

ATTACHMENT ● TO SCHEDULE A
STATEMENT OF WORK FOR
ELIGIBLE COMMUNITY PUBLIC SPACE COLLECTION
for
MASTER SERVICES AGREEMENT
Number 2022 -●

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STATEMENT OF WORK

STATEMENT OF WORK NUMBER: ●

This statement of work (“Statement of Work”) is given pursuant to Section 3.1 of the Master Services Agreement (“MSA”), made as of ● BETWEEN ● (“Contractor”) and Circular Materials, a federal not-for-profit corporation, having a place of business at 1881 Yonge Street, Suite 800, Toronto ON M4S 3C4, operating as Circular Materials Ontario (“CMO”, and with the Contractor, each a “Party” and collectively the “Parties”), with an effective date of ● (“Statement of Work Effective Date”).

NOW, THEREFORE, in consideration of the promises, mutual covenants, and agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties acknowledge and agree to all covenants, terms and conditions as stipulated in the MSA, as follows:

1. Beginning on the applicable Statement of Work Eligible Community Service Commencement Date listed in Exhibit 4, the Contractor shall perform the Work required by this Statement of Work for all Blue Box Material Public Space Collection Containers located within the applicable Eligible Community listed in Exhibit 4 that are in existence on such date. For clarity, the Contractor shall perform the Work required by this Statement of Work for a Blue Box Material Public Space Collection Container located within an Eligible Community listed in Exhibit 4 on the applicable Statement of Work Eligible Community Service Commencement Date even if the Public Space Collection Location for such Blue Box Material Public Space Collection Container is not referenced in Exhibit 2.
2. The Work under this Statement of Work shall include all the Contractor’s other obligations under the MSA.
3. The time period during which the Work required by this Statement of Work is to be performed is from the earliest Statement of Work Eligible Community Service Commencement Date listed in Exhibit 4 until December 31, 2025. Pursuant to Section 2.1(b) of the MSA, CMO and the Contractor may, by Change Order, extend this Statement of Work for up to three (3) further periods of one (1) year each. The initial term and any such additional term or terms are herein referred to as the “SoW Term”.
4. The full compensation for the Work under this Statement of Work shall be as set forth in Exhibit 5, which excludes Value Added Taxes. Value Added Taxes are payable by CMO to the Contractor on the price of the Statement of Work.
5. In the event of the termination of the MSA in accordance with Section 7.5 of the MSA, CMO shall only pay for the Work authorized by this Statement of Work which is performed prior to the termination date. For the purposes of clarity, CMO shall not be liable to make any other payments in connection with this Statement of Work as a result of such termination of the MSA.
6. Capitalized terms not defined in this Statement of Work shall have the meaning set out in the MSA.
7. Attached and forming an integral part of this Statement of Work are the following exhibits:
 - (i) Exhibit 1 – Scope of Work and Other Provisions;
 - (ii) Exhibit 2 – Public Space Collection Locations and Container Types;
 - (iii) Exhibit 3 – Blue Box Material Accepted in Collection System;
 - (iv) Exhibit 4 – Service Commencement Dates;
 - (v) Exhibit 5 – Compensation; and

- (vi) Exhibit 6 – Automated Vehicle Location System Minimum Specifications for Collection Vehicles Currently Equipped with GPS/AVL Hardware.

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IN WITNESS WHEREOF, the terms and conditions of this Statement of Work are acknowledged and agreed to by the Parties as of the date first listed above.

[Contractor]

By: _____

Name:

Title:

By: _____

Name:

Title:

We have authority to bind the Contractor.

[CMO]

By: _____

Name:

Title:

By: _____

Name:

Title:

We have authority to bind CMO

EXHIBIT 1: SCOPE OF WORK AND OTHER PROVISIONS

ARTICLE 1 DEFINITIONS

1.1 Definitions

“BLUE BOX MATERIAL PUBLIC SPACE COLLECTION CONTAINER” means a container located in a Public Space for the collection of Blue Box Material.

“COLLECTION” means the collection of Blue Box Material from a Blue Box Material Public Space Collection Container and delivery of the collected Blue Box Material to a RF.

“COLLECTION SERVICES” means the portion of the Work required by this Statement of Work.

“NEW PUBLIC SPACE COLLECTION LOCATION” means a new public space collection location as agreed to by the Parties for the purposes of the MSA.

“NON-BLUE BOX MATERIAL” means material that is not Blue Box Material.

“NON-BLUE BOX MATERIAL PUBLIC SPACE COLLECTION CONTAINER” means a container located in a Public Space for the collection of Non-Blue Box Material.

“PUBLIC SPACE” has the meaning set out in the Regulation.

“PUBLIC SPACE COLLECTION CONTAINER” means a Blue Box Material Public Space Collection Container or a Non-Blue Box Material Public Space Collection Container.

“PUBLIC SPACE COLLECTION LOCATION” means (i) a public space collection location referred to in Exhibit 2 or (ii) a New Public Space Location.

“RECEIVING FACILITY” or “RF” means any facility designated by CMO as the point where the Contractor is to unload Blue Box Material, including any alternate facilities identified by CMO for use when an RF is unable to accept Blue Box Material.

“SINGLE STREAM” means Stream 1 and Stream 2 materials combined.

“SOW TERM” has the meaning set out in Section 3 of this Statement of Work.

“STATEMENT OF WORK EFFECTIVE DATE” has the meaning set out in the recitals to this Statement of Work.

“STREAM 1” has the meaning set out in Section 3.2(f)(i) of Exhibit 1 to this Statement of Work.

“STREAM 2” has the meaning set out in Section 3.2(f)(ii) of Exhibit 1 to this Statement of Work.

“TRANSITION DATE” means the transition date for an Eligible Community set forth in the document of the (Ontario) Ministry of Environment, Conservation and Parks entitled “Blue Box Transition Schedule” and dated June 1, 2021.

“VALUATION TYPE” or “VALTYPE” means the source of Blue Box Material including single-family residences, multi-family residences, long-term care homes, retirement homes, schools, depots and public space. The ValType shall be recorded on weighscale tickets at an RF.

ARTICLE 2
SCOPE OF COLLECTION SERVICES

2.1 Scope of Collection Services

- (a) The Contractor shall provide Collection Services, including picking up, Collection Vehicle compacting to a maximum compaction rate agreed by the Parties, hauling of material to a RF and unloading by material stream for Blue Box Material from all Blue Box Material Public Space Collection Containers, in a manner that meets or exceeds the standard, level, scope and quality of collection services the Blue Box Material Public Space Collection Container (or, for a Blue Box Material Public Space Collection Container in a New Public Space Collection Location, a similar Blue Box Material Public Space Collection Container) received immediately prior to the Transition Date and complies with the terms of the MSA.
- (b) Without limiting the generality of the foregoing, the Collection Services shall meet the applicable requirements of the Regulation, including Sections 29 and 30.
- (c) The Contractor shall retain responsibility for, and control of, Blue Box Material from a Public Space, including a Blue Box Material Public Space Collection Container, through to delivery to an RF.
- (d) CMO shall not be obligated to join or instigate litigation to protect the right of the Contractor. The Contractor may independently enforce its rights under this Statement of Work against third party violators, including but not limited to seeking injunctive relief.

ARTICLE 3
SERVICE PROVISION

3.1 Addition or Removal of Public Space Collection Locations

CMO and the Contractor may add New Public Space Collection Locations or remove existing Public Space Collection Locations, and make related revisions to Exhibit 2, by Change Order, pursuant to Section 8.8 of the MSA.

3.2 Blue Box Material to be Collected

- (a) The Contractor will collect Blue Box Material from Blue Box Material Public Space Collection Containers in the Eligible Communities, including those in the Public Space Collection Locations in the Eligible Communities listed in Exhibit 2.
- (b) The Contractor will not scavenge or permit its employees or Subcontractors to scavenge, any Blue Box Material during Contractor's performance of the Work.
- (c) The Contractor will use best efforts to reduce the quantity of Non-Blue Box Material in collected Blue Box Material to no more than twenty percent (20%) by weight.
- (d) If the average amount of Non-Blue Box Material collected from Blue Box Material Public Space Collection Containers in an Eligible Community in any rolling six (6) month period exceeds twenty percent (20%) the Contractor will, within ninety (90) calendar days, prepare and submit to CMO a plan that includes identification of sources of Non-Blue Box Material and strategies and supporting measures to mitigate the amounts of Non-Blue Box Material. The Contractor will implement the plan and provide quarterly reporting to CMO detailing the progress and outcomes of the plan. If improvement does not occur within ninety (90) calendar days after the start of plan execution, the Contractor will work with CMO to establish additional changes and to adopt best practices recommended by CMO.
- (e) The Contractor may not collect, and collected Blue Box Material may not contain, any packaging containing hazardous or special waste.
- (f) Blue Box Material is to be collected from Blue Box Material Public Space Collection Containers, including those in the Public Space Collection Locations in the Eligible Communities listed in Exhibit 2, in two streams as follows (as such terms are generally described in Exhibit 3): **[NTD: revise if Contractor is collecting a single stream.]**
 - (i) Stream 1 – Paper Products and the following types of Paper Packaging:
 - paper laminates
 - kraft paper carry-out bags
 - kraft paper – non-laminated
 - corrugated cardboard
 - boxboard and other paper packaging
 - (ii) Stream 2 – Plastic Packaging, Metal Packaging, Glass Packaging and the following types of Paper Packaging:
 - gable top containers

- aseptic containers

3.3 Public Space Collection Containers

CMO, at any time, may direct the Contractor to affix signage provided by the Administer to a Public Space Collection Container or post signage at a Public Space Collection Location. The Contractor shall affix or post such signage, as directed, within thirty (30) calendar days.

3.4 Unloading Blue Box Material

- (a) The locations of the RFs for each Eligible Community will be provided by CMO no later than ninety (90) calendar days prior to the Statement of Work Eligible Community Service Commencement Date for the Eligible Community.
- (b) Contractor will deliver all collected Blue Box Material to the RF identified by CMO. The Contractor will not release Blue Box Material to anyone other than the RF or dispose of any collected Blue Box Material without prior written authorization from CMO.
- (c) Delivery to an RF shall adhere to the following steps:
 - (i) The inbound Collection Vehicle shall pass over the weighscale without exception. The operator of the Collection Vehicle must provide information such that a weighscale ticket with all required data can be generated;
 - (ii) The Collection Vehicle shall go to the designated tipping floor area of the RF. Each of the fibres and containers must be deposited into the appropriate tipping floor area. A Collection Vehicle operator must take instruction from the tipping floor supervisor and only empty when permitted;
 - (iii) Selected Collection Vehicles will be directed to return to the weighscale after emptying the first compartment to get a split weight (estimated 10% of Collection Vehicles by Eligible Community will be directed to split weigh). After split weighing, a Collection Vehicle will return to the tipping floor area for the second compartment and empty the contents of the Collection Vehicle. The Collection Vehicle will then return to the weighscale to obtain a tare weight;
 - (iv) The Collection Vehicle must empty the fibre and container compartments on every trip to the RF. The Collection Vehicle operator must ensure each compartment is completely emptied before moving to the next tipping floor area and before leaving the property. The Collection Vehicle operator shall not clean out the Collection Vehicle in a manner that causes or may cause fibre materials to be commingled with containers or vice versa;
 - (v) If the Collection Vehicle experiences a bulkhead failure, the Collection Vehicle operator shall work with the tipping floor supervisor to separate the two streams; **[NTD: revise if Contractor is collecting a single stream.]**
 - (vi) Every Collection Vehicle must have a tare weight taken once every two months without exception. To alleviate the potential for backup and delays on the weighscale, tare weight timing will be staggered; and

- (vii) In the event an RF is unable to accept Blue Box Material from a Collection Vehicle, the Contractor shall immediately notify CMO and the Collection Vehicle shall proceed to another RF as directed by CMO.
- (d) The Collection Vehicle operators shall comply with all operational protocol and procedures of an RF during unloading of Blue Box Material.

ARTICLE 4
RECORD KEEPING AND REPORTING REQUIREMENTS

4.1 Record Keeping and Reporting Requirements

- (a) The Collection Vehicle operator will provide the necessary information to the RF representative such that the following data may be collected for each inbound vehicle:
 - (i) Date and time;
 - (ii) Originating Eligible Community ID number;
 - (iii) Valtype as applicable to the load;
 - (iv) Blue Box Material onboard (e.g. Stream 1, Stream 2, or a Single Stream material type);
 - (v) Contractor ID number;
 - (vi) Collection Vehicle number;
 - (vii) Scale ticket number;
 - (viii) Gross weight (tonnes);
 - (ix) Tare weight (tonnes, including by split load if applicable); and
 - (x) Net weight (tonnes; tonnes by compartment – Stream 1, Stream 2, where split-weighting occurs).
- (b) The Contractor shall ensure that detailed records are kept for the Blue Box Material that is collected and delivered to a RF including a record of the number of Collection Vehicles emptied per day, the weight in metric tonnes of each load, and where the load was delivered such that a cross-correlation between RF records and Contractor records can be made.
- (c) Within sixty (60) calendar days of the end of a calendar year, the Contractor shall annually provide a report to CMO, in a form approved by CMO, outlining kilometres driven and fuel consumed by Collection Vehicles in the delivery of the Work under this Statement of Work. The report will be organized to display information by Collection Vehicle category and where Collection Vehicles are used for a specific Valtype the information for Collