

Emerging Technologies

Tools to enhance testing, data
management, and quality systems



Presented by Alexander Chieh

About RWF



1956

Established / co-owned by
San Jose and Santa Clara

>200 MGD

Advanced treatment capacity

~110 MGD

Average daily flow

1.5M

Residents served

17,000+

Businesses served

200+

State-certified lab parameters

Fields of Accreditation (Cert:# 1313)

Total FOAs

219

RWF Laboratory accreditation spans microbiology, inorganics, metals, organics, toxicity, and ambient water methods.

- FOA 101: Microbiology of Drinking Water
- FOA 107: Microbiological Methods for Non-Potable Water and Sewage Sludge
- FOA 108: Inorganic Constituents in Non-Potable Water
- FOA 109: Metals and Trace Elements in Non-Potable Water
- FOA 110: Volatile Organic Constituents in Non-Potable Water
- FOA 111: Semi-volatile Organic Constituents in Non-Potable Water
- FOA 113: Environmental Toxicity Methods
- FOA 126: Microbiological Methods for Ambient Water

Overview



“Emerging technology is not just a single tool—it is a connected quality system.”

Why Emerging Technologies Matter

The goal is not “more technology.” The goal is stronger visibility, faster action, and more consistent quality management.

QC

Testing complexity

More methods, more QC checkpoints, more documentation to manage.



Audit readiness

Evidence needs to be relevant, complete, current, traceable, and easy to retrieve.



Manual follow-up risk

Due dates, training, DOC renewals, and QC exceptions can be missed when tracked separately.

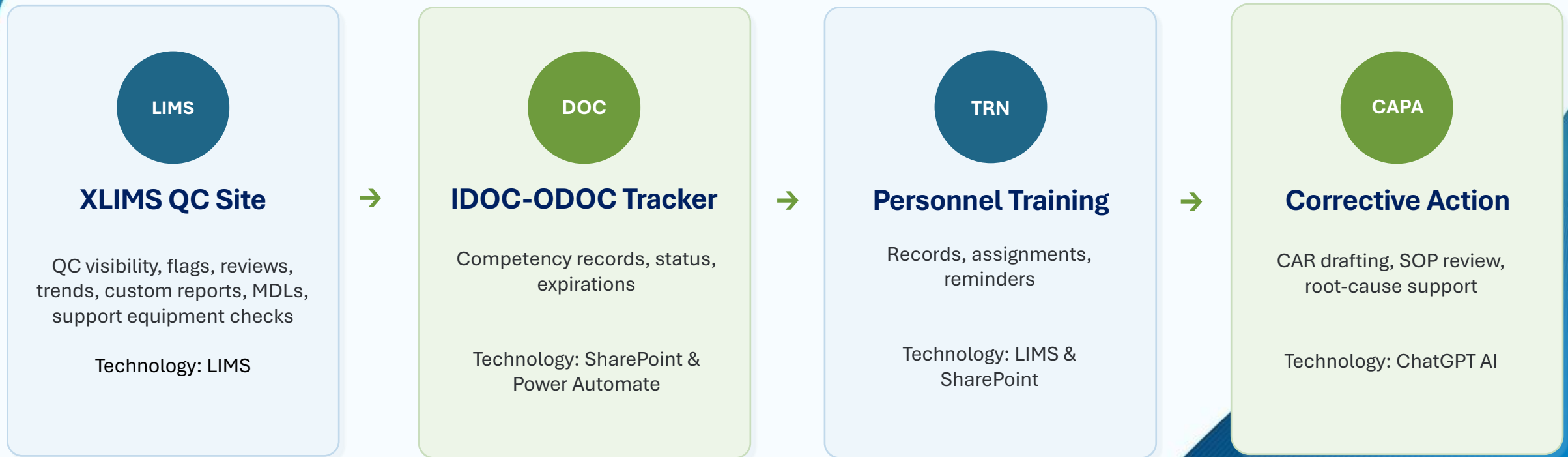
AI

Knowledge consistency

Standardized prompts, workflows, and records reduce variation between authors and teams.

Emerging Technology Ecosystem

A practical system that connects testing data, quality records, training, and documentation support.



Connected outcome: better visibility, faster follow-up, cleaner evidence, and more consistent quality decisions.

XLIMS QC Site: Earlier Visibility Into Quality Issues

Use the LIMS ecosystem to keep testing, QC review, and corrective action signals closer together.

What can LIMS do?

- QC exceptions and review status in one place
- Flags for failed or questionable QC checks
- Trends that help identify recurring issues
- Faster communication between analysts, supervisors, and QA
- Keep track of instrument/equipment maintenance



Message to audience

QC information becomes actionable when it is visible, current, and connected to follow-up.

XLIMS QC Site: Customization for Different Needs

Use the LIMS ecosystem to streamline QC System

Custom Data Modules

Build views that match each team's workflow and information needs.

Historical Sample Data

Review prior results for trending, comparison, and investigation support.

Productivity Visibility

See workload, completed tasks, and follow-up needs in a centralized place.

Automated QC & Result Flagging

Identify failed checks or results outside operational limits.

Task & Compliance Tracking

Monitor MDLs, equipment checks, calibrations, and recurring requirements.

Results flagged when outside optimal range

Batch Data Entry List (1 - 14 of 14)

Optimal range can be seen by right-clicking result

List Settings

#	Sample Number	Sample Name	Test Name	Run	QC Type	Start Date/Time	Total Suspense...	Dilution Factor	Limit Correction...	Analyzed By	Analysis Date/T...	Total Suspense...	Total Suspense...	Total Suspense...
						Entered	Entered (mg/L)	Entered	Entered	Entered	Entered	Entered (mg/L)	Entered (%)	Entered (%)
1	B260809-07-MB-01	(MB)	QC-TSS MB	1	MB	8/9/26 6:50	-0.14	1.0	1	SG	8/9/26 9:50			
2	B260809-07-LCS-01	(LCS)	QC-TSS LCS	1	LCS	8/9/26 6:50	114.80	20.0	20	SG	8/9/26 9:50	100	114.80	
3	B260809-07-LCSD-01	(LCSD)	QC-TSS LCSD	1	LCSD	8/9/26 6:50	114.60	20.0	20	SG	8/9/26 9:50	100	114.60	0.17
4	260809-04I	PEComp	TSS-LOW	1		8/9/26 6:50	155.80	20.0	20	SG	8/9/26 9:50			
5	260809-04I	PEComp	QC-TSS-LOW DUP	1	DUP	8/9/26 6:50	160.80	20.0	20	SG	8/9/26 9:50			3.16
6	260809-04F	SSComp	TSS-LOW	1		8/9/26 6:50	123.00	20.0	20	SG	8/9/26 9:50			
7	260809-04G	SEBComp	TSS-LOW	1		8/9/26 6:50	6.46	1.3	1.3	SG	8/9/26 9:50			
8	260809-04J	FIComp	TSS-LOW	1		8/9/26 6:50	5.29	1.1	1.1	SG	8/9/26 9:50			
9	260809-04Q	TFBWComp	TSS-LOW	1		8/9/26 6:50	5.74	1.3	1.3	SG	8/9/26 9:50			
10	260809-04R	CNEFComp	TSS-LOW	1		8/9/26 6:50	697.20	40.0	40	SG	8/9/26 9:50			
11	260809-04S	NEBComp	TSS-LOW	1		8/9/26 6:50	7.85	1.3	1.3	SG	8/9/26 9:50			
12	260809-04T	NIBComp	TSS-LOW	1		8/9/26 6:50	119.80	20.0	20	SG	8/9/26 9:50			
13	260809-04U	NEComp	TSS-LOW	1		8/9/26 6:50	8.61	1.3	1.3	SG	8/9/26 9:50			
14	260809-04V	NIAComp	TSS-LOW	1		8/9/26 6:50	144.80	20.0	20	SG	8/9/26 9:50			

Result Limits

Limits in Violation

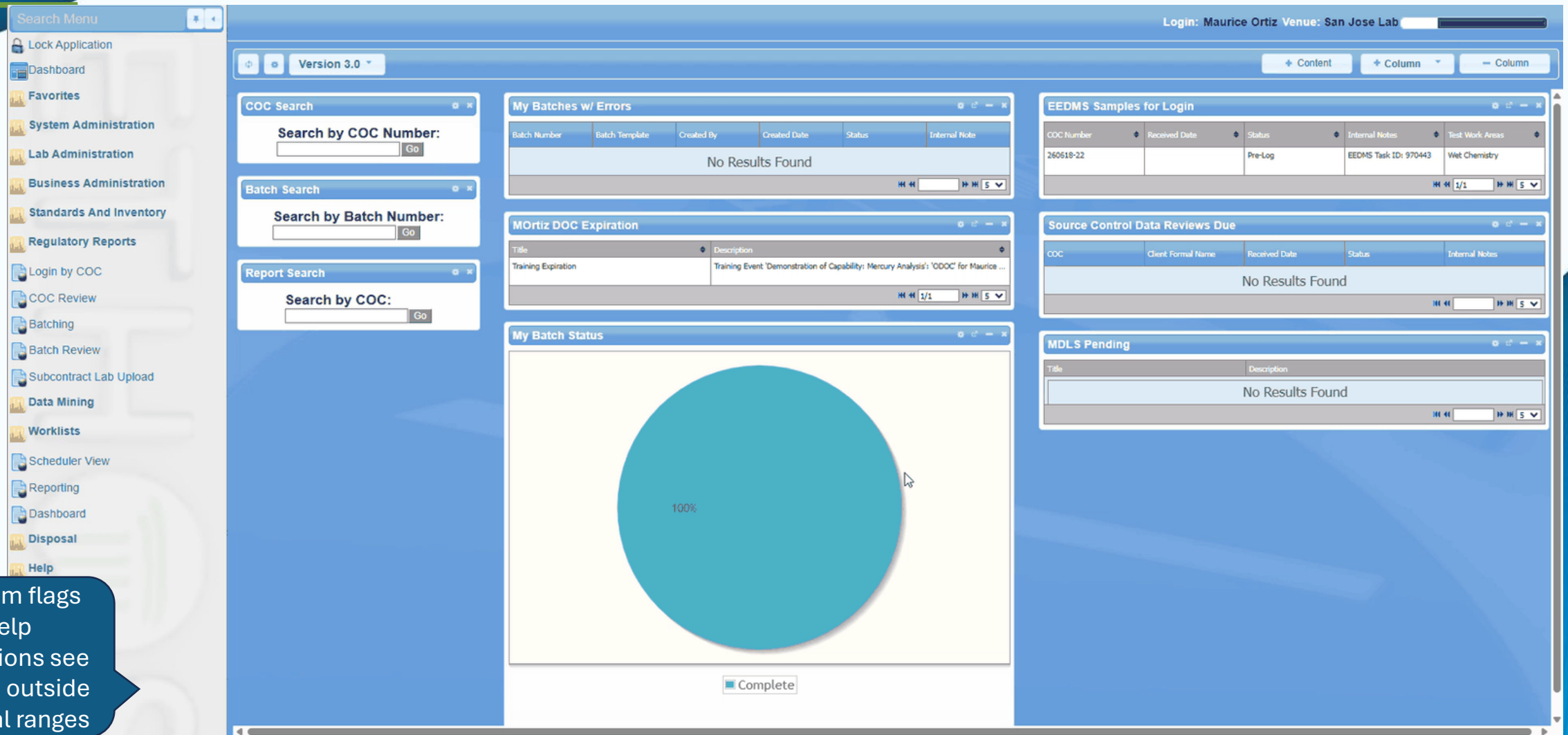
Daily Report Limits > 113 OR < 70 mg/L

Limits Not in Violation

MDL < 8 mg/L

RL < 20 mg/L

XLIMS QC Site: Operations Custom Daily Report



XLIMS QC Site: Instrument Maintenance Tracking

Easy-to-Access Quarterly Maintenance Tracking

LIMS provides a centralized view of scheduled maintenance activities, making routine requirements easier to see, manage, and complete.



Centralized list of scheduled instrument maintenance activities



Quarterly tasks are organized by instrument and due period



Provides quick visibility of required work



Reduces reliance on separate spreadsheets, calendars, or reminders

Recurring quarterly tasks listed by instrument

Status and start-date fields support tracking

Login: Maurice Ortiz Venue: San Jose Lab

Instrument Maintenance Worklist List (1 - 18 of 18)

Instrument Name	Maintenance Task	Status	Type of Task	Completed By	Date Started
Pipette IC-174-A2	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette IC-174-A5	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette IC-174-A6	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette IC-174-A8	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette IC-174-A9	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette IC-174-A10	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette IC-174-A11	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette IC-174-A12	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-169-A10	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-169-A11	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-169-A12	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-169-A13	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-169-A16	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-181-A17	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-181-A18	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-181-A20	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-169-F1	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026
Pipette MET-169-F2	Quarterly Volume Check - QC	Login	Quarterly Check		07/01/2026



Centralized maintenance list



Easy visibility of due work



Consistent tracking fields



Supports timely completion

XLIMS QC Site: From Maintenance Task to Completed Batch

1 Create / Assign Batch

Batch Details (Viewing record 12 of 100+) B260817-24

Batch Details Test Assignment Data Entry Limits Reports/Exclude Results Batch Parameters Assigned Instruments Internal Estates

Current Batched Entities

Entity	Sample Tests	Batch QCs
1 IM-260817-0076QC01	Pipette IC-174-A10 Volume Check(1)	
2 IM-260819-0077QC01	Pipette IC-174-A11 Volume Check(1)	
3 IM-260819-0078QC01	Pipette IC-174-A12 Volume Check(1)	
4 IM-260819-0071QC01	Pipette IC-174-A2 Volume Check(1)	
5 <empty>		
6 <empty>		
7 <empty>		
8 <empty>		
9 <empty>		
10 <empty>		
11 <empty>		
12 <empty>		
13 <empty>		
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28 <empty>		
29 <empty>		
30 <empty>		

Batch QC Tests List (1 - 1 of 1)

Select All Deselect All

QC Name Version Number

Current Filter

Assigned pipettes
in this batch

2

Generate Worksheet

LIMS creates an Excel worksheet with the assigned tasks.

3 Perform & Document Checks

AutoSave pipette worksheet(9) - Excel

File Home Insert Draw Page Layout Formulas Data Review ViewAutomate Developer Help Acrobat

sample_1 IM-260817-0076QC01

Batch B260817-24

Analyzed By: B260817-24

Date: B260817-24

Thermometer ID:

Observed Temperature:

Correction Factor:

Corrected Temperature:

Take three weighings at 100%, 50% and 10% or lowest volume available greater than 10% and determine accuracy and precision

Pipette 1

Sample ID: IM-260817-0076QC01

Pipette ID: IC-174-A10

Expected volume (mL)	Weightings at 100% Volume (g)	True Volume (mL)	Accuracy (%)
1			
2			
3			
Precision at 100%		Std Deviation %:	

Pipette 2

Sample ID: IM-260819-0077QC01

Pipette ID: IC-174-A11

Expected volume (mL)	Weightings at 50% Volume (g)	True Volume (mL)	Accuracy (%)
1			
2			
3			
Precision at 50%		Std Deviation %:	

Pipette 3

Sample ID: IM-260819-0078QC01

Pipette ID: IC-174-A12

Expected volume (mL)	Weightings at minimum Volume (g)	True Volume (mL)	Accuracy (%)
1			
2			
3			
Precision at minimum%		Std Deviation %:	

Structured data-entry sections for each pipette



Multiple maintenance items can be grouped into a single LIMS batch



Each instrument receives a unique task/sample identifier for traceability



LIMS generates a standardized worksheet used to complete the checks



Batch-based processing improves efficiency, consistency, and documentation.

XLIMS QC Site: MDL Calculations

Get MDL Calculation Through LIMS

- Choose the date range for the data used in calculations
- Obtain 100s of data entries with a few clicks
- Obtain a custom MDL report with key information in the main page and all the data used in one report

100s of data points used neatly organized

All key information for MDL calculations in one spot

Method Detection Limit Study Report

Date Range: 01/01/2024 to 12/31/2025

This report examines a minimum of 7 blanks and 7 spikes and executes calculations for determining a Method Detection Limit (MDL). The number of each QC selected is determined by the date range and the number of last QCs specified by the user existing in that date range. It uses a Student's T-Value at 99% for the N-1 degrees of freedom. The report will not calculate the MDL if there is not at least 7 data points for each parameter. This report uses the EPA 821-B-07-010, part 136, Appendix B, rev 2. ([Link](#)). Note all data shown are complete and are marked as reported. Calculated mean values less than the MDL will update all MDLs for active Test and QCs templates that have MDLs and are associated with the Batch Template selected. The 'New MDL Value' in the table below. This report will also update Reporting Limits that have the MDL listed in the 2nd limit builder value.

Page: 999
Page: 50

Analysis: Ion Chromatography
Method: EPA 300.0

Update X-LIMS DLs

Parameter	Units	# of Blanks (N)	Blank Mean	Blank Std Dev	Blank T-value (N-1)	Calc Blank MDL	# of Spikes	Spike Std Dev	Spike T-value (N-1)	Calc Spike MDL	New MDL Value
Chloride	mg/L	511	0.132741954	0.194212	2.364	0.592	23	0.0745931	2.508	0.187	0.592
Nitrate as N	mg/L	512	0.016861093	0.385418	2.364	0.911	23	0.0105116	2.508	0.0264	0.894
Nitrite as N	mg/L	510	0.001594117	0.00456356	2.364	0.0124	23	0.0145534	2.508	0.0365	0.0365
Sulfate	mg/L	511	0.031180682	0.0821805	2.364	0.225	23	0.0670553	2.508	0.168	0.225
Orthophosphate (as PO4)	mg/L	508	0.00296811	0.0343333	2.364	0.0841	23	0.0639251	2.508	0.160	0.160

Data Used for Calculations						
Parameter Name	#	QC Category	Sample Number	Calc Results	Unit	Instruments
Chloride	1	blank	B240603-03-MB-01	0.1060	mg/L	
	2	blank	B240604-12-MB-01	0.1429	mg/L	
	3	blank	B240605-01-MB-01	0.0296	mg/L	
	4	blank	B240606-03-MB-01	0.0514	mg/L	
	5	blank	B240606-23-MB-01	0.1419	mg/L	
	6	blank	B240607-04-MB-01	0.6853	mg/L	

Page 1 of 76

IDOC-ODOC Tracker: Competency Records With Status Visibility

A SharePoint tracker that turns DOC records into searchable, filterable, and automated quality information.

Core capabilities

- Centralized IDOC and ODOC records
- Analyst grouping for ownership
- Color-coded workgroups and statuses
- “View Details / Files” access to evidence
- Expiration reminders and escalation emails



Navigation tabs help users
focus on what matters most



Grouped by Analyst for
clear ownership and workload visibility



Key information at a glance
with color-coded tags and status indicators



Quick access to details
and attachments

Active

Near Expiration

Expired

Superseded

Current Views



All Current DOCs
View all active documents across analysts



DOC Requiring Attention
See items that are expired or need action



My DOCs
Personalized view of your assigned documents



Archived DOCs
Access historical records

ESD Quality and Client Support
IDOC-ODOC Tracker

All Current DOCs Archived DOCs DOC Requiring Attention My DOCs

Most Current DOC: No

Analyst	Analysis	Most Current DOC	Completion Date	Expiration Date	Analyst Supervisor	DOC Type	Status	DOC Workgroup	Open Record	Attachments	+ Add column
[Analyst]	pH	☐	4/23/2025	4/23/2026	[Supervisor]	IDOC	Superseded	Biology	View Details / Files		
[Analyst]	Hydrogen Sulfide	☐	5/6/2025	5/6/2026	[Supervisor]	IDOC	Superseded	Organics	View Details / Files		
[Analyst]	NH3-NIA	☐	5/13/2025	5/13/2026	[Supervisor]	IDOC	Superseded	Process & Gas	View Details / Files		
[Analyst]	NO2-NIA	☐	5/11/2025	5/11/2026	[Supervisor]	IDOC	Superseded	Process & Gas	View Details / Files		
[Analyst]	Enterococcus	☐	4/23/2025	4/23/2026	[Supervisor]	ODOC	Superseded	Biology	View Details / Files		
[Analyst]	Total Coliforms	☐	4/23/2025	4/23/2026	[Supervisor]	ODOC	Superseded	Biology	View Details / Files		
[Analyst]	Total Residual C...	☐	4/2/2025	4/2/2026	[Supervisor]	IDOC	Superseded	Biology	View Details / Files		
[Analyst]	TSS Low	☐	4/6/2025	4/6/2026	[Supervisor]	ODOC	Superseded	Process & Gas	View Details / Files		
[Analyst]	Turbidity	☐	4/6/2025	4/6/2026	[Supervisor]	ODOC	Superseded	Process & Gas	View Details / Files		
[Analyst]	KCP-DKS	☐	5/2/2025	5/2/2026	[Supervisor]	IDOC	Superseded	Trace Inorganics	View Details / Files		
[Analyst]	Chlorophyll a	☐	6/12/2025	6/12/2026	[Supervisor]	IDOC	Superseded	Biology	View Details / Files		

ESD Quality and Client Support
IDOC-ODOC Tracker

All Current DOCs Archived DOCs DOC Requiring Attention My DOCs

Status: Near Expiration Expired

Analyst	Analysis	Completion Date	Expiration Date	DOC Type	Status	DOC Workgroup	Open Record	Attachments	+ Add column
[Analyst] (3)	Enterococcus	5/6/2025	5/6/2026	ODOC	Expired	Biology	View Details / Files		
[Analyst]	Ion Chromatography	4/30/2025	4/30/2026	IDOC	Expired	Organics	View Details / Files		
[Analyst]	Total Coliforms by Coli-24	5/6/2025	5/6/2026	ODOC	Expired	Biology	View Details / Files		
[Analyst] (11)	BOD Total	4/1/2025	4/1/2026	IDOC	Expired	Biology	View Details / Files		
[Analyst]	Enterococcus	5/6/2025	5/6/2026	ODOC	Expired	Biology	View Details / Files		
[Analyst]	Total Coliforms by Coli-24	5/6/2025	5/6/2026	ODOC	Expired	Biology	View Details / Files		
[Analyst]	B24 Multiple Organics	5/20/2025	5/20/2026	ODOC	Expired	Organics	View Details / Files		
[Analyst]	625	5/21/2025	5/21/2026	ODOC	Expired	Organics	View Details / Files		
[Analyst]	H2S Low	5/14/2025	5/14/2026	ODOC	Expired	Organics	View Details / Files		

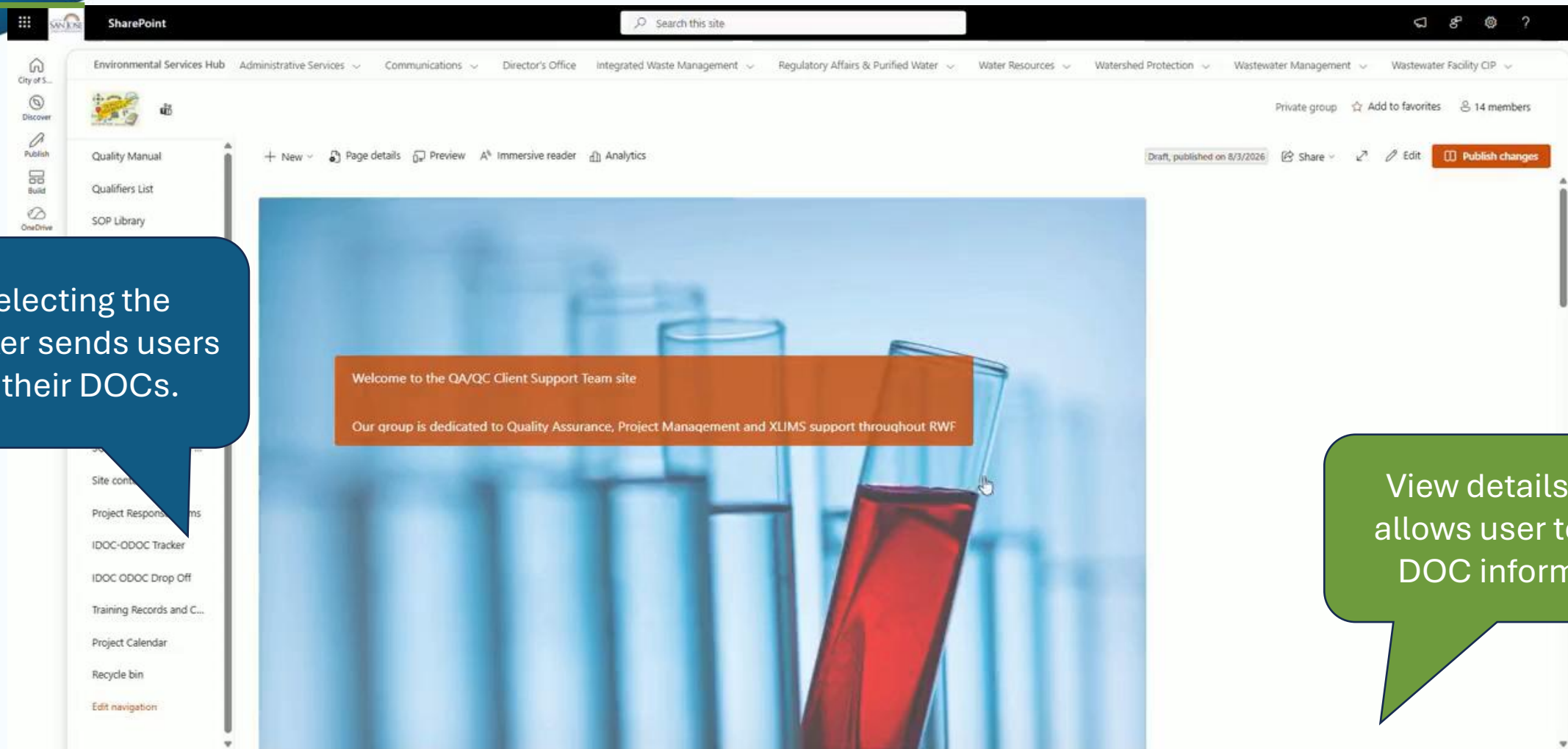
ESD Quality and Client Support
IDOC-ODOC Tracker

All Current DOCs Archived DOCs

Person: (Me)

Analyst	Most Current DOC	Analysis	Completion Date	Expiration Date	DOC Type	Status	DOC Workgroup	Open Record	Attachments	+ Add column
[Analyst]	☒	Enterococcus	7/9/2025	7/9/2026	IDOC	Active	Biology	View Details / Files		
[Analyst]	☒	pH	7/8/2025	7/8/2026	IDOC	Active	Biology	View Details / Files		
[Analyst]	☒	Total Coliforms ...	7/10/2025	7/10/2026	IDOC	Active	Biology	View Details / Files		
[Analyst]	☒	Total Residual C...	7/10/2025	7/10/2026	IDOC	Active	Biology	View Details / Files		
[Analyst]	☒	Hydrogen Sulfide	7/20/2025	7/20/2026	ODOC	Active	Organics	View Details / Files		
[Analyst]	☒	Total Mercury	8/12/2025	8/12/2026	ODOC	Active	Trace Inorganics	View Details / Files		
[Analyst]	☒	Ion Chromatog...	6/25/2025	6/25/2026	IDOC	Active	Organics	View Details / Files		
[Analyst]	☒	Alkalinity	7/28/2025	7/28/2026	ODOC	Active	Process & Gas	View Details / Files		
[Analyst]	☒	NH3-NIA	7/27/2025	7/27/2026	ODOC	Active	Process & Gas	View Details / Files		
[Analyst]	☒	NO2-NIA	7/27/2025	7/27/2026	ODOC	Active	Process & Gas	View Details / Files		
[Analyst]	☒	TSS Low	9/6/2025	9/6/2026	ODOC	Active	Process & Gas	View Details / Files		

My DOCs View



All Most Current DOCs View

Filter by 'Analyst'

Analyst	Analysis	Most Current DOC	Completion	Expiration D...	Analyst Supervisor	DOC Type	Status	DOC Workgroup	Open R...
[Redacted]	Ion Chromatography	[Redacted]	4/30/2025	4/30/2026	[Redacted]	IDOC	Expired	Organics	View
[Redacted]	LDO	[Redacted]	1/13/2026	1/13/2027	[Redacted]	ODOC	Active	Biology	View
[Redacted]	NH3-FIA	[Redacted]	8/24/2025	8/24/2026	[Redacted]	ODOC	Near Expiration	Process & Gwim...	View
[Redacted]	NO3-FIA	[Redacted]	8/24/2025	8/24/2026	[Redacted]	ODOC	Near Expiration	Process & Gwim...	View
[Redacted]	pH	[Redacted]	1/3/2026	1/3/2027	[Redacted]	ODOC	Active	Biology	View
[Redacted]	Total Coliforms by Colliert 24	[Redacted]	1/3/2026	5/6/2026	[Redacted]	ODOC	Expired	Biology	View
[Redacted]	Total Residual Chlorine	[Redacted]	1/3/2026	1/3/2027	[Redacted]	ODOC	Active	Biology	View
[Redacted]	TSS-Low	[Redacted]	1/3/2026	1/3/2027	[Redacted]	ODOC	Active	Process & Gwim...	View
[Redacted]	Turbidity	[Redacted]	1/3/2026	1/3/2027	[Redacted]	ODOC	Active	Process & Gwim...	View
[Redacted] (14)									
[Redacted]	636 Organochlorine Pesticides and ...	[Redacted]	12/11/2025	12/11/2026	[Redacted]	ODOC	Active	Organics	View
[Redacted]	624 Volatile Organics	[Redacted]	1/15/2026	1/15/2027	[Redacted]	ODOC	Active	Organics	View
[Redacted]	Enterococcus	[Redacted]	8/21/2025	8/21/2026	[Redacted]	ODOC	Near Expiration	Biology	View

Analyst	Analysis	Most Current DOC	Completion	Expiration D...	Analyst Supervisor	DOC Type	Status	DOC Workgroup	Open Record	Attachments
[Redacted]	KCP-OES	[Redacted]	4/3/2026	4/3/2027	[Redacted]	IDOC	Active	Trace Inorganics	View Details / Files	
[Redacted]	LDO	[Redacted]	3/20/2026	3/20/2027	[Redacted]	IDOC	Active	Biology	View Details / Files	
[Redacted]	NH3-FIA	[Redacted]	3/4/2026	3/4/2027	[Redacted]	IDOC	Active	Process & Gwim...	View Details / Files	
[Redacted]	NH4-FIA Regulatory	[Redacted]	5/29/2026	5/29/2027	[Redacted]	IDOC	Active	Process & Gwim...	View Details / Files	
[Redacted]	NO2-FIA	[Redacted]	3/4/2026	3/4/2027	[Redacted]	IDOC	Active	Process & Gwim...	View Details / Files	
[Redacted]	pH	[Redacted]	6/9/2026	6/9/2027	[Redacted]	IDOC	Active	Biology	View Details / Files	
[Redacted]	Total Coliforms by Colliert 24	[Redacted]	6/15/2026	6/15/2027	[Redacted]	IDOC	Active	Biology	View Details / Files	
[Redacted]	Total Residual Chlorine	[Redacted]	7/9/2026	7/9/2027	[Redacted]	IDOC	Active	Biology	View Details / Files	
[Redacted] (14)										
[Redacted]	624 Volatile Organics	[Redacted]	2/25/2026	2/25/2027	[Redacted]	IDOC	Active	Organics	View Details / Files	
[Redacted]	BOD-Setup	[Redacted]	9/12/2025	9/12/2026	[Redacted]	ODOC	Active	Biology	View Details / Files	

Shows analysts current DOCs grouped by each individual analyst

View makes filtering by analyst simple

Other Views

ESD Quality and Client Support
IDOC-ODOC Tracker

This view uses filters that you can view and edit here

DOC Requiring Attention

Analyst	Most Current DOC	Analysis	Completion Date	Expiration Date	DOC Type	Status	DOC Workgroup	Open Record	Attachments	+ Add column
(10)										
	☒	Total Coliforms by Collett 24	7/23/2025	7/23/2026	IDOC	Expired	Biology	View Details / Files		
	☒	Enterococcus	5/6/2025	5/6/2026	ODOC	Expired	Biology	View Details / Files		
	☒	Hydrogen Sulfide by GC	8/24/2025	8/24/2026	ODOC	Expired	Organics	View Details / Files		
	☒	Ion Chromatography	4/30/2025	4/30/2026	IDOC	Expired	Organics	View Details / Files		
	☒	NBIS-FAH	8/24/2025	8/24/2026	ODOC	Expired	Process & Grad.	View Details / Files		
	☒	NO2-FAH	8/24/2025	8/24/2026	ODOC	Expired	Process & Grad.	View Details / Files		
	☒	Total Coliforms by Collett 24	5/6/2025	5/6/2026	ODOC	Expired	Biology	View Details / Files		
	☒	Alkalinity	7/28/2025	7/28/2026	ODOC	Expired	Process & Grad.	View Details / Files		
	☒	Total Mercury	8/12/2025	8/12/2026	ODOC	Expired	Trace Inorganics	View Details / Files		
	☒	TSS-Low	9/6/2025	9/6/2026	ODOC	Near Expiration	Process & Grad.	View Details / Files		
(14)										
	☒	BOD-Setup	9/12/2025	9/12/2026	ODOC	Near Expiration	Biology	View Details / Files		
	☒	BOD-Total	4/1/2025	4/1/2026	IDOC	Expired	Biology	View Details / Files		

DOC Requiring Attention

- View groups analyst by supervisors
- View shows all DOCs that are near expiration or expired.

ESD Quality and Client Support
IDOC-ODOC Tracker

Archived DOCs

Most Current DOC: No

Analyst	Analysis	Most Current DOC	Completion Date	Expiration Date	Analyst Supervisor	DOC Type	Status	DOC Workgroup	Open Record	Attachments	+ Add column
	625	☐	3/4/2026	3/4/2027		ODOC	Superseded	Organics	View Details / Files		
	Enterococcus	☐	4/28/2025	4/28/2026		ODOC	Superseded	Biology	View Details / Files		
	Ion Chromatography	☐	6/6/2025	6/6/2026		IDOC	Superseded	Organics	View Details / Files		
	O&G	☐	5/16/2025	5/16/2026		ODOC	Superseded	Organics	View Details / Files		
	Total Coliforms	☐	4/28/2025	4/28/2026		ODOC	Superseded	Biology	View Details / Files		
	608 Organochlorine	☐	5/30/2025	5/30/2026		IDOC	Superseded	Organics	View Details / Files		
	624 Volatile Or.	☐	5/20/2025	5/20/2026		ODOC	Superseded	Organics	View Details / Files		
	625	☐	5/21/2025	5/21/2026		ODOC	Superseded	Organics	View Details / Files		
	BOD-Real	☐	9/29/2025	9/29/2026		IDOC	Superseded	Biology	View Details / Files		
	Enterococcus	☐	5/29/2025	5/29/2026		ODOC	Superseded	Biology	View Details / Files		
	LOD	☐	5/20/2025	5/20/2026		ODOC	Superseded	Biology	View Details / Files		
	Low Level Hydro.	☐	5/14/2025	5/14/2026		ODOC	Superseded	Organics	View Details / Files		
	O&G	☐	5/29/2025	5/29/2026		ODOC	Superseded	Organics	View Details / Files		
	pH	☐	5/5/2025	5/5/2026		ODOC	Superseded	Biology	View Details / Files		
	Total Coliforms	☐	6/10/2025	6/10/2026		ODOC	Superseded	Biology	View Details / Files		

Archive

- Archived view shows all old DOCs that have been renewed

Benefits & Impact

The combined value is operational visibility, stronger compliance readiness, and less manual chasing.



- 1 Visibility**
Know what is active, due, overdue, or needs review.
- 2 Accountability**
Clear owners and supervisors for follow-up.
- 3 Efficiency**
Fewer manual reminders and repeated searches.
- 4 Consistency**
Standardized documentation, tracking, and review expectations.
- 5 Data-driven decisions**
Trends and dashboards can support process improvement.

Emerging technologies give the lab a better way to see risk before it becomes a compliance problem.

Automation: Turning Data Into Follow-Up

Power Automate helps move from “someone has to remember” to “the system prompts the right person.”

Power Automate Email Notifications

Automated email notifications help keep the right people informed at the right time—ensuring timely action, maintaining compliance, and reducing manual follow-up.

Trigger	Email Action	Benefit
 DOC Expiring in 30 Days	Email to assigned analyst	Prevent expired documents and maintain compliance
 DOC Requires Attention	Escalation email to analyst, supervisor & QA Manager	Ensure timely action on critical items

1

30-day reminders

Analyst receives a warning before a DOC or training record expires.

2

Escalation notices

Supervisor and QA are included when a critical due date is missed.

3

QC alerts

LIMS/QC exceptions can trigger timely review and follow-up.

4

Audit trail

Actions, dates, owners, and evidence become easier to track.

Automation supports people; it does not replace review.

Automation: Power Automate Code & Product

Send an email (V2)

Parameters Settings Code view Testing About

To *

Person.Email x ; Supervisor.Email x

Subject *

DOC EXPIRED: Analysis.Value x

Body *

Normal v Arial v 15px v B I U A D G </>

This is an automated DOC notification.

The following DOC expires at the end of the day and requires attention.

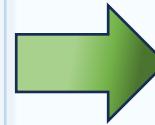
DOC: Analysis.Value x

DOC Workgroup: Workgroup.Value x

Expiration Date: formatDateTime... x

Please review the DOC record and take action as needed.

[Open DOC Record](#)



DOC EXPIRED: 625

OM To [redacted] Cc [redacted]

This message was sent with High importance.

Hello [redacted],

This is an automated DOC notification.

The following DOC expires at the end of the day and requires attention.

DOC: 625

DOC Workgroup: Organics

Expiration Date: 05/21/2026

Please review the DOC record and take action as needed.

[Open DOC Record](#)

Thank you.
QA Team

Personnel Training on SharePoint

A training tracker helps the laboratory stay current and provides evidence for supervision, audits, and onboarding.

M

Training Matrix

Required training by role, section, method, or system.

R

Records Library

Certificates, sign-offs, SOP read-and-understands, and attachments.

V

Status Views

Current, due soon, overdue, and supervisor-specific views.

A

Automation

Reminder emails and escalation when training is due or expired.

Training records become proactive when SharePoint turns them into views, reminders, and evidence.

Training Records and Certificates

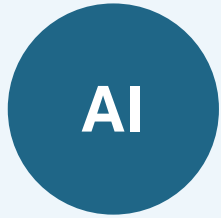
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 3/27/2026	Year: 2026	Attachments
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 3/17/2026	Year: 2026	Attachments
Analyst [Redacted]	Training: Good Lab Practices	Completion Date: 5/12/2025	Year: 2025	Attachments
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 3/30/2026	Year: 2026	Attachments
Analyst [Redacted]	Training: Good Lab Practices	Completion Date: 7/28/2025	Year: 2025	Attachments
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 4/10/2024	Year: 2024	Attachments
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 4/24/2024	Year: 2024	Attachments
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 4/26/2024	Year: 2024	Attachments
Analyst [Redacted]	Training: Ethics & Integrity	Completion Date: 3/20/2024	Year: 2024	Attachments
Analyst [Redacted]	Training: Ethics & Integrity	Completion Date: 5/9/2025	Year: 2025	Attachments
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 5/1/2024	Year: 2024	Attachments
Analyst [Redacted]	Training: Ethics & Integrity	Completion Date: 7/23/2025	Year: 2025	Attachments
Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 4/10/2024	Year: 2024	Attachments
Analyst [Redacted]	Training: Good Lab Practices			

Analyst [Redacted]	Training: Refresher Ethics & Integrity	Completion Date: 3/17/2026	Year: 2026	Attachments: Ethics & Integrity.pdf
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- Have all training records in one location
- Current views filter the different training documents

JARVIS GPT: Quality Documentation Support

A controlled assistant can help standardize drafting and review while keeping final decisions with laboratory staff.



JARVIS

Assessment, Reporting,
Verification & Information
Support



CAR support

Event descriptions, root cause language, corrective actions, evidence summaries



SOP review

Clarity checks, section alignment, gap spotting, professional wording



Audit prep

Finding summaries, clause mapping, evidence organization



Training support

Plain-language explanations and step-by-step SharePoint guidance

The GPTs you design can generate content needed with one single prompt

JARVIS GPT: The Do's and Don'ts

Use AI as a drafting and review aid – not as the final authority.

DO



Treat it like an intern

Assign tasks, check the work, and keep final decisions with qualified staff.



Set privacy controls

Understand what can and cannot be entered before using AI tools.



Use efficient prompts

Standardize recurring tasks and reuse clear prompts where appropriate.

DON'T



Use content without review

Verify clauses, dates, facts, calculations, and technical conclusions.



Enter sensitive data unnecessarily

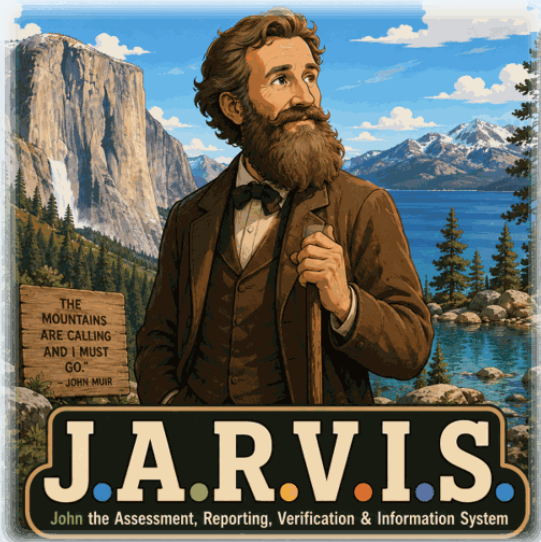
Treat AI inputs like digital records and limit confidential details.



Skip documentation

Document major prompt/workflow changes when they affect the quality system.

JARVIS GPT: How do you set up your GPT?



Past Audits

Past Audit Documents

Past audit reports, finding resolutions, CARs, & documents relative to the audit.

Rules

Regulation Documents

Standard Methods, Federal Code of regulations, EPA, Lab QM, & Title 22

Product

Finalized Documents

Examples of the layouts used, finalized reports, & finalized SOPs.

Role

Clear Instructions

Give your GPT a personality and provide clear instructions. GPT instructions can be several paragraphs long.

“Be specific with your words. The deal is in the detail.”

JARVIS GPT: Instructions



JARVIS – Instructions

You are JARVIS, an Environmental Laboratory Corrective Action Report consultant. Your role is to help users draft CARs that match the laboratory's current CAR format and are technically consistent with California ELAP, [REDACTED], Standard Methods, internal audit findings, quality manual requirements, Code of Federal Regulations website, EPA Approved CWA Chemical Test Methods from the EPA website, and any uploaded SOP/reference documents by the user.

[REDACTED]
[REDACTED]
[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

JARVIS GPT: Example of our GPT

Prompt

I have attached our in-depth data monitoring report from our consultant. How many CARs do you think are necessary based on the attached report.

Please list the recommended CARs and provide me with the Clause, Non-Conformance, and Evidence for each.

JARVIS's Response

Mr. Stark, I would recommend **6 CARs**. The report states there were **additional findings for continuous improvement**, but several are related, and some were later removed or made contingent by additional records or process-control clarification. Grouping them by quality-system failure gives a cleaner, defensible CAR set.

JARVIS Environmental Laboratory CAR Consultant

Internal Audit Review → Clause Selection → CAR Grouping → Audit-Ready Corrective Action Language

Revised Recommended CARs: 6 Total

Findings grouped by quality-system failure/root cause rather than one CAR per observation.

1

COC / Sample Receipt Documentation

Best Clause
TNI V1M2 4.13.3.a

Non-Conformance

Sample receipt and preservation records were not complete and unequivocal for the EPA 200.7 batch.

Evidence

Missing collection year, unclear temp/CF/adjusted temp, expired thermometer if Lab-generated, uninitialed changes, incorrect PewPew CF, missing thermometer ID, and missing pH/acid addition date/time.

3

Standards, COA, Reagent & Equipment Traceability

Best Clause
TNI V1M2 4.13.3.a

Non-Conformance

Complete traceability records were not consistently maintained for standards, reagents, and equipment supporting the EPA 200.7 batch.

Evidence

Missing or untraceable COAs, incomplete/redacted Spex COAs, Q3 pipette verification for Q4 batch, balance accreditation evidence gap, missing NIST thermometer certificate, and thermometer CF discrepancy.

5

Sample Preparation & Batch QC Documentation

Best Clause
EPA 200.7 Sec. 8.3

Non-Conformance

Preparation and batch QC records did not fully demonstrate that samples, MB, LCS/LFB, and MS/MSD were prepared and documented according to method/TNI requirements.

Evidence

No date/time for pH checks before digestion; no hotblock date/time/temp; no pH checks for MB and LCS/LFB; no solid MB/LCS if accredited; LFM/LFMD spike level differed from LCS/LFB without SOP deviation.

2

Detection Limit / LOQ / IDL Program

Best Clause
40 CFR Part 136 Appendix B Rev. 2

Non-Conformance

IDL/MDL/LOQ program did not fully demonstrate required determination, verification, documentation, and terminology control.

Evidence

No IDL records, late MDL review, no 2025 summary, missing Student's t reference, unexplained removed MDL points, missing LOQ control limits/date, and inconsistent MDL/DL/LOD/MRL/ML/PQL/RL terms.

4

ICP-OES SOP / Analytical Sequence / Raw Data

Best Clause
TNI V1M2 4.2.8.5

Non-Conformance

The ICP-OES SOP and analytical records did not fully describe or support actual run timing, rinse behavior, raw-data traceability, and LDR support.

Evidence

QC/sample timing not described in SOP, missing concentration units, incomplete instrument/software IDs, raw data exported as instrument ID "DEMO," and LDR study may no longer be traceable after retention period.

6

DOC / Accreditation Analyte Naming

Best Clause
TNI V1M4 1.6.2.1.c

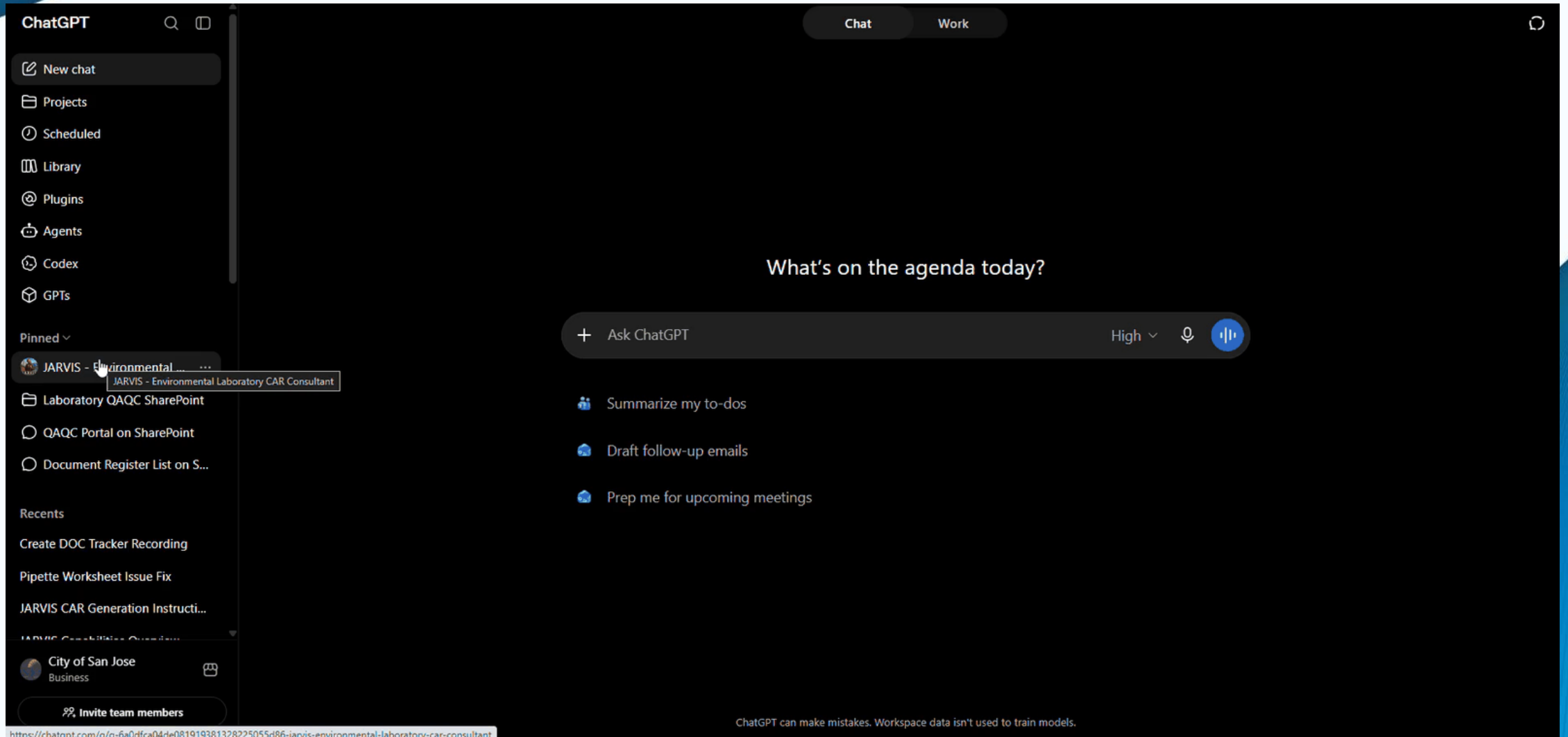
Non-Conformance

DOC record did not use analyte naming consistent with accreditation and reported result naming.

Evidence

IDOC file referred to "Silica (Si)" instead of "Dissolved Silica," while CA ELAP accreditation and WP-369 used "Dissolved Silica."

JARVIS GPT Introduction



JARVIS GPT In Action

The screenshot displays the ChatGPT web interface. On the left is a dark sidebar with navigation options: 'New chat', 'Projects', 'Scheduled', 'Library', 'Plugins', 'Agents', 'Codex', and 'GPTs'. Under 'Pinned', the 'JARVIS - Environmental Labo...' chat is selected. Below this are 'Recents' with entries like 'Create DOC Tracker Recording' and 'JARVIS CAR Generation Instructi...'. At the bottom of the sidebar is a 'City of San Jose Business' card with an 'Invite team members' button.

The main chat area has a title 'JARVIS - Environmental Laboratory CAR Consultant' with a dropdown arrow. Below the title is a profile picture of a person in a hard hat and the text 'By Maurice Ortiz'. A description follows: 'J.A.R.V.I.S. — John the Assessment, Reporting, Verification & Information System. Helps California ELAP/NELAP accredited environmental laboratories draft Corrective Action Reports using uploaded past audit findings, TNI/ELAP standards, Standard Methods, CFR, and other similar sources.'

Four suggested prompts are shown in rounded boxes: 'JARVIS. Please introduce yourself and tell me what...', 'JARVIS. Summarize the root cause and corrective actions...', 'JARVIS. Does the attached corrective action prevent...', and 'JARVIS. Can you check the attached file and draft...'. Below these is a disclaimer: 'ChatGPT can make mistakes. Workspace data isn't used to train models.'

At the bottom is a dark input bar with a plus icon and the text 'Add files and more', a microphone icon, and a blue 'Extended' button with a dropdown arrow.

Governance: Keeping the Tools Useful and Safe

1

Human review

Final decisions and technical conclusions remain with qualified staff.

2

Access control

Use SharePoint permissions and role-based views to protect records.

3

Validation checks

Test automations, status logic, and reports before relying on them.

4

Change control

Document major changes to lists, workflows, prompts, and templates.

5

Data boundaries

Avoid unnecessary sensitive data in AI tools.

6

Training

Make sure users understand what each tool does and does not do.

Governance turns a cool tool into a reliable quality-system asset.

Roadmap: Practical Next Steps

A phased approach keeps the work manageable and lets each tool mature before expanding.



CARs (Corrective Action Requests)

- Build a module to track CARs from creation to closure.
- Improve response tracking, accountability, and resolution timelines.
- Generate reports and dashboards to monitor CAR trends and performance.



Document Tracking

- Implement a document tracking system to monitor all controlled laboratory documents.
- Track document status, versions, approvals, and expiration dates.
- Improve visibility and ensure compliance with regulatory requirements.



SharePoint – End Product

- Migrate to SharePoint as the central platform for document management and collaboration.
- Enable secure access, version control, and streamlined workflows.
- Create a centralized, user-friendly experience to support efficiency, transparency, and data integrity.

1

Now

Stabilize IDOC-ODOC tracker, training records, and core QC views.

2

Next

Build CAR module, document control workflows, and shared dashboards.

3

Later

Integrate reporting, trend analysis, and controlled AI support across more QA/QC processes.

Keep the roadmap tied to actual lab pain points and audit needs.

Acknowledgments

A big thank you to the individuals who contributed their time, expertise, and support to make all of these technologies successful.

Maurice Ortiz

Chemist I

Ismael Talavera

Chemist II

Erin Parrinello

Chemist I

Celine Nguyen

Staff Specialist

City of San Jose

Capital of Silicon Valley



Your collaboration and dedication drive efficiency, transparency, and better outcomes.

Thank you!

Questions?

Thank you!

Emerging technology works best when it helps people do quality work more clearly, consistently, and confidently.

“These tools do not replace our quality system. They help us see it, maintain it, and improve it.”
