Clean Air Status and Trends Network

Second Quarter 2025 Quality Assurance Report

Summary of Quarterly Operations (April through June)

Submitted to U.S. Environmental Protection Agency (EPA)
Clean Air and Power Division

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Introduction

This quarterly report summarizes results from the Clean Air Status and Trends Network (CASTNET) quality assurance/quality control (QA/QC) program for data collected during second quarter 2025. The various QA/QC criteria and policies are documented in the CASTNET Quality Assurance Project Plan [QAPP; WSP USA Environment & Infastructure Inc. (WSP), 2025]. The QAPP is comprehensive and includes standards and policies for all components of project operation from site selection through final data reporting. It is reviewed annually and updated as warranted.

Quarterly Summary

WSP completed preparation and organization of the documentation for the assessor to review for renewal of International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 17025:2017 accreditation by the American Association for Laboratory Accreditation (A2LA). The assessor performed an onsite assessment of the WSP analytical and field laboratories on April 14–16, 2025. WSP provided the assessor with office and meeting space as needed. The CASTNET Project Manager, Laboratory Operations Manager (LOM), QA Manager, and Field Operations Manager (FOM) met with the assessor to answer questions and provide access to the areas to be assessed. Other CASTNET personnel met with the assessor, as requested.

Overall, the A2LA assessment went smoothly. The assessor found 10 minor deficiencies in documentation mainly related to changing and/or updating the wording used. There were no technical performance deficiencies, and the assessor highly praised the technical staff for their competence. The LOM, QA Manager, and FOM began working on developing corrective actions to address the deficiencies and provide plans for resolution. Corrective action plans for all the noted deficiencies were submitted to A2LA on May 15, 2025. Four of the corrective action plans were finalized and closed by that date. The remaining corrective action plans were completed, closed, and submitted to A2LA on June 30, 2025. WSP's current ISO/IEC 17025:2017 accreditation was extended through August 31, 2025, to ensure the accreditation remains active until all corrective action plans are resolved, closed, and reviewed by A2LA.

EPA's Office of Air Quality Planning and Standards (OAQPS) finalized the parameters for submission of CASTNET filter pack data to EPA's Air Quality System (AQS). Data are to be backfilled in AQS for all sites starting with samples from 1990 or the site's inception date if it is after 1990. WSP set up a test format for uploading data and running batches of files using chloride data from the ABT147, CT site, and the data were successfully loaded into AQS. During June, WSP tried loading all parameters for ABT147. The fields for sulfate (SO_4^{2-}) data were not set up correctly in AQS, which prevented the data from being loaded, and there were problems with overlapping date ranges for filter packs that sampled for fewer than seven days. WSP will continue working with EPA to establish a format for submitting filter pack data. Once testing of this format is finalized, it will be shared with Air Resource Specialists, Inc., the contractor for the Bureau of Land Management-Wyoming State Office (BLM) and

the National Park Service (NPS), for submission of filter pack data from BLM-sponsored and NPS-sponsored CASTNET sites.

WSP continued preparations for updating CASTNET ozone (O_3) transfers to the new cross-section. As of the end of second quarter 2025, four CASTNET transfers, which included one Thermo 49i-PS bench standard and three Thermo 49i Level 2 traveling transfers, were updated with the new cross-section and verified following the guidelines in EPA's 2023 Transfer Standards for Calibration of Air Monitoring Analyzers for Ozone Technical Assistance Document (EPA, 2023b).

During second quarter, WSP continued preparations for updating CASTNET onsite, Level 3 O_3 transfer standards to the new O_3 cross-section and implementation of the updated EPA guidance. The new process includes updating the site data logger program and the documentation the calibrator uses for the reverification of the site transfer standard. The new reverification procedure consists of three automated, sequential verification runs. During the process, the WSP field calibrator utilizes a Level 2 transfer standard that has been updated to the new cross-section, thereby updating each site's Level 3 transfer standard.

When the WSP field technician performed the first onsite transfer standard updates and reverification procedures at the ABT147, CT and WST109, NH sites, he evaluated how well the new procedures and documentation addressed the process. On June 30, 2025, WSP's field subcontractors were trained on these procedures and documentation to prepare them for updating and reverifying the onsite, Level 3 O_3 transfers prior to the next calibration cycle, which starts in July 2025.

Beginning January 1, 2025, data from O_3 systems not using the new cross-section are required to be flagged "XS." WSP is appending "XS" qualifier flags to the 2025 O_3 data for EPA-sponsored CASTNET sites to indicate they were obtained from O_3 systems that were not updated to the new cross-section. When a site is updated to the new cross-section, flags are no longer needed for data collected from that site from the date of the update forward. As of the end of second quarter 2025, three EPA-sponsored sites were updated to the new cross-section: ABT147 as of May 9, 2025 at 04:10 EST; WST109 as of May 10, 2025 at 11:16 EST; and LPO010, CA as of June 26, 2025 at 19:10 PST.

EPA's OAQPS is encouraging O_3 monitoring organizations to transition to scrubber-free O_3 transfer standards. WSP believes the best option for transitioning to scrubber-free transfer standards is through equipment changes over time. WSP evaluated potential replacement systems under Task Order 68HERH24F0336, Non-routine Maintenance and Repairs (3006), and recommended replacement of the current Thermo Model 49i O_3 system with the new Teledyne API O_3 system (models N400 and T703U). The Teledyne API system does not use scrubbers. WSP will purchase the Teledyne O_3 models in third quarter 2025 and will begin replacing the Thermo 49i O_3 system in early 2026.

WSP submitted analytical results of samples for proficiency test (PT) 125 for Rain and Soft Waters to the Water Science and Technology Directorate, a branch of Environmental Science and Technology Laboratories with Environment and Climate Change Canada on January 23, 2025. WSP received final results for PT 125 on April 14, 2025. WSP's results had no flags and received a rating of "Good."

During second quarter 2025, National Performance Audit Program (NPAP) and state agency audits were performed at the sites listed in Table 1.

Table 2 lists the quarters of data that were validated to Level 3 during second quarter 2025 by site calibration group. Table 3 lists the sites in each calibration group along with the calibration schedule. Table 4 presents the measurement criteria for laboratory filter pack measurements. These criteria apply to the QC samples listed in the following section of this report. Table 5 presents the critical criteria for O_3 monitoring. Table 6 presents the critical criteria for trace-level gas monitoring.

Quality Control Analysis Count

The QC sample statistics presented in this report are for reference standards (RF) and continuing calibration verification spikes (CCV) used to assess accuracy and for replicate sample analyses (RP) used to assess "in-run" precision. In addition, laboratory method blanks (MB) containing reagents without a filter; laboratory blanks (LB) containing reagents and a new, unexposed filter; and field blanks (FB) containing reagents and an unexposed filter that was loaded into a filter pack assembly and shipped to and from the monitoring site while remaining in sealed packaging are also included.

Previously, in third quarter 2024, the laboratory detected elevated sulfur dioxide (SO_2) concentrations on the cellulose filter LB and FB. The elevated concentrations were all less than two times the reporting limit. No problems were noted during initial acceptance testing of the filters, and MB exhibited no elevations in concentration. Since only a few sites are using filter packs with cellulose filters, analyses are not done as frequently as for other filter media. To better monitor the cellulose LB and FB, the LOM decided to analyze smaller batches of cellulose filters more frequently to track results more closely. During June 2025, LB for the cellulose filters were slightly above the reporting limit, starting with week 21 filters. As previously, the elevated concentrations were less than two times the reporting limit. The LOM evaluated current handling procedures for the cellulose filters. After the cellulose filters have been impregnated and acceptance tested, they are stored in plastic zip top bags. It takes about 10 weeks to use all of the filters in a bag of acceptance-tested filters. The filters start showing problems when the bag is nearly empty, and it is surmised that the filters' repeated exposure to ambient air from the regularly opened bag is causing the elevated SO_2 concentration levels. Future batches of acceptance-tested filters will be sealed in smaller quantities across multiple bags to minimize exposure to ambient air. Newly prepped filters that passed acceptance testing were used for week 26 filter packs. Table 7 presents the number of analyses in each category that were performed during second quarter 2025.

Sample Receipt Statistics

Ninety-five percent of field samples from EPA-sponsored sites must be received by the CASTNET laboratory in Gainesville, FL no later than 14 days after removal from the sampling tower. Table 8 presents the relevant sample receipt statistics for second quarter 2025.

Data Quality Indicator (DQI) Results

Figures 1 through 3 present the results of RF, CCV, and RP QC sample analyses for second quarter 2025. All results were within the criteria listed in Table 4.

Table 9 presents summary statistics of critical criteria measurements at O_3 sites collected during second quarter 2025. The statistics presented contain data validated at Level 2 and Level 3. All data associated with QC checks that fail to meet the criteria listed in Table 5 were or will be invalidated unless the cause of failure has no effect on ambient data collection, and passing results still meet frequency criteria. Results in shaded cells either exceed documented criteria or are otherwise notable. Table 10 presents observations associated with the shaded cell results in Table 9.

Table 11 presents summary statistics of critical criteria measurements at trace-level gas monitoring sites collected during second quarter 2025. The statistics presented contain data validated at Level 2 and Level 3. All data associated with QC checks that fail to meet the criteria listed in Table 6 were or will be invalidated unless the cause of failure has no effect on ambient data collection, and passing results still meet frequency criteria. Results in shaded cells either exceed documented criteria or are otherwise notable. Table 12 presents observations associated with the shaded cell results in Table 11.

Laboratory Control Sample Analysis

The laboratory control sample (LCS) is a reagent blank spiked with the target analytes from the established analytical methods and carried through the same extraction process that field samples must undergo. LCS analyses are performed by the laboratory to monitor for potential sample handling artifacts and provide a means to identify possible analyte loss from the extraction process. The recovery values for SO_2 dropped from 103 percent on February 1, 2025 to 83 percent on March 26, 2025. There was no corresponding drop in values for RF or CCV QC samples. During second quarter 2025, WSP's analytical laboratory continued investigating the cause of the drop in LCS SO_2 results. Four LCS were prepared and analyzed in April with no changes to solutions or procedures and had recovery values ranging from 88 to 92 percent. Troubleshooting included changing the analytical column in the ion chromatograph and running LCS samples on a different instrument for comparison. Four LCS were prepared and analyzed in May and had recovery values ranging from 85 to 94 percent. While these results are not failing, the laboratory continued investigating the cause of the drop in values. A new eluent concentrate was prepared on June 1, 2025. The three LCS that were prepared and analyzed during June used the new eluent and had recovery values ranging from 101 to 102 percent. WSP plans to continue using the new eluent. Figure 4 presents LCS analysis results for second quarter 2025. All second quarter recovery values for SO_2 were between 85 percent and 102 percent.

Blank Results

Figures 5 through 7 present the results of MB, LB, and FB QC sample analyses for second quarter 2025. All second quarter results were within criteria (two times the reporting limit) listed in Table 4 with the exception of one cellulose FB result at four times the reporting limit. The data associated with the cellulose FB (mid-May from HAS012, KS) looked reasonable, and all associated QC data passed. This FB had unusual handling since its return shipment was delayed in the mail and took 4 weeks to arrive back to the laboratory.

Suspect/Invalid Filter Pack Samples

Filter pack samples that were flagged as suspect or invalid during second quarter 2025 are listed in Table 13. This table also includes associated site identification and a brief description explaining the reason a sample was flagged. During second quarter, four filter pack samples were invalidated.

Field Problem Count

Table 14 presents a total count of field problems affecting continuous data collection for more than one day for second quarter of 2025. The problem counts are sorted by a 30-, 60-, or 90-day time period to resolution. A category for unresolved problems is also included.

References

American Society for Testing and Materials (ASTM). 2022. ASTM E29-22, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications. ASTM International, West Conshohocken, PA, DOI:10.1520/E0029-22. www.astm.org.

U.S. Environmental Protection Agency (EPA). 2023a. *Title 40 Code of Federal Regulations Part 58*, Appendix A to Part 58 – Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards. https://www.epa.gov/amtic/ambient-air-monitoring-quality-assurance.

U.S. Environmental Protection Agency (EPA). 2023b. *Transfer Standards for Calibration of Air Monitoring Analyzers for Ozone Technical Assistance Document*. Publication No. EPA-454/B-22-003, January 2023: https://www.epa.gov/system/files/documents/2023-11/o3_tad_508_20230906_final.pdf.

WSP USA Environment & Infrastructure Inc. (WSP). 2025. *Clean Air Status and Trends Network (CASTNET) Quality Assurance Project Plan (QAPP) Revision 10.2*. Prepared for U.S. Environmental Protection Agency (EPA), Office of Air and Radiation, Clean Air and Power Division, Washington, DC. Contract No. 68HERH21D0006. Gainesville, FL. https://www.epa.gov/castnet/documents-reports.

Table 1 NPAP and State Agency Audits of CASTNET O_3 Systems

Site ID	Auditing Agency
NIC001, NY	New York Department of Environmental Conservation
SND152, AL	NPAP (EPA Region 4)
VIN140, IN	NPAP (EPA Region 5)
VPI120, VA	NPAP (EPA Region 3)

Table 2 Data Validated to Level 3 through Second Quarter 2025

Calibration Group*	Months Available	Number of Months	Complete Quarters	Number of Quarters
E-1/SE-5	August 2024–January 2025	6	Quarter 4 2024	1
MW-7/W-9	September 2024–February 2025	6	Quarter 4 2024	1
E-2/MW-8	October 2024–March 2025	6	Quarter 4 2024–Quarter 1 2025	2

Note: * The sites contained in each calibration group are listed in Table 3.

Table 3 Field Calibration Schedule for 2025

Calibration Group	Months Calibrated	Sites Calibrated			
Eastern Sites (17 Total)					
E-1 (7 Sites)	February/August	ARE128, PA PED108, VA	BEL116, MD VPI120, VA	BWR139, MD WSP144, NJ	CTH110, NY
E-2 (6 Sites)	April/October	ABT147, CT WFM105, NY	CAT175, NY WST109, NH	EGB181, ON	NIC001, NY
E-3 (4 Sites)	May/November	KEF112, PA	LRL117, PA	MKG113, PA	PAR107, WV
Southeastern Sites (11 Total)					
SE-4 (7 Sites)	January/July	BFT142, NC GAS153, GA	CND125, NC SND152, AL	COW137, NC SPD111, TN	DUK008, NC[1]
SE-5 (4 Sites)	February/August	CAD150, AR	CVL151, MS	IRL141, FL	SUM156, FL
Midwestern Sites (15 Total)					
MW-6 (4 Sites)	January/July	CKT136, KY	ESP127, TN	MCK131, KY	MCK231, KY
MW-7 (7 Sites)	March/September	BVL130, IL[2] RED004, MN	OXF122, OH STK138, IL[2]	PRK134, WI VIN140, IN	QAK172, OH
MW-8 (4 Sites)	April/October	ANA115, MI	HOX148, MI	SAL133, IN	UVL124, MI
Western Sites (13 Total)					
W-9 (5 Sites)	March/September	ALC188, TX SAN192, NE[2]	CHE185, OK	HAS012, KS	KNZ184, KS
W-10 (8 Sites)	May/November	CNT169, WY PAL190, TX	GTH161, CO PND165, WY	LPO010, CA ROM206, CO	NPT006, ID UMA009, WA

Notes: [1] Trace-level gas calibrations are performed quarterly in January, April, July, and October.
[2] Trace-level gas calibrations are performed quarterly in March, June, September, and December.

