
County Contract Number *(Insert Number)*
County of San Diego, Air Pollution Control District, California Assembly Bill 617 Program
Agreement With *[Contractor's Name]* For
Airborne Metals Laboratory Analyses
Exhibit A – Statement of Work

1. Scope of Work/Purpose

The Contractor shall perform all work necessary to complete the analytical testing of samples collected within the County of San Diego. The instruments used to collect these samples will be operated and maintained by staff at the San Diego County Air Pollution Control District (District). Unless otherwise stated, the Contractor shall furnish all personnel, materials, equipment, tools, software, and incidentals necessary to complete the analysis work.

2. Background Information

The District was selected by the state of California to conduct community monitoring under Assembly Bill 617 (AB617). One of the chosen monitoring objectives is to analyze concentrations of airborne metals. The District's laboratory is at maximum throughput capacity, so an external laboratory is necessary for analysis of the collected metal samples. A monitoring plan has been submitted to the California Air Resources Board (CARB), specifying the techniques to be used. Basic QA/QC parameters are discussed in the monitoring document. This Statement of Work provides the detail-level requirements for the contract laboratory.

3. Goals and Objectives

3.1. Goals: The Contractor shall provide the services described herein to accomplish the following goals:

- Analytical testing of field and QA/QC samples provided by the District and Proficiency Testing (PT) laboratories *via* Inductively Coupled Plasma Mass Spectrometry (ICP-MS), X-Ray Fluorescence (XRF), Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES), or a combination thereof to meet QA/QC requirements.
- Reporting of data to District staff.
- Teleconferences with District staff.
- Method improvements/refinements as the need arises.

3.2. Objectives: The Contractor shall achieve the following outcome objectives:

- Successful analytical testing of the aforementioned field samples with eighty-five percent or greater samples marked as "valid" according to the criteria set forth (Note: field issues, e.g. invalid sample time, invalid sample flow, etc., will not count towards laboratory data completeness).
- Passing all other QA/QC criteria with exceptions/failures reported to District staff as part of the reports.
- Delivery of reports within the specified turnaround time.
- Teleconferences with District staff at a negotiated frequency that is subject to change with notice.

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4. Acronyms

AB617:	State of California Assembly Bill 617
BPA:	Blanket Purchase Agreement
CARB:	California Air Resources Board
CoC:	Chain of Custody
District:	San Diego County Air Pollution Control District
EPA:	United States Environmental Protection Agency
FDS:	Field Data Sheet
ICP-MS:	Inductively Coupled Plasma Mass Spectrometry
ICP-OES:	Inductively Coupled Plasma Optical Emission Spectroscopy
IDL:	Instrument Detection Limit
IO-3.5:	Inorganic Compendium 3.5
MDL:	Method Detection Limit
MQO:	Measurement Quality Objective
NATTS:	National Ambient Air Toxics Trends Sites
PT:	Proficiency Testing
QA/QC:	Quality Assurance/Quality Control
TAD:	Technical Assistance Document
XRF:	X-Ray Fluorescence

5. General Requirements for Service Delivery

The analytical testing shall consist of nitric acid and hydrochloric acid digestion using hot block acid digestion, acid sonication, or microwave acid digestion of airborne metals samples collected on 47 mm Teflon filters followed by analysis for elements listed in Tables 1-3 via ICP-MS. The method used must be documented and approved by the District.

The Contractor must follow United States Environmental Protection Agency (EPA) analytical methods of testing and additional methods, as directed by the District. The National Ambient Air Toxics Trends Sites (NATTS) Technical Assistance Document (TAD)¹ will be the guiding document for QA/QC criteria, with Inorganic Compendium 3.5 (IO-3.5)² being the methodology for analytical testing at a minimum for Tier I compounds (described in the specific requirements section). Sections 4.4.11 and 4.4.12 of the TAD contain most of the information for QA/QC validation. Unless prior approval is granted by the District, the Contractor is to use a collision reaction cell to avoid interferences (especially for Arsenic). Method Detection Limits (MDLs) will be determined by the method update rules referenced in the NATTS TAD. Tiers II and III constituent analyses are to follow the same methodology, unless otherwise requested by the District. The contractor may be requested by the District to analyze Tier II & Tier III compounds by XRF or ICP-OES on the same filter (advance notice will be given to the Contractor).

¹https://www3.epa.gov/ttnamti1/files/ambient/airtox/NATTS%20TAD%20Revision%203_FINAL%20October%202016.pdf (Accessed April 18, 2019).

²<https://www.epa.gov/sites/production/files/2015-07/documents/epa-io-3.5.pdf> (Accessed April 18, 2019).

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6. Specific Requirements for Service Delivery

Tables 1-3 list the various constituents that will be analyzed and the MDLs that must be met. The MDLs will be determined in collaboration with the District. The Contractor must specify previously-obtained MDLs (from a different project) and/or Instrument Detection Limits (IDLs) to ensure that the MDLs for this contract will be met before the contract begins. The District will send blank filters to the Contractor for spiking and blank analysis to perform the MDL studies. Yearly updates to the MDL must be performed (The filter information is discussed elsewhere in this document). Non-compliance may be used as a mechanism to cancel the contract.

Lot analyses on the background levels of metals for new filters will be conducted by the Contractor when a new shipment/different lot of filters are received by the District. Non-compliance may be used as a mechanism to cancel the contract.

In an effort to use the filters with the lowest metals background, at a minimum, the District will request that analyses be conducted on filters from different manufacturers (the District will supply the filters). Non-compliance may be used as a mechanism to cancel the contract.

- Tier I (Table 1) constituents are the core NATTS metals that must meet NATTS QA/QC criteria and MDLs. Failure of QA/QC criteria will trigger corrective action by the Contractor. Tier II (Table 1) and III (Table 3) targets should meet all QA/QC criteria and MDLs. Variations from passing criteria for these target constituents will need to be documented and approved by the District. As method refinement occurs with this contract, some QA/QC criteria may be updated (through teleconferences with the District). After agreed upon QA/QC criteria are set, continuation of failures over multiple runs for Tiers II and III may be used as a mechanism to cancel the contract.
- Tier I and Tier II constituents will be analyzed at all field locations.
- Tier III constituents will be analyzed at one location, initially.
- Tier III constituents may be requested to be analyzed at other locations.

TABLE 1 – Tier I Constituents

No.	Constituent	Unit	MDL
1	Arsenic	µg filter ⁻¹	0.00552
2	Beryllium	µg filter ⁻¹	0.01008
3	Cadmium	µg filter ⁻¹	0.01344
4	Lead*	µg filter ⁻¹	0.36007
5	Manganese	µg filter ⁻¹	0.12002
6	Nickel	µg filter ⁻¹	0.05041

*Note that the lead analysis is of non-regulatory methodology

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TABLE 2 – Tier II Constituents

No.	Constituent	Unit	MDL
1	Antimony	µg filter ⁻¹	0.48010
2	Barium	µg filter ⁻¹	0.00160
3	Chromium	µg filter ⁻¹	0.00192
4	Cobalt	µg filter ⁻¹	0.24005
5	Molybdenum	µg filter ⁻¹	0.96019
6	Selenium	µg filter ⁻¹	48.00960
7	Tin	µg filter ⁻¹	0.00100
8	Vanadium	µg filter ⁻¹	0.24005

TABLE 3 – Tier III Constituents

No.	Constituent	Unit	MDL
1	Aluminum	µg filter ⁻¹	0.24850
2	Calcium	µg filter ⁻¹	0.68500
3	Copper	µg filter ⁻¹	0.00250
4	Iron	µg filter ⁻¹	0.13600
5	Magnesium	µg filter ⁻¹	0.19300
6	Potassium	µg filter ⁻¹	1.28500
7	Sodium	µg filter ⁻¹	0.34450
8	Strontium	µg filter ⁻¹	0.00100
9	Titanium	µg filter ⁻¹	0.01100
11	Zinc	µg filter ⁻¹	0.04900

The MDLs specified are from:

- For Tier I constituents: the NATTS TAD for MDL Measurement Quality Objectives (MQOs).
- For Tier II constituents: a combination of the 0.1 hazard quotient result from the NATTS TAD, 0.1 hazard quotient result from the Minimal Risk Levels (MRLs) from the Agency for Toxic Substances and Disease Registry (ATSDR),³ and the CARB SOP MVA Aerosol #152 (v 2.1; effective date July 1, 2018).⁴
- For Tier III constituents: the previously-referenced CARB #152 SOP and from current ICP-MS method development literature.⁵

³ <https://www.atsdr.cdc.gov/mrls/index.asp> (Accessed April 30, 2019).

⁴ https://www.arb.ca.gov/testmeth/slb/sop152v2_0.pdf (Accessed May 8, 2019).

⁵ <https://doi.org/10.5740/jaoacint.18-0198> (Accessed May 8, 2019).

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All analysis shall be in accordance with all Local, State, Federal laws, as required. All analyses and work are to follow the aforementioned procedures, TAD, and additional analyses procedures as defined by the District. This work includes following quality assurance requirements, meeting required minimum detection limits, running blank (trip, lot, and field) analyses, method troubleshooting/refinement with the District, regular teleconferences with the District (timeframe to be determined in negotiation with the District and the Contractor), and other practices, as dictated by the district. Failure to follow these specifications may be used as a mechanism to cancel the contract.

Currently, filter assembly, decontamination, and loading of filters is performed by the District. The District may require (especially as the number of sampling locations increase) the Contractor to perform the decontamination and filter loading at a future date (with notice). The contractor will provide pricing to the District for this service. The Contractor's procedure for decontamination and filter loading must be approved by the District.

The District requires the use of filters with the lowest contamination levels of metals and will furnish the filters for this project, including the QA/QC filters and the MDL filters. Currently, the District uses 47 mm Teflon PALL brand filters. The filter manufacturer may change, depending on District tests for metals levels. The Contractor may be requested to furnish 47 mm Teflon filters on an "as needed basis." These filters and filter assemblies must meet the District's cleanliness requirements to maintain minimum acceptable blank levels and all other QA/QC requirements.

The District has an existing shipping contract, and the Contractor will use this service (shipping costs to be borne by the District).

The Contractor will supply a digital and printable Chain of Custody (CoC) for use in this project. The District will supply a Field Data Sheet (FDS) accompanying the filters. Initially, the District will utilize its own CoC until the project is established.

The contract laboratory must participate in EPA NATTS laboratory PTs, any such PTs by CARB (if offered), or by the District; not to exceed one PT per quarter. The contract laboratory should maintain a "Green-Acceptable" (current EPA terminology) rating for the EPA NATTS PTs. Deviations from this rating will be discussed with the District and continued failure to achieve this rating may be used as a mechanism to cancel the contract.

Other QA/QC and sampling criteria for this project involve:

- The maximum number of sampling locations will be 15, with a ramping of the number of sites from one to 15 with an estimated timeline of five years. The district currently has one operational sampling site, and it is expected that the number of sampling sites will increase to 10 by summer 2020.
- The sampling frequency will be every six (6) days.

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- There will be one (1) Trip blank per site per month.
- There will be one (1) Field blank per site per month.
- There will be one (1) lab blank per batch analysis
- There will be five lot blanks on each new lot of filters. Lot blank corrections to the data will not be allowed.

7. Data Collection and Reporting Requirements

- The District will store and then ship the samples to the contract lab on a monthly basis.
- The District does not know the ambient concentrations in the sampling locations for the constituents listed in tables. In an effort to be able to adjust field collection flow rates and/or times, the Contractor will supply data monthly (no later than 30 calendar days after the conclusion of the month) for the first 6 (minimum)-9 months (maximum) of the project.
 - These data can be preliminary, and once the project methods are fully-vetted and District approved (after the aforementioned number of months) data must be reported to the District no later than 45 calendar days after the conclusion of each quarter. Deviations from this schedule must be discussed with the District and may be used as a mechanism to cancel the contract.
- The electronic copies must also include the data in a District-approved digital format (i.e., .csv, .xls, etc.) for use in data analysis programs and the District's LIMS. The QA/QC data must be in a District-approved unalterable format (i.e., .pdf). Deviations from this format will be discussed with the District and may be used as a mechanism to cancel the contract.

All data is to be sent electronically to specified District personnel with “Send” and “Read Receipts” tracking for the Senior Chemist.

Senior Chemist: David Shina: david.shina@sdcounty.ca.gov

Chemist: Kurtis Malecha: kurtis.malecha@sdcounty.ca.gov

Chemist: <not hired yet>

Chemist: <not hired yet>

Deviations must be discussed with the District and may be used as a mechanism to cancel the contract.

All reports must include the complete laboratory and analytical report(s). The laboratory analytical report must be signed by the laboratory director and contain:

1. A complete sample analytical report.
2. A complete laboratory quality assurance/quality control (QA/QC) report.
3. A discussion of the QA/QC data.
4. A discussion and complete report of any corrective action utilized and any deviations from standard procedures.
5. A transmittal letter that shall indicate whether or not all the analytical work was supervised by the director or authorized personnel of the laboratory, and contain the following statement, “All analyses were conducted at a laboratory certified for such

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analyses by the <laboratory name> in accordance with current USEPA procedures and San Diego County APCD directives.”

8. Commencement/Completion of Work

Unless otherwise stated, the Contract time shall commence upon the date of receiving the Blanket Purchase Agreement (BPA). This Contract will be a BPA for one (1) base year with four (4) one year option periods, for a total of five (5) years. After the first year, QA/QC criteria may be refined, if determined by the District. Additionally, the District may require the Contractor to provide prepared sampling media after a mutually agreed upon time, as previously discussed.

The Contractor will be able to begin work within five (5) working days from the date of the BPA. This time is to allow for mailing of the BPA to the Contractor and to allow for the Contractor to submit all required documents. No separate Notice to Proceed will be issued.

9. Demonstration of Quality Assurance

Demonstration of experience following all aforementioned procedures can be illustrated as follows:

1. Prior and/or continued work with the EPA methods listed, including references and duration (e.g. other regulatory agencies, academia, etc.).
2. Prior and/or continued participation in EPA NATTS Proficiency Tests with “Green Acceptable” results for the Metals subset of the program. If the Contractor has not participated in the PTs, demonstrated adherence to the QA/QC requirements in the NATTS TAD should be shown.
3. Any federal certifications for these methods.
4. Note that the prior work/participation needs to be current. The Contractor must demonstrate that the prior work/participation occurred at a minimum within the last four calendar years.
5. Demonstrated MDLs for the targets. If the MDLs are better than required by the District (listed in this document), they should be illustrated.

10. Warranties and Guarantees

While the basic laboratory practices are delineated in the methods listed above, the concentrations of the constituents in the sampled areas are unknown. To achieve valid results, some method refinement may be required to better quantify these levels. These refinements will be handled in teleconferences with the District. If the District determines that the Contractor is not responsive, the District may use this as a mechanism to cancel the contract. If the work is not completed in accordance to EPA and District methods and directives, the District may use this as a mechanism to cancel the contract.

END SECTION