUES
T1	TOPOGRAPHIC MAP INTERPOLATION
UNK	UNKNOWN





Coordinate Types - Geospatial

Collection of geospatial data

horz_datum_code	horz_c	datum_desc
WGS84	WGS 8	34
КТМ	KUWA	IT TRANSVERSE MERCATOR
0	OTHER	2
UNK	UNKN	OWN
UTM	UNIVE	RSAL TRANSVERSE MERCATOR
horz_collect_method_	_code	horz_collect_method_desc
G1		HIGH PRECISION GPS
G2		LOW PRECISION GPS
P1		INTERPOLATION MAP
P2		INTERPOLATION PHOTO
P3		INTERPOLATION SATELLITE
P4		INTERPOLATION GOOGLE EARTH
LINK		

coord_type_code	coord_desc
LAT_LONG	LATITUDE/LONGITUDE
UTM	UNIVERSAL TRANSVERSE MERCATOR
КТМ	KUWAIT TRANSVERSE MERCATOR





EDDs

Electronic Data Deliverables are electronic tabular formats for sharing, manipulating, and using data.



Kuwait EDD











Required Data

Field Data Sample_Code Sample_Date Sample_Matrix_Code Sample_Type_Code Sample_method Preservative Sampling_Company_Code

Lab Data

Sample_Code Lab_Name_Code Lab_Sample_Id Sample_Type_Code Lab_Anl_Method_Name **Chemical Name** CAS RN Lab_Qualifiers **Result Unit Result_Type_Code** Detect_Flag **Dilution_Factor** Sample_Matrix_Code Lab_Matrix_Code Total_or_Dissolved **Analysis_Date Analysis_Time** Lab_Prep_Method_Name





Available EarthSoft Resources





Waste EDD

Generator

• Spill

Transporter







Generator

Generator information Spill information Waste information Disposal information





Waste Work Flow







Generator information

MANID Unique identifier for manifest, format is "M-0000-0000-0001"

- G_GEN_ID Generator facility ID issued by KEPA
- **G_POC_NAME** Generator point of contact; first and last name
- **G_POC_PHONE** Generator point of contact phone number
- G_POC_EMAILGenerator point of contact email addressG_WM_TYPEDescription of waste media for individual waste
streams
- G_SIZE Classification of generator based on annual amount
- G_DISTRICT Location based on district

G_ISIC Industry sector code





Generator Spill information

MANID

- G_SPILL_LAT
- G_SPILL_LONG
- G_SPILL_DATE
- G_SPILL_AREA
- G_SPILL_AREA_UNITS

G_SPILL_MAT

G_SPILL_QTY G_SPILL_QTY_UNITS G_SPILL_POC

G_SPILL_PHONE

Unique identifier for manifest, format is "M-0000-0000-0001" Latitude of accidental release in decimal degrees Longitude of accidental release in decimal degrees Date of accidental release Estimated surface area effected by spill Units of spill area Type of Hazardous Material released (CAS) Amount of hazardous material released Units of material released Name of Person in charge of clean-up Phone number of person in charge





Generator Waste information

G WM OTHER Description of "Other" media type **G** STREAM Code for waste stream category **G** SOURCE Code for source of waste G EXP Indicator for explosive wastes G FLAM Indicator for flammable wastes G REACT Indicator for reactive wastes Indicator for corrosive wastes G CORR G POIS Indicator for poisonous wastes G RAD Indicator for radioactive waste G OTHER Description of "Other" hazard type





Generator Disposal information

G_CONT_TYPE G NUM CONT G_CONT_LAT G CONT LONG G_WASTE_WGHT G WASTE WGHT UNITS G_GEN_DATE G SCHED DATE G_DISPATCH_DATE G DISPATCH TIME T_TRANS_ID

R_RECV_ID

e.g. 55-gallon drums, truck tank, etc. Number of waste containters Decimal degrees - location of containers Decimal degrees - location of containers Total weight of disposed waste, per waste steram Units of weight (kg, lbs, tonnes) Date waste container was sealed and ready for transfer Scheduled date transporter should pick up waste Date the transporter left the facility with waste Time the transporter left the facility with waste Transporter KEPA issued ID Receiving organization's KEPA issued ID

ear



Transporter

Transporter information Delivery Information





Transporter information

Unique identifier for manifest, format is "M-MANID 0000-0000-0001" T TRANS ID **Transporter Company ID** T DRIVER Transport Company Driver's Name T_DRIVERID 12-digit numeric code Driver's mobile phone number T DRIVER PHONE T VEHLIC License plate number Volume or weight of waste vehicle is capable of T VEHCAP carrying T_VEHCAP_UNITS Volume or weight capacity of vehicle units





Transporter Delivery Information

T_VEHEMPTWGHT

T_VEHEMPTWGHT_UNITS

T_TOTWGHT

T_TOTWGHT_UNITS

T_PICKUP_DATE

T_PICKUP_TIME

R_ACCEPTED

R_REJECTREASON

T_DATERETURN

T_TIMERETURN

Empty vehicle weight

Empty vehicle weight units

Vehicle + waste weighed at receiving facility

Vehicle + waste weight units

Date waste accepted by transporter

Time waste accepted by transporter

Indicator if waste stream was acepted (True) or rejected (False)

Text describing reason for rejection

Time waste returned to generator if rejected

Date waste returned to generator if rejected







Receiver information Treatment information Disposal information





Receiver information

MANID	Unique identifier for manifest, format is "M- 0000-0000-0001"
R_RECV_ID	KEPA issues disposal license/ID
R_POC_NAME	Receiver point of contact; first and last name
R_POC_PHONE	Receiver point of contact phone number
R_POC_EMAIL	Receiver point of contact email address
R_RECVTEST	Type of receiving test used for incoming waste
R_DISTRICT	Receiver district location





Receiver Treatment information

R_RECVRESULTS Receiving test result R_RECVRESULTS_UNITS Units of receiving test (ppm, mg/l) **R** ACCEPTED Indicator if waste stream was rejected **R** REJECTREASON Text describing reason for rejection **R** DATERECVD Date waste accepted by receiver **R** TIMERECVD Time waste accepted by receiver **R_TREAT_TYPE** Type of treatment the waste will undergo R_TREAT_OTHER Describe treatment type if "Other" R_TREAT_DATE Date treatment took place Total amount of waste treated **R_AMT_TREATED** R_AMT_TREATED_UNITS Total amount of waste treated units





Receiver Disposal information

- R_DISPOSAL_TYPE
- Final disposal process
- **R_DISPOSAL_OTHER** Describe disposal type
- **R_TOTDISPOSED** Total amount of waste actually disposed
- R_TOTDISPOSED_UNITS Total amount of waste actually disposed -Units
- R_TOTRECYCLED Total amount of waste recycled
- R_TOTRECYCLED_UNITS Total amount of waste recycled units
- R_DISPOSAL_DATE Date transferred for final disposal/recycling
- R_RECYCLE_ID Recycling company ID (same Receiver ID)





EQuIS Resources

- EarthSoft Community Center-<u>http://community.earthsoft.com</u>
 - Online Data Dictionary
 - Online Documentation
 - EQuIS Academy Recordings and other Downloads
 - Discussion Forum
- EarthSoft Website- <u>http://www.earthsoft.com</u>
 - Upcoming Training Schedule
 - Additional Product Information and Corporate Overview
 - Upcoming Office Hours and Previous Office Hour Videos
 - Lists of available EDD Formats
- For support, the designated Point of Contact (POC) may contact <u>support@earthsoft.com</u>