Table 4 Data Quality Indicators for CASTNET Laboratory Measurements

Analyte	Method	Precision[1] (MARPD)	Accuracy[2] (%)	Nominal Reporting Limits[3]	
				mg/L	µg/Filter
Ammonium (NH_4^+)	AC	20	90–110	0.020*	0.5
Sodium (Na^+)	ICP-OES	20	95–105	0.005	0.125
Potassium (K^+)	ICP-OES	20	95–105	0.006	0.15
Magnesium (Mg^{2+})	ICP-OES	20	95–105	0.003	0.075
Calcium (Ca^{2+})	ICP-OES	20	95–105	0.006	0.15
Chloride (Cl^-)	IC	20	95–105	0.020	0.5
Nitrate (NO_3^-)	IC	20	95–105	0.008*	0.2
Sulfate (SO_4^{2-})	IC	20	95–105	0.040	1.0

Notes: [1] This column lists precision goals for both network precision calculated from co-located filter samples and laboratory precision based on replicate samples for samples > five times the reporting limit. The criterion is ± the reporting limit if the sample is ≤ five times the reporting limit.

[2] This column lists laboratory accuracy goals based on reference standards and continuing calibration verification spikes. The criterion is 90–110 percent for ICP-OES reference standards.

[3] The reporting limit for SO_4^{2-} on cellulose filters (as reported as SO_2 with correction factor applied) is 0.080 mg/L (2.0 µg/filter).

AC = automated colorimetry
IC = ion chromatography
ICP-OES = inductively coupled plasma-optical emission spectrometry
MARPD = mean absolute relative percent difference
mg/L = milligrams per liter
µg/Filter = micrograms per filter
* = as nitrogen
** = as SO_4^{2-}

Values are rounded according to American Society for Testing and Materials (ASTM) E29-22, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (ASTM, 2022).

For more information on analytical methods and associated precision and accuracy criteria, see the CASTNET QAPP, (WSP, 2025).

Table 5 Ozone Critical Criteria*

Type Check	Analyzer Response
Zero	Less than ± 3.1 parts per billion (ppb)
Span	Less than ± 7.1 percent between supplied and observed concentrations
Single Point QC	Less than ± 7.1 percent between supplied and observed concentrations

Notes: * Applies to CASTNET sites that are configured and operated in accordance with Part 58 of Title 40 of the Code of Federal Regulations (EPA, 2023a). The minimum frequency for these checks is once every two weeks.

Values are rounded according to ASTM E29-22, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (ASTM, 2022).

Table 6 Trace-level Gas Monitoring Critical Criteria*

Parameter	Analyzer Response	
	Zero Check	Span Check / Single Point QC Check
SO_2	Less than ± 1.51 ppb	Less than ± 10.1 percent between supplied and observed concentrations
NO_y	Less than ± 1.51 ppb	
CO	Less than ± 50 ppb	

Notes: *Applies to CASTNET sites that are configured and operated in accordance with Part 58 of Title 40 of the Code of Federal Regulations (EPA, 2023a). The minimum frequency for these checks is once every two weeks.

Values are rounded according to ASTM E29-22, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (ASTM, 2022).

SO_2 = sulfur dioxide
NO_y = total reactive oxides of nitrogen
CO = carbon monoxide
ppb = parts per billion

Table 7 QC Analysis Count for Second Quarter 2025

Filter Type	Parameter	RF Sample Count	CCV Sample Count	RP Sample Count	MB Sample Count	LB Sample Count	FB Sample Count
Teflon	SO_4^{2-}	63	186	76	15	22	41
	NO_3^-	63	186	76	15	22	41
	NH_4^+	31	158	72	15	20	41
	Cl^-	63	186	76	15	22	41
	Ca^{2+}	30	160	72	15	20	41
	Mg^{2+}	30	160	72	15	20	41
	Na^+	30	160	72	15	20	41
	K^+	30	160	72	15	20	41
Nylon	SO_4^{2-}	41	159	69	13	22	41
	HNO_3	41	159	69	13	22	41
Cellulose	SO_2	24	50	16	9	20	8

Table 8 Filter Pack Receipt Summary for Second Quarter 2025

Count of samples received more than 14 days after removal from tower:	25
Count of all samples received:	727
Fraction of samples received within 14 days:	0.966
Average interval in days:	4.933
First receipt date:	04/01/2025
Last receipt date:	06/30/2025

Note: Sample shipments for the Egbert, Ontario site (EGB181) are sent in groups of four. Samples associated with EGB181 are excluded from this statistic.

Table 9 Ozone QC Summary for Second Quarter 2025 (1 of 2)

Site ID	% Span Pass[1]	Span [%D][2]	% Single Point QC Pass[1]	Single Point QC [%D][2]	Single Point QC CL	%Zero Pass	Zero Average (ppb)[2]
ABT147, CT	100.00	1.03	100.00	1.21	0.13	100.00	0.17
ALC188, TX	88.24	3.49	88.24	3.43	0.38	100.00	0.41
ANA115, MI	98.92	2.34	98.92	1.57	0.27	100.00	0.21
ARE128, PA	95.29	5.36	95.24	2.81	1.13	95.24	2.31
BEL116, MD	97.67	2.76	100.00	2.78	0.15	100.00	0.36
BFT142, NC	100.00	3.45	100.00	3.69	0.17	100.00	0.14
BVL130, IL	100.00	1.19	100.00	1.04	0.11	100.00	0.18
BWR139, MD	87.23	17.36	87.23	17.93	6.81	98.94	0.49
CAD150, AR	100.00	1.12	100.00	1.21	0.17	100.00	0.41
CKT136, KY	100.00	1.28	100.00	1.21	0.14	100.00	0.16
CND125, NC	97.83	3.15	97.87	2.27	0.69	97.85	1.16
CNT169, WY	100.00	0.46	100.00	0.85	0.12	100.00	0.28
COW137, NC	100.00	0.61	100.00	1.00	0.13	100.00	0.31
CTH110, NY	100.00	0.57	100.00	1.01	0.18	100.00	0.32
CVL151, MS	100.00	1.28	100.00	1.70	0.15	100.00	0.18
DUK008, NC	100.00	0.83	100.00	1.95	0.23	99.05	1.32
ESP127, TN	98.92	1.95	100.00	0.73	0.09	100.00	0.21
GAS153, GA	100.00	1.17	100.00	1.79	0.30	100.00	0.76
GTH161, CO	97.50	4.41	97.50	4.33	1.90	97.53	0.85
HAS012, KS	97.87	0.79	100.00	0.60	0.11	100.00	0.24
HOX148, MI	100.00	0.61	100.00	0.77	0.09	100.00	0.17
IRL141, FL	88.35	3.94	90.10	3.72	0.37	100.00	0.23
KEF112, PA	98.92	0.74	98.92	0.90	0.18	100.00	0.28
LPO010, CA	95.79	4.35	97.73	1.55	0.29	97.73	1.68
LRL117, PA	97.00	3.37	100.00	2.64	0.29	100.00	0.19
MCK131, KY	100.00	1.78	100.00	2.42	0.14	100.00	0.45
MCK231, KY	98.82	1.31	100.00	1.38	0.23	100.00	0.37
MKG113, PA	100.00	1.26	100.00	1.64	0.15	100.00	0.24
NPT006, ID	94.94	2.19	93.51	4.00	1.86	94.81	2.40
OXF122, OH	92.00	3.48	94.67	3.56	2.65	94.67	0.84
PAL190, TX	100.00	1.54	100.00	1.09	0.12	100.00	0.23
PAR107, WV	100.00	1.43	100.00	1.36	0.17	100.00	0.21
PED108, VA	96.74	2.46	97.83	2.53	0.32	100.00	0.26
PND165, WY	100.00	2.03	100.00	1.59	0.15	100.00	0.45
PRK134, WI	100.00	2.20	100.00	2.17	0.10	100.00	0.12
PSU106, PA	98.91	1.11	100.00	0.98	0.13	100.00	0.25
QAK172, OH	100.00	0.99	100.00	1.07	0.17	100.00	0.27
ROM206, CO	100.00	0.74	100.00	0.87	0.13	100.00	0.32
SAL133, IN	93.33	3.01	83.65	3.07	0.47	100.00	0.28
SAN192, NE	100.00	1.44	96.59	3.93	2.38	94.32	1.32
SND152, AL	100.00	2.37	96.08	2.33	0.27	99.02	1.02

Table 9 Ozone QC Summary for Second Quarter 2025 (2 of 2)

Site ID	% Span Pass[1]	Span [%D][2]	% Single Point QC Pass[1]	Single Point QC [%D][2]	Single Point QC CL	%Zero Pass	Zero Average (ppb)[2]
SPD111, TN	100.00	1.35	100.00	1.05	0.11	100.00	0.20
STK138, IL	95.88	6.84	96.74	4.51	2.81	100.00	0.27
SUM156, FL	100.00	3.06	100.00	2.92	0.18	100.00	0.25
UMA009, WA	100.00	1.53	100.00	1.73	0.25	100.00	0.44
UVL124, MI	100.00	0.75	100.00	0.61	0.06	100.00	0.21
VIN140, IN	100.00	0.65	100.00	1.40	0.11	100.00	0.19
VPI120, VA	100.00	2.20	98.91	2.66	0.69	98.91	0.31
WSP144, NJ	98.94	4.21	95.74	3.08	0.71	100.00	0.43
WST109, NH	98.90	1.19	100.00	1.07	0.16	98.91	0.63

Notes: [1]Percentage of comparisons that pass the criteria listed in Table 5. Values falling below 90 percent are addressed in Table 10.
[2]Absolute value of the average percent differences between the on-site transfer standard and the site monitor. Values exceeding the criteria listed in Table 5 are addressed in Table 10.
%D = percent difference
ppb = parts per billion

Table 10 Ozone QC Observations for Second Quarter 2025

Site ID	QC Criterion	Comments
ALC188, TX	% Span Pass % Single Point QC Pass	Operation was affected by issues with a solenoid.
BWR139, MD	% Span Pass Span |%D| % Single Point QC Pass Single Point QC |%D|	The analyzer pump malfunction affected data collected 04/11/2025 to 04/17/2025.
IRL141, FL	% Span Pass	The cause for the QC failures from 06/08/25 to 06/14/25 was not identified.
SAL133, IN	% Single Point QC Pass	An analyzer pressure transducer malfunction affected data collected 06/20/2025 to 07/01/2025.

Note: %D = percent difference

Table 11 Trace-level Gas QC Summary for Second Quarter 2025

Parameter	% Span Pass[1]	Span [%D][2]	% Single Point QC Pass[1]	Single Point QC [%D][2]	% Zero Pass[1]	Zero Average (ppb)[2]
BVL130, IL						
SO_2	100.00	3.47	100.00	0.99	100.00	0.86
NO_y	100.00	2.40	93.18	6.71	93.02	1.21
CO	100.00	1.82	97.73	3.48	100.00	19.50
DUK008, NC						
NO_y	100.00	3.42	100.00	2.32	100.00	0.55
SAN192, NE						
NO_y	87.50	12.40	83.93	14.34	80.36	0.87
STK138, IL						
NO_y	100.00	2.64	100.00	3.65	100.00	0.59

Notes: [1]Percentage of comparisons that pass the criteria listed in Table 6. Values falling below 90 percent are addressed in Table 12 .
[2]Absolute value of the average percent differences between the supplied and observed concentrations. Values exceeding the criteria listed in Table 6 are addressed in Table 12.

%D = percent difference
ppb = parts per billion

Table 12 Trace-level Gas QC Observations for Second Quarter 2025

Site ID	Parameter	QC Criterion	Comments
SAN192, NE	NO_y	% Span Pass Span |%D| % Single Point QC Pass Single Point QC |%D| % Zero Pass	A solenoid malfunctioned starting 05/09/2025. The solenoid was replaced 05/29/2025.

Note: %D = percent difference

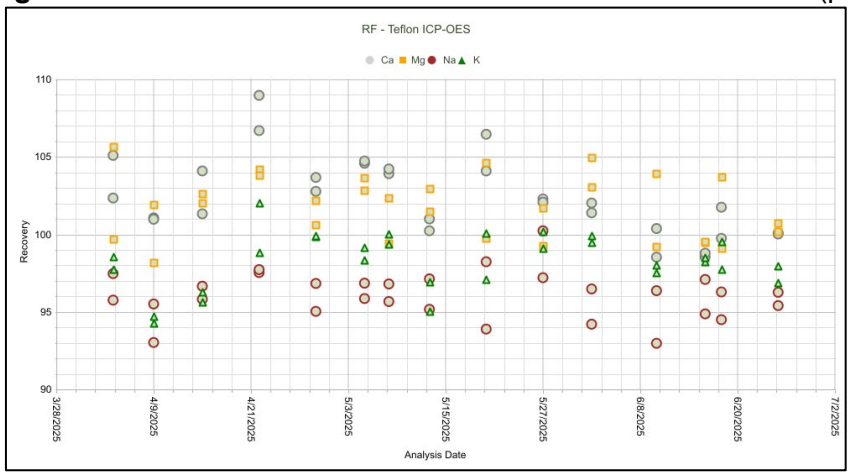
Table 13 Filter Packs Flagged as Suspect or Invalid During Second Quarter 2025

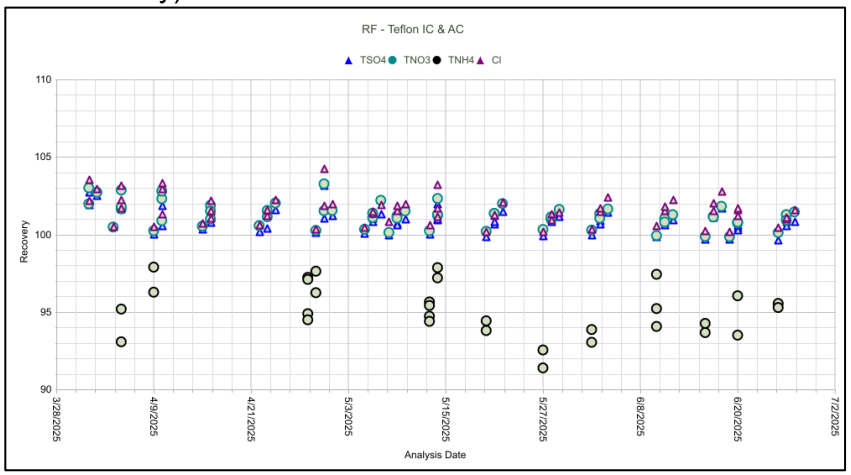
Site ID	Sample No.	Reason
ALB801, AB	2518007-01	Flow volume was insufficient. Data may be recovered with next flow data upload.
CHE185, OK	2520004-02	Site was affected by a power failure.
MCK231, KY	2522001-28	The data logger malfunctioned 05/30/2025 and was replaced 06/07/2025.
VOY413, CA	2520003-21	Site was affected by a power failure.

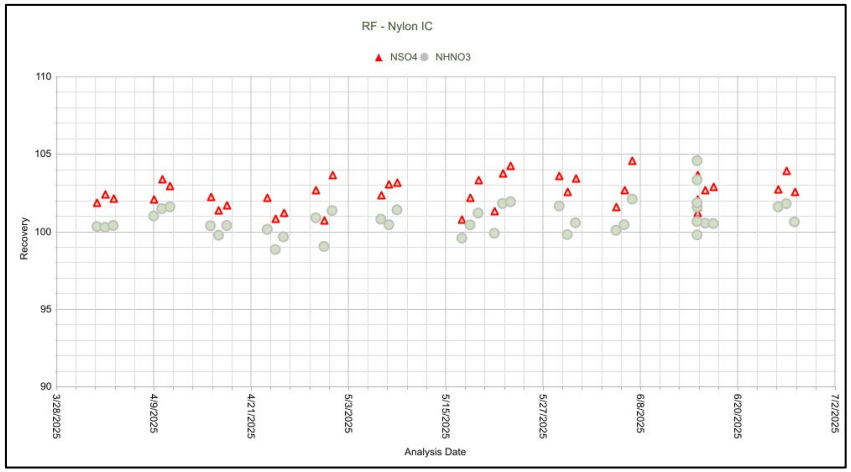
Table 14 Field Problems Affecting Data Collection

Days to Resolution	Problem Count
30	217
60	6
90	0
Unresolved by end of quarter	3

Figure 1 Reference Standard Results for Second Quarter 2025 (percent recovery)







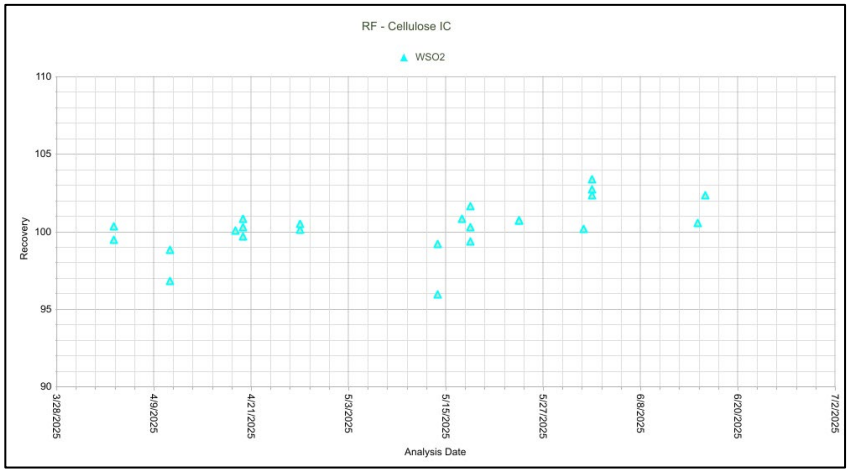
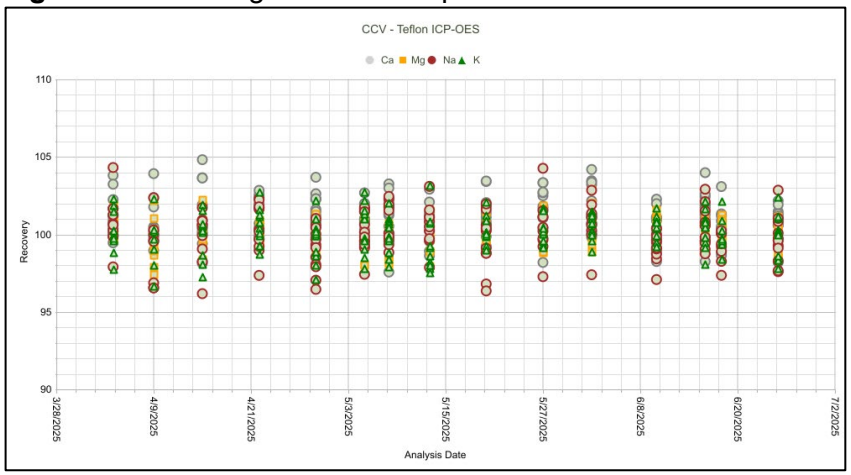
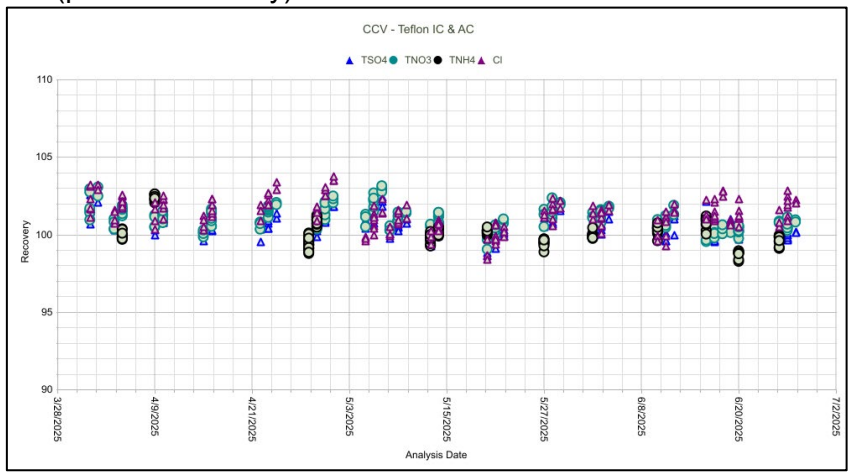
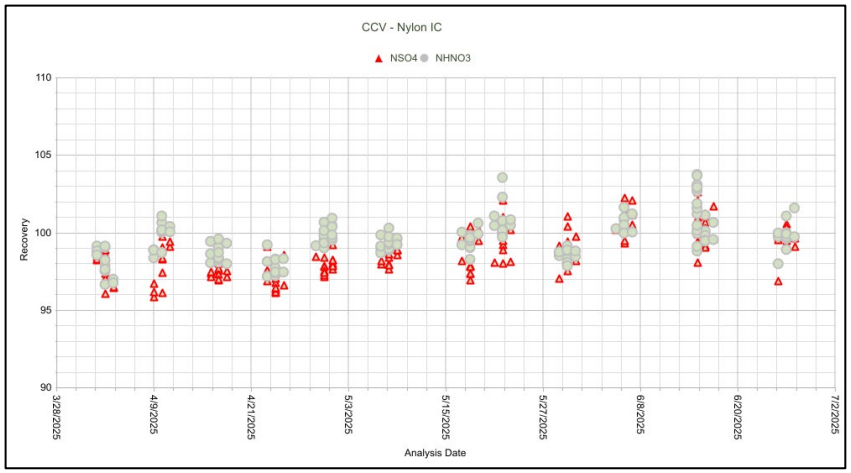


Figure 2 Continuing Calibration Spike Results for Second Quarter 2025 (percent recovery)







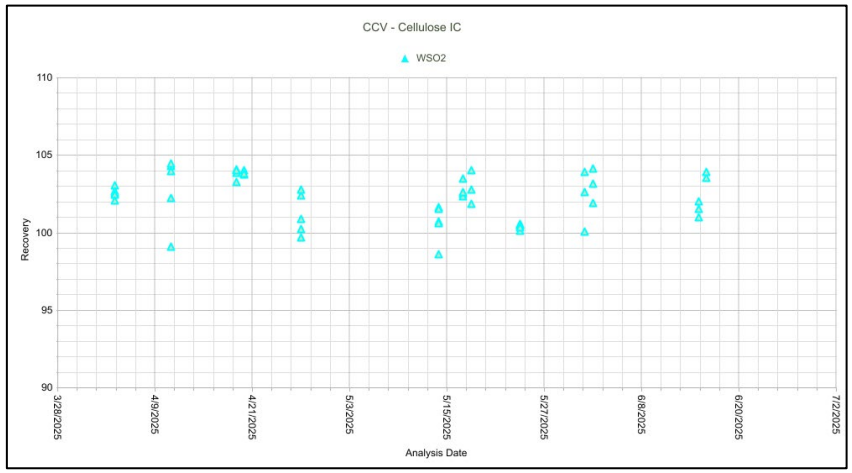
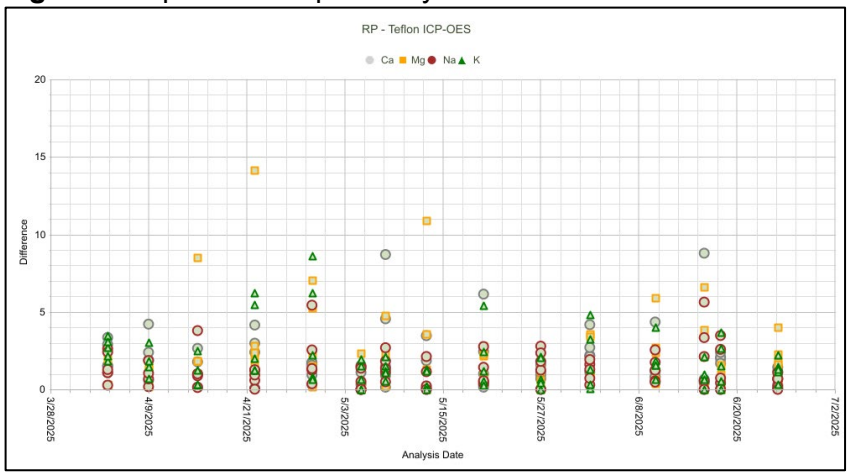
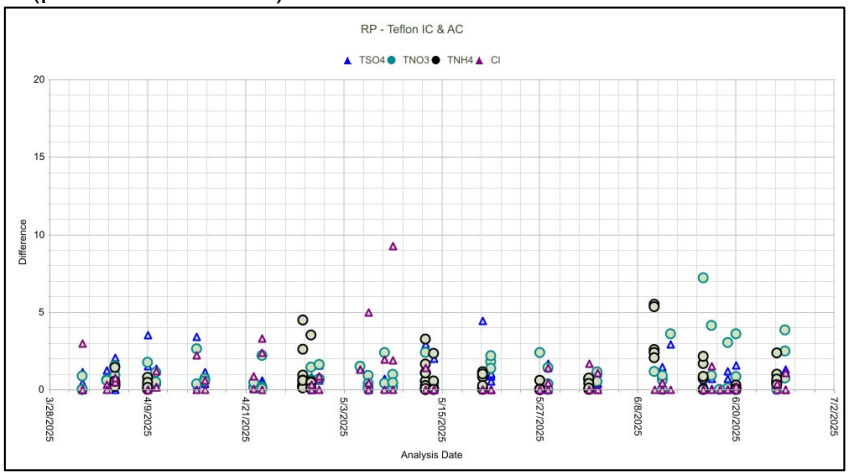
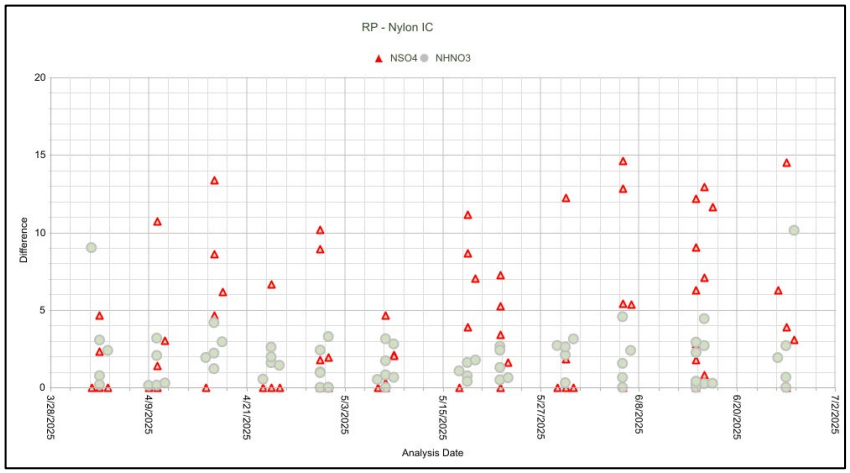


Figure 3 Replicate Sample Analysis Results for Second Quarter 2025 (percent difference)







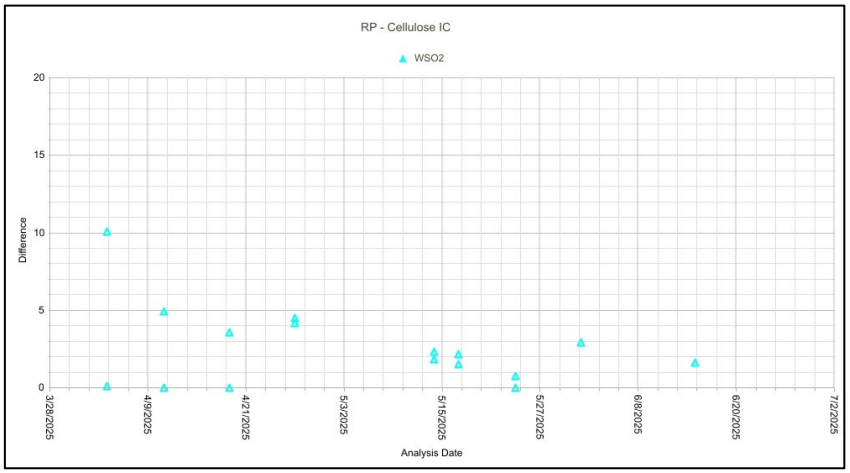
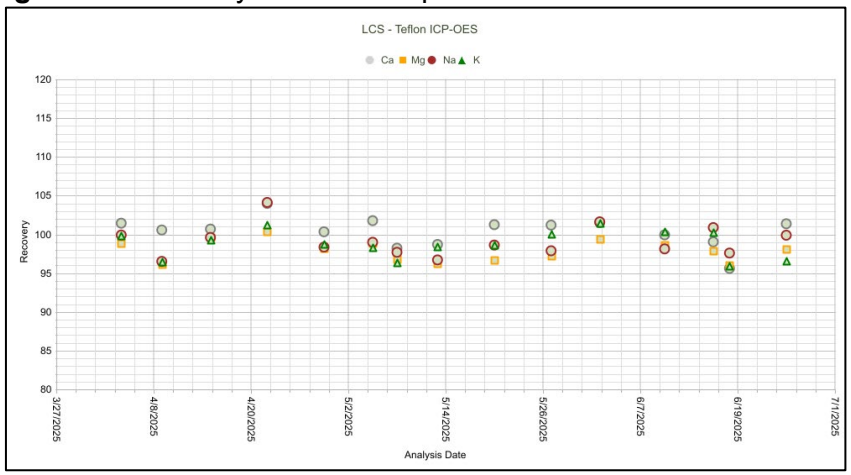
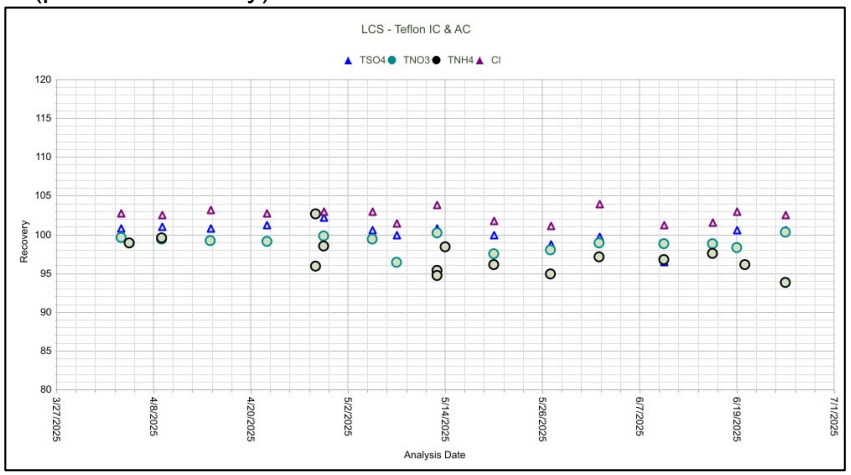
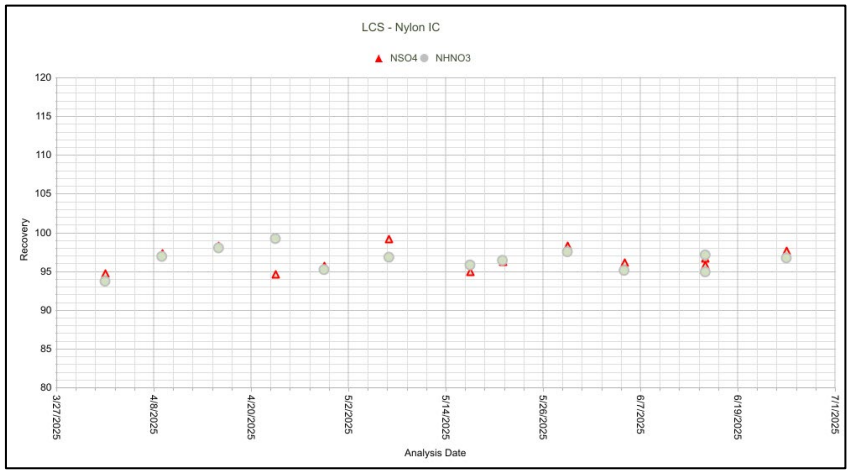


Figure 4 Laboratory Control Sample Results for Second Quarter 2025 (percent recovery)







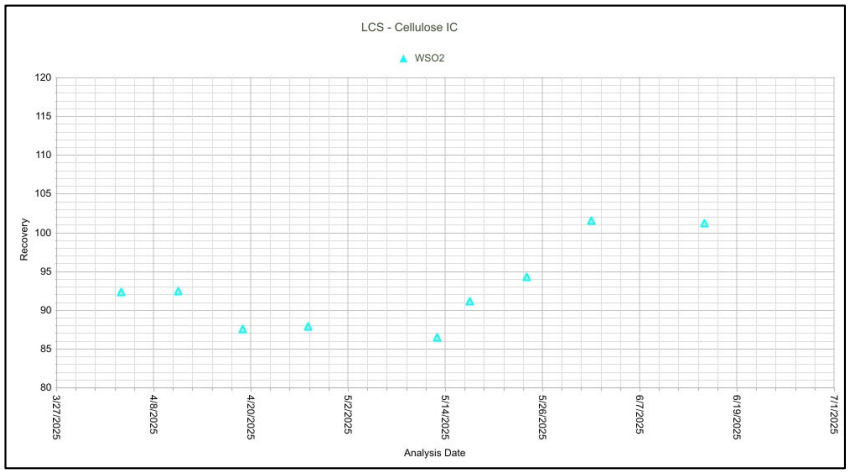
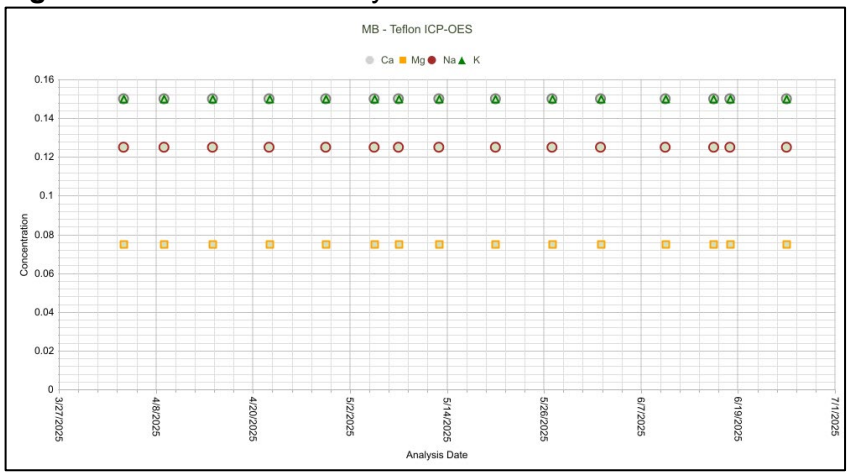
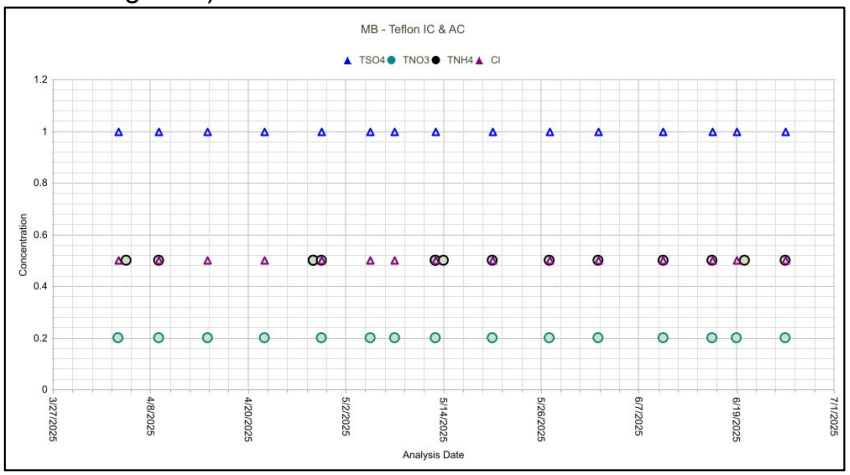
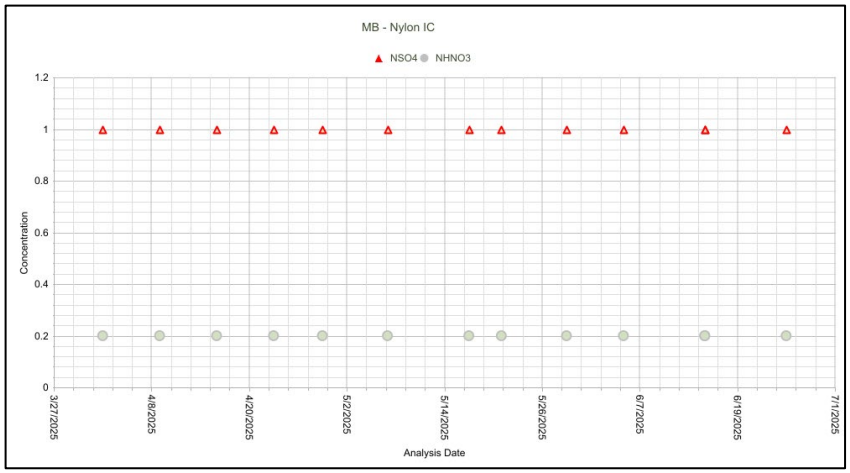


Figure 5 Method Blank Analysis Results for Second Quarter 2025 (total micrograms)







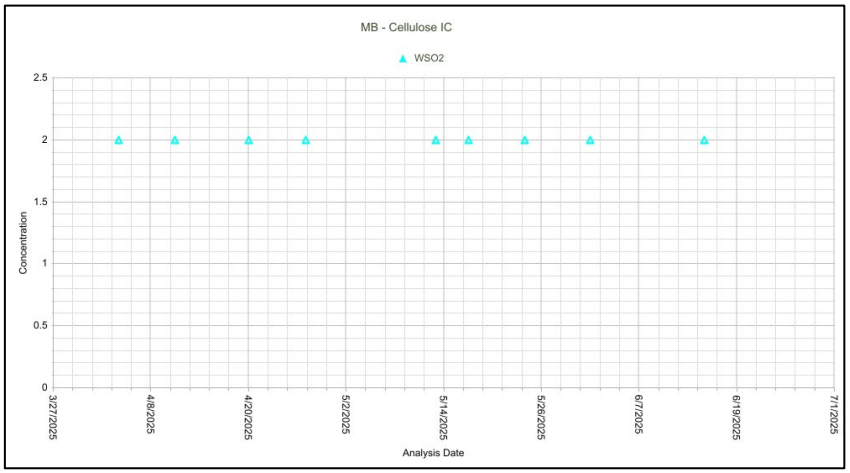
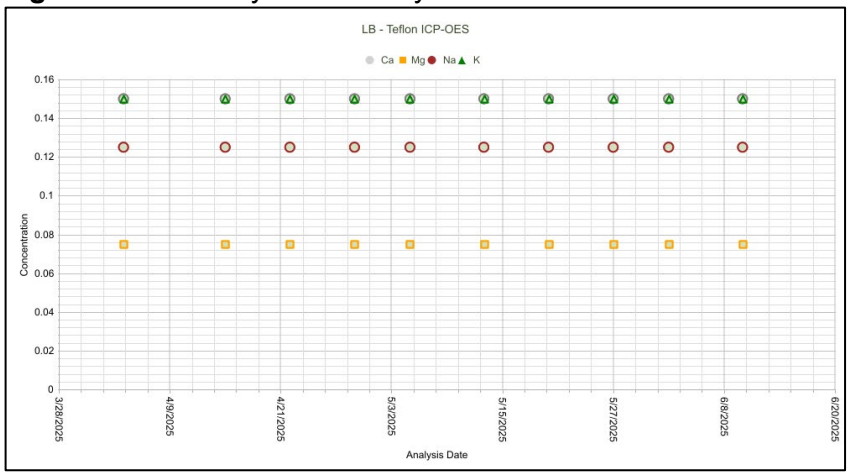
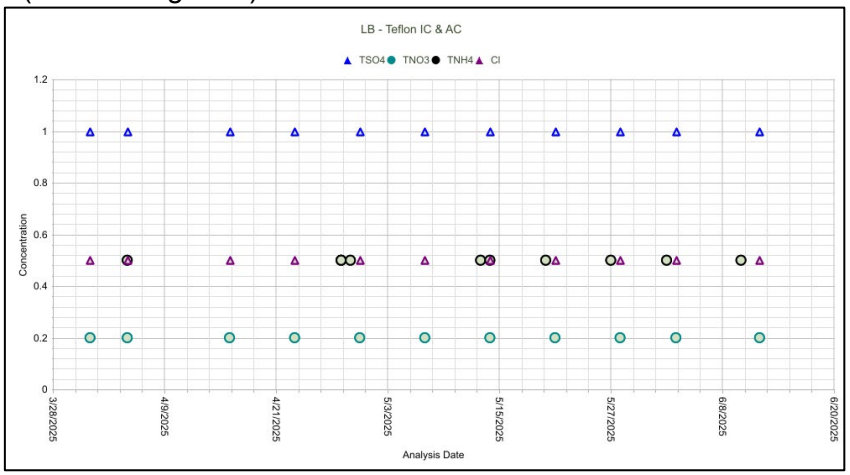
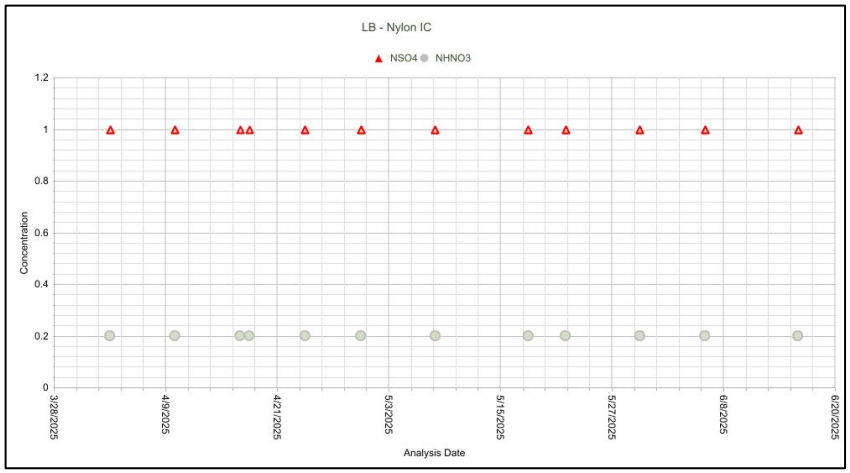


Figure 6 Laboratory Blank Analysis Results for Second Quarter 2025 (total micrograms)







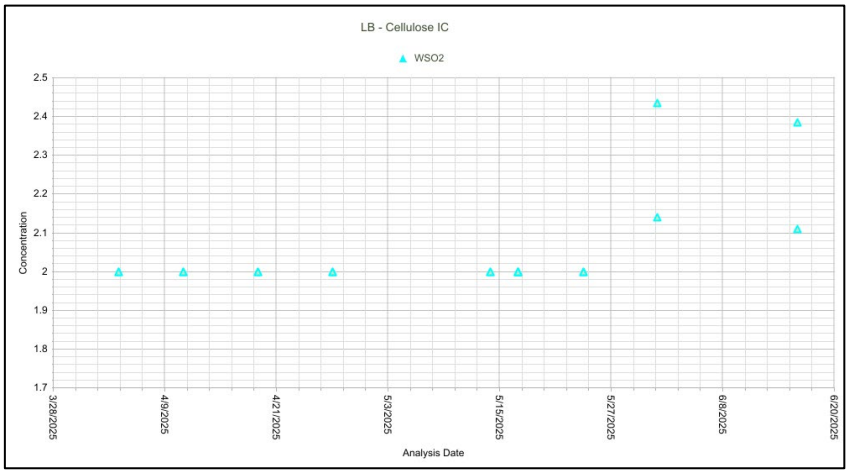


Figure 7 Field Blank Analysis Results for Second Quarter 2025 (total micrograms)