



Nick Tumney  
Senior Implementation Manager

## Need for **Data Governance** Using **Data Management** **Software:**



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## A Valuable Tool in **Site** **Monitoring and** **Remediation**

# ESG Compliant?



Environmental Practice



Social Responsibility



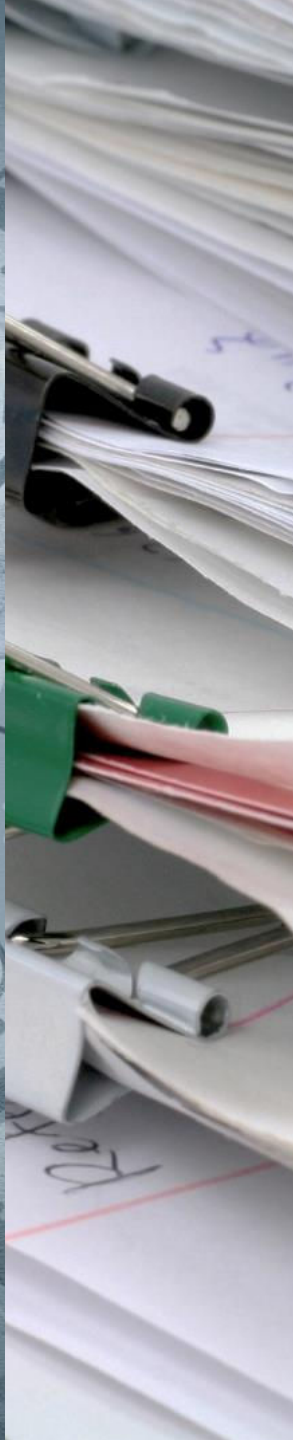
Data Governance

# Data Governance?

Spreadsheets  
vs  
databases.

# Challenges

- Tons of paperwork
- Data Intensive
  - years' worth
- Manual Transcription
  - errors, delays, rework
- Security



# The Solution!

## “Digital Transformation”

- Integrated digital tools & EDMS
- Capture all stages of the Project Life Cycle

# Input



Sample Planning



Field Notes



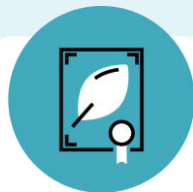
Lab Reports



Historical Data

# EDMS

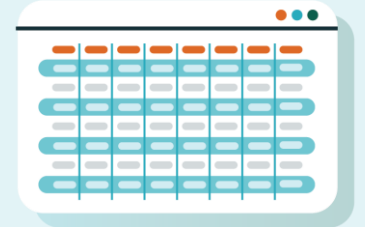
esdat 



Regulatory  
Guidelines

Data QA,  
Review and  
Acceptance

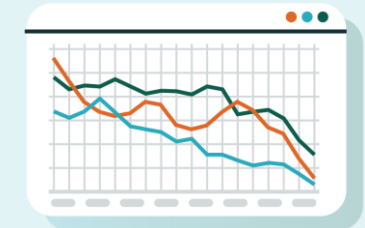
# Output



Exceedance  
Tables

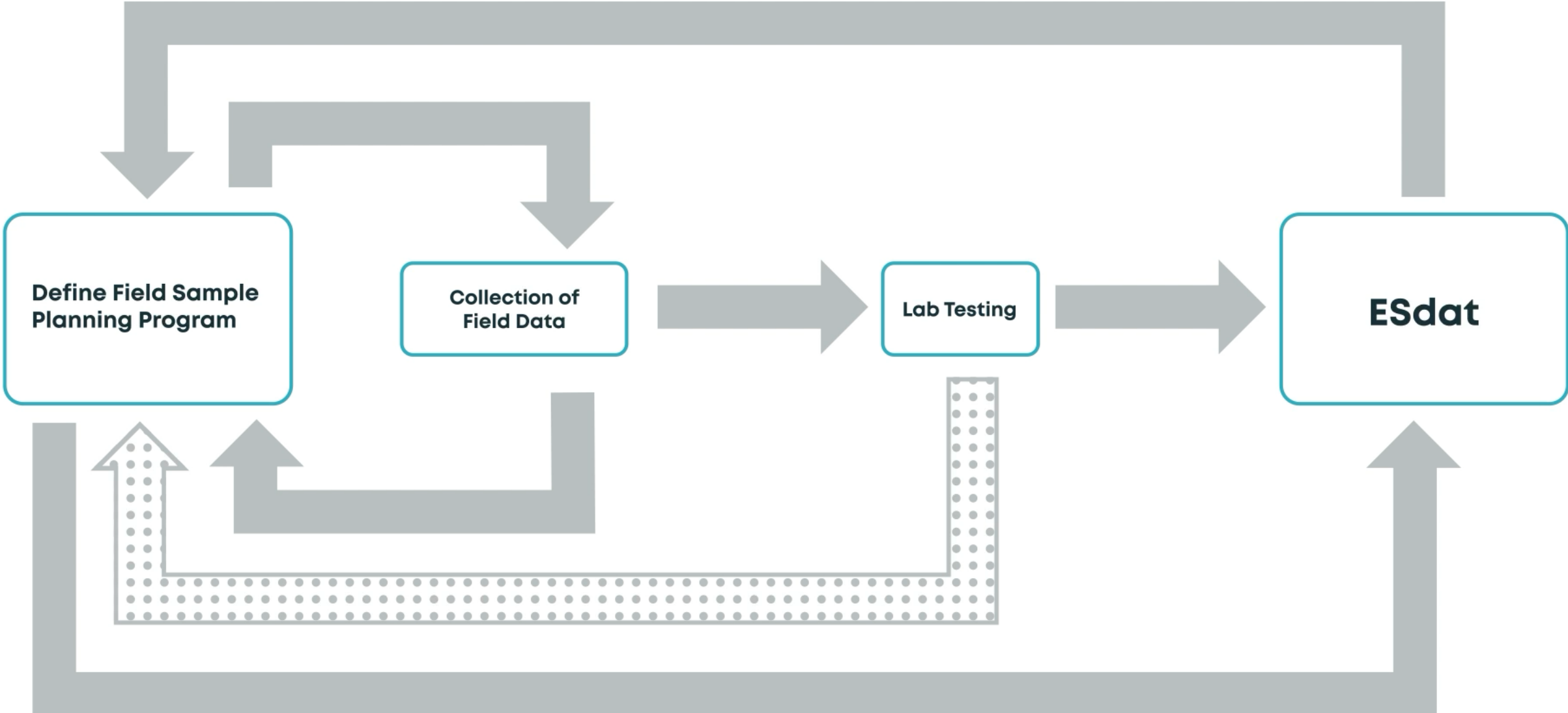


Mapping



Trend Analysis  
And Graphs

# Project Lifecycle





# Online Sample Planning

Increase efficiency  
Reduce errors

Electronic & Remote  
field program  
management

Input or Upload  
Field data

Increase visibility on  
costs

Traceability:  
link to lab, eCOC,  
eQuote, etc.

Schedule &  
Automate:  
Repetitive, recurring  
sampling events







# Sample Planning Quotes & Budgeting

Quote: A2

- Metals and Inorganics
  - pH in Water
  - Conductivity in Water
  - Solids, Total Suspended in Water
  - Cyanide, WAD in Water
  - Anions by IC (2) Pkg in Water
  - Chromium, Speciated (diss) Pkg in water
  - Metals, Dissolved by ICPMS (BC CSR) Pkg in Wa
  - Metals, Total by ICPMS (BC CSR) Pkg in Water**

Name \*

Type	Preservative	Vol.	Filtered	Desc.	Qty.	
C05_125 mL Plastic (Metals)	HNO3	125 ml	No	Red	1	<input type="button" value="X Delete"/>

**Analyses**

Name	Unit	ChemCode	Detection Limit	Quantitation Limit
Aluminum total	mg/L	7429-90-5	0.005	0.005
Antimony total	mg/L	7440-36-0	0.0002	0.0002
Arsenic total	mg/L	7440-38-2	0.0005	0.0005
Barium total	mg/L	7440-39-3	0.005	0.005
Beryllium total	mg/L	7440-41-7	0.0001	0.0001
Boron total	mg/L	7440-42-8	0.05	0.5
Cadmium total	mg/L	7440-43-9	0.00001	0.00001





Create Monitoring Round

Filter Monitoring Rounds

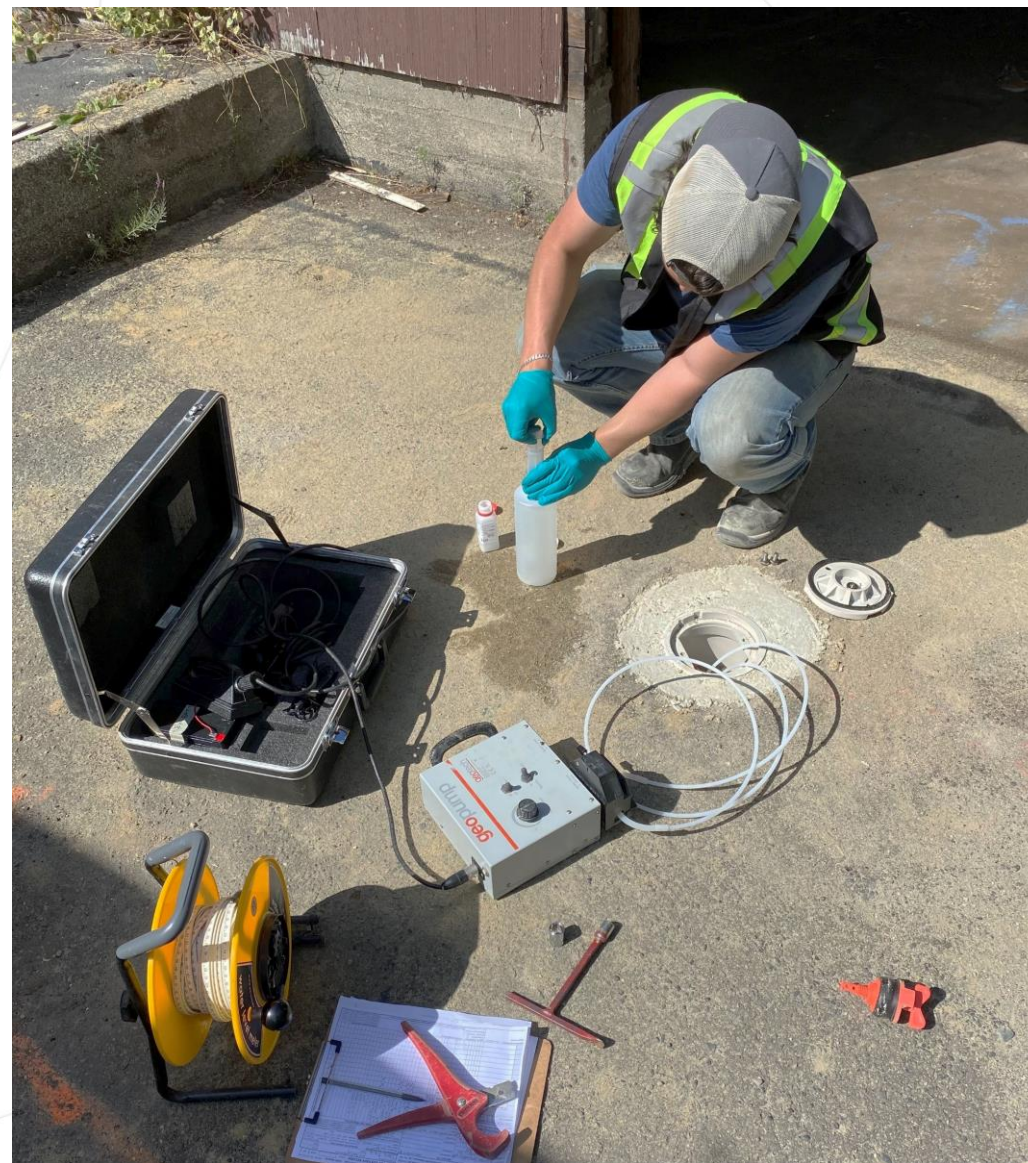
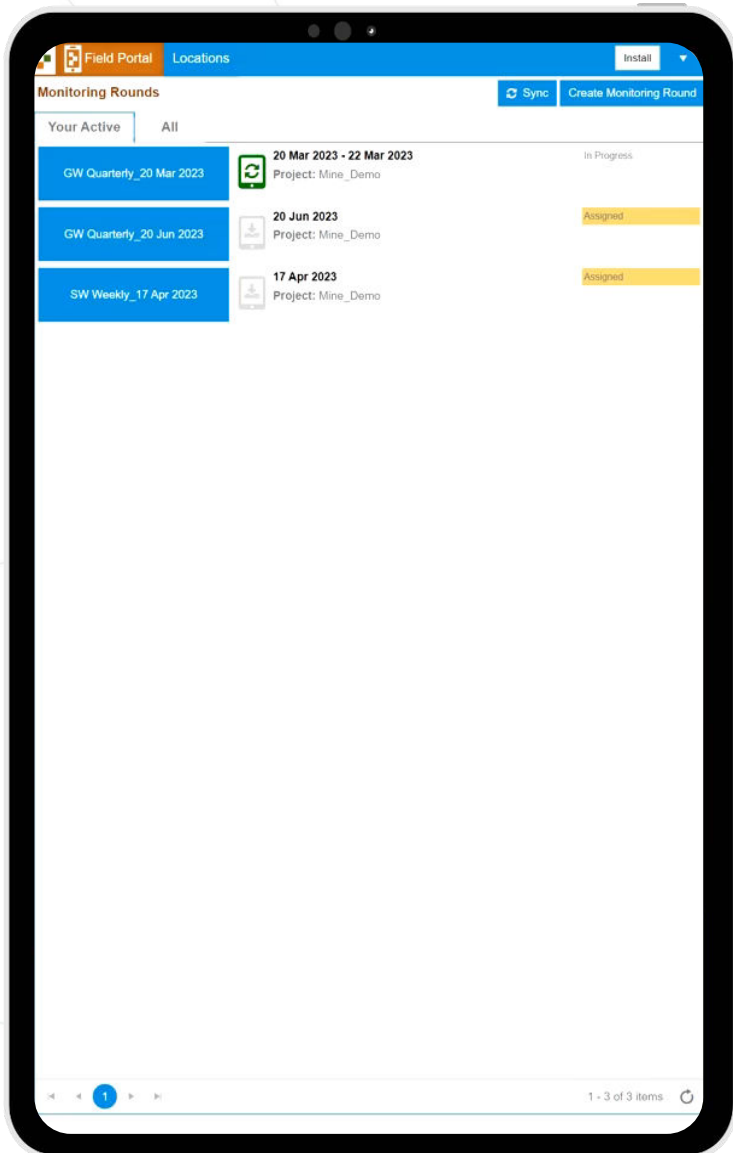
GW Quarterly_20 Mar 2023 20 Mar 2023 - 22 Mar 2023 Project: Mine_Demo  Cancel	<b>Plan</b> Assigned To: Nick Turney  View	<b>Field Data</b> In Progress  Overview	Location Visits CA-eCOC-001 NS
SW Weekly_17 Apr 2023 17 Apr 2023 - Project: Mine_Demo  Cancel	<b>Plan</b> Assigned To: Nick Turney  View	<b>Field Data</b> Assigned  Overview	Location Visits
GW Quarterly_20 Jun 2023 20 Jun 2023 - Project: Mine_Demo  Cancel	<b>Plan</b> Assigned To: Nick Turney  View	<b>Field Data</b> Assigned  Overview	Location Visits (9 Pending)

# Online Bottle Ordering

The screenshot displays the CARO Webstore interface. At the top, the browser address bar shows the URL <https://cci.caro.ca/webstore>. The page header includes the CARO Analytical Services logo, a personalized greeting "Hello CARO SalesTeam, welcome to your benchtop!", and user information "CARO Analytical Services" and "CARO SalesTeam". A navigation sidebar on the left contains links for Orders, Webstore (highlighted), Invoicing, Contact, and Help. The main content area is titled "CARO Webstore" and features a search bar, filter options (Analysis selected, Supplies unselected), and a "Checkout" button. Below the filters is a table of products:

Image	Product Name	Summary	Price	Qty.	
	Ice Pack	Ice packs for transportation. Most analyses require the samples to remain between 2-8°C during transport.	\$2.00	1	<a href="#">Add To Cart</a>
	40 mL Vial - [VOC Soil] (requires 2 per sample)	<i>This item will be invoiced later</i> <b>Requires TWO 40 mL Container:</b> Volatiles - BTEX/VOC/NH/PHC F1	\$2.25	1	<a href="#">Add To Cart</a>

A "Start An ECOC" button is located in the bottom left corner of the interface.



# Lab Testing

1

## Sample Receipt

Log Samples

Containers

Analysis

2

## Analyze Samples

3

Generate reports and distribute to client



Field Profile: Standard | [Print Plan](#) | Approve | Cancel

Field Data [Add New](#)

Fieldwork Status: Completed

Location Visits | Groundwater | Field Samples | Field Chem | Lab | Photos & Files | [Enable Delete](#)

	Site ID	Monitoring Zone	Location	Arrival Time	Departure Time	Executed By	Comments	Weather
MW01	DemoSite	Zone2	MW01					
MW02	DemoSite	Zone2	MW02					

Laboratory Submissions [Add New](#)

Sample Delivery Group	Relinquished Date	Laboratory	Request:Version	SRN	Lab Reports	Status
DemoProject_25 Apr 2023			1 : 1 Add Cancel ⓘ	SRN Not Received	Add/Remove	Request Cancelled
Caro		Caro	1 : 1 Add Cancel ⓘ	SRN Not Received	Add/Remove	Request Cancelled
DemoProject_25 Apr 2023			1 : 1 Add Cancel ⓘ	SRN Not Received	A46574 A16713 A16715 TK003B Add/Remove	Request Not Sent
CA_VAN_21	25 Apr 2023 3:00 PM	Caro	1 : 1 Add Cancel	SRN Not Received	Add/Remove	Request Sent - Awaiting SRN

Reports | [Field Data \(by Location Visit\)](#) | [Field Data \(Tabulated\)](#) | [Exceedances](#)

# Lab Testing



Hello CARO SalesTeam, welcome to your benchtop!

CARO Analytical Services

CARO SalesTeam



- Orders
- Webstore
- Invoicing**
- Contact
- Help

## Invoicing

Credit Limit  
**\$3,000.00**

Credit Application Status  
**Approved**

Search invoice # and WO#

Weekly Water Quality

Select date range

Invoice	Date	Project	WO#	
IC2232945	2022-12-13	Weekly Water Quality, I MADE UP THIS PROJECT	#W022K2756, #W022K2860	
IC2100317	2021-01-06	CARO Lot Test, Option VI PT, Monthly Monitoring, Weekly Water Quality, Autospooling Draft, ABBA_101	#W00031839, #W0003235... <a href="#">View All</a>	
IC1920614	2019-12-02	Weekly Water Quality	#W09120001	
IC1919487	2019-11-19	Weekly Water Quality	#W09110144	
IC1917498	2019-10-10	Weekly Water Quality	#W09101039	
IC1807722	2018-05-25	Weekly Water Quality	#W08052406	

< 1 >

Start An ECOC



# Data Processing



Lab Results Issued

PDF  
EDD



Results imported into EDMS

Excel  
ESdat  
Other



Reconciliation with field notes

Sample locations  
Sample types  
Parent samples



Utilize built-in QA/QC

RPDs, other DQOs  
Fit for purpose

# Automation, Integration!

ESdat - Lab Report Received has Exceedances and Outlier(s) - Message (HT... Search

File Message Help

ESdat - Lab Report Received has Exceedances and Outlier(s)

online.ca@esdat.net  
To Nick Tunney  
Archive 2024-04-11  
[Click here to download pictures.](#) To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Reply Reply All Forward

Wed 2023-04-12 2:11 PM

**Lab Report Received has Exceedances**  
**Lab Report Received has Outlier(s)**

The laboratory report CA231234X from CARO has been received.

The Laboratory Report relates to:  
Monitoring Round: GW Quarterly\_20 Mar 2023  
Laboratory Submission: CA eCOC 001  
Project: Mine\_Demo  
Monitoring Programs: This monitoring round relates to the following schedules:  
GW Quarterly  
Sites: This monitoring round relates to the following Sites:  
Mine\_Demo  
View the Laboratory Report [Details](#), [Chem Table](#), [Chem Map](#).

The selected results have been compared against the following Environmental Standards associated at the Site and Location level:

- BC WQG Drinking Water
- BC WQG Fresh Water Aquatic Life Long Term Chronic

The following results were found to exceed one or more of the standards:

Site ID	Location Code	Well	Field ID	Matrix Type	Sampled Date	Depth	Chem Name	Result	Action Level Source	Action Level Values	Reportable	Source
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		pH (Lab)	2.9	BC WQG Fresh Water Aquatic Life Long Term Chronic	6.5 - 9	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Aluminium	52.4 mg/L	BC WQG Drinking Water	9.5 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Arsenic	4.18 mg/L	BC WQG Drinking Water	0.01 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Arsenic	4.18 mg/l	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.005 mg/l	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Cadmium	0.495 mg/L	BC WQG Drinking Water	0.005 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Cadmium	0.495 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.000127 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Cobalt	0.431 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.004 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Copper	9.26 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.0002 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Copper	3.74 mg/l	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.0002 mg/l	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Lead	0.822 mg/L	BC WQG Drinking Water	0.01 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Lead	0.822 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.0034 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Manganese	21.9 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.7678 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Manganese	13.6 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.7678 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Silver	< 0.0005 mg/l	BC WQG Fresh Water Aquatic Life Long Term Chronic	5F-05 mg/l	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Zinc	6.43 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.0075 mg/L	Not Specified	Site
Mine_Demo	MW055	-	MW055_20 Mar 2023	Water	20 Feb 2023 11:49AM		Zinc	30.2 mg/L	BC WQG Fresh Water Aquatic Life Long Term Chronic	0.0075 mg/L	Not Specified	Site



# ESdat

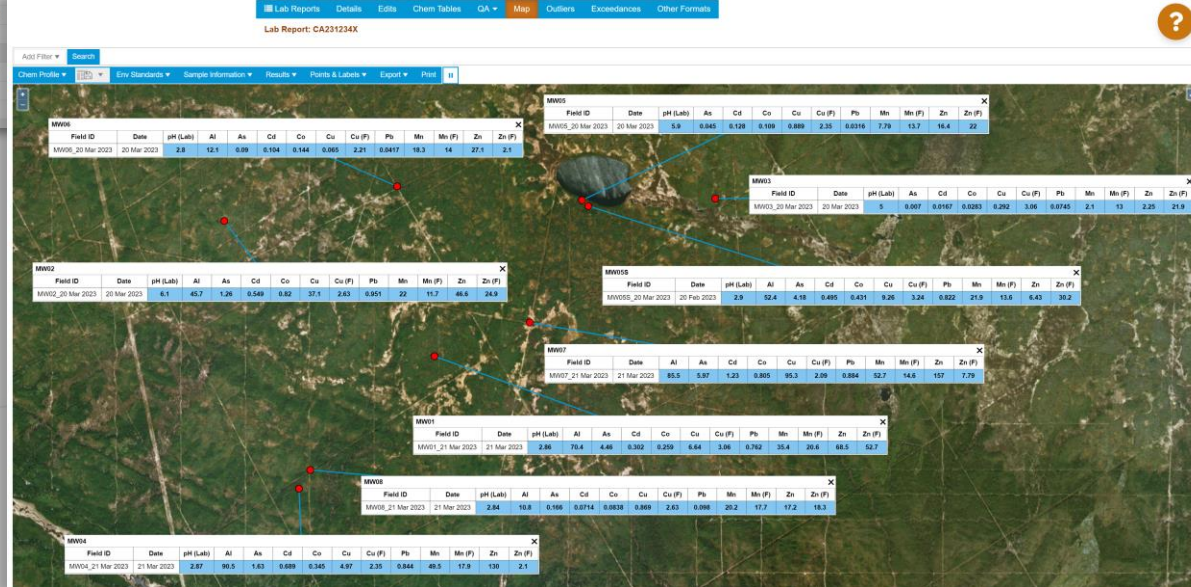
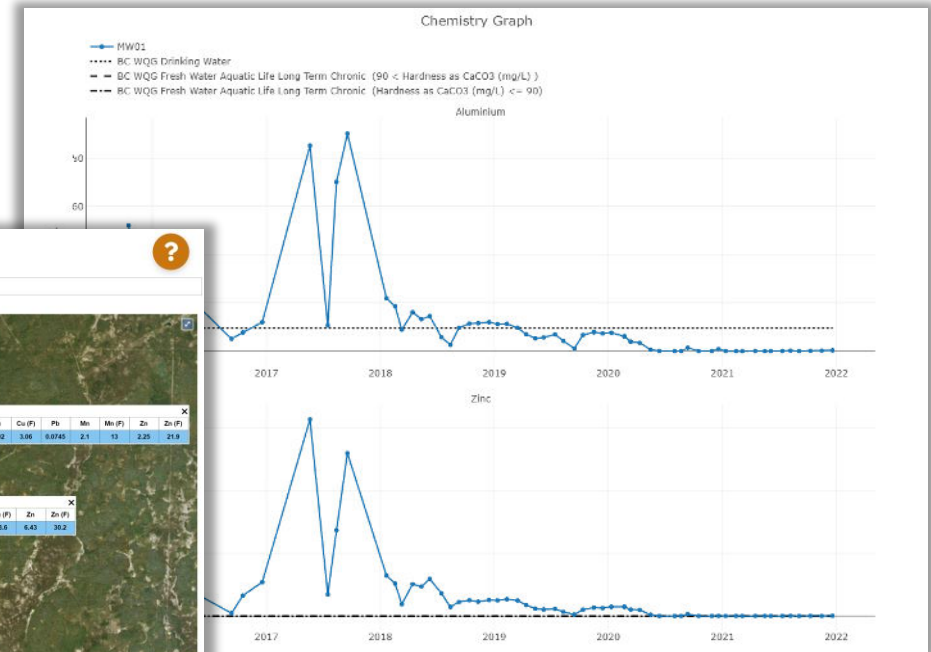
Your data. Organized. Analyzed. Reported. Faster

-  Projects & Sites
-  LSPECS
-  Field Portal
-  Lab Reports
-  Data View

# Interpretation and Reporting

Lab Report: CA231234X

Chem Profile	Env Standards	Sample Information	Statistics	Results	Excel Export
<b>Inorganic</b>					
pH (Lab)	Acidity (as CaCO3)	Acidity (as CaCO3)	E. Coli	Aluminum	Antimony
mg/L	mg/L	mg/L	cfu/100 ml	mg/L	mg/L
0.001	1	1	1	0.051	0.001
<b>Biological</b>					
<b>Metals</b>					
Barium	Beryllium	Cadmium (Total)	Cadmium	Chromium (Total)	Cobalt
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
0.001	0.001	0.001	0.001	0.001	0.0005
<b>Other Metals</b>					
Copper	Copper (Total)	Iron	Iron (Total)	Lead	Magnesium (Total)
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
0.001	0.001	0.1	0.1	0.0005	0.001
<b>Environmental Standards</b>					
BC WQ5 Drinking Water				10	9.5
BC WQ5 Fresh Water Aquatic Life Long Term Chronic				0.005	0.005
Monitoring No.	Location Code	Date	Field ID		
GW Quarterly...	MW01	21 Mar 2023	MW01_21 Ma...	2.86	551
GW Quarterly...	MW02	20 Mar 2023	MW02_20 Ma...	6.1	1725
GW Quarterly...	MW03	20 Mar 2023	MW03_20 Ma...	5	161
GW Quarterly...	MW04	21 Mar 2023	MW04_21 Ma...	2.87	511
GW Quarterly...	MW05	20 Mar 2023	MW05_20 Ma...	5.9	281
GW Quarterly...	MW05	20 Feb 2023	MW05_20 ...	2.9	1899
GW Quarterly...	MW06	20 Mar 2023	MW06_20 Ma...	2.8	4257
GW Quarterly...	MW07	21 Mar 2023	MW07_21 Ma...	7	328
GW Quarterly...	MW08	21 Mar 2023	MW08_21 Ma...	2.84	522





ArcGIS



EDMS



Surfer



GWSDAT



ESlog CREATE BORELOGS WITHOUT THE HEADACHES FOR FREE!

PD	Sample	Analysis	% Recovery	Depth (m)	Graphic Log	Moisture	ESlog Description	Well Diagram	Elevation (m)
4	BH01_2-3-1						<p>EASY TO USE: Create logs with your favourite browser and use wells as you make them</p> <p>TIME SAVED! No training required, just point where you want to enter data, click and start typing</p> <p>ESlog is produced by ES&amp;S, the company that brings you ESdat</p> <p>MORE EDMS SOLUTIONS: visit <a href="http://esdat.com.au">esdat.com.au</a> to learn more about our range of scalable products to meet your needs</p> <p>TRY ESlog TODAY! <a href="http://eslog.esdat.net">eslog.esdat.net</a></p>		45
4	BH01_5-5-3	Y							44
4	BH01_3-3-4								43
04	BH01_6-4-1								42
									41
									40
									39



# Data Governance!

- *Central & Secure Location for all data*
- *Streamline workflow & communication: Reduce errors*
- *Data tabulation: Real-time/as soon as available*
- *Automated for efficient data comparison*
- *Traceable: improve internal QC measures*



# Takeaway

“Don't work for your data,  
Make your data work for you!”



# Thank you. Questions?



Esma Al-Autman  
Business Development Specialist

# Learn more! Contact:

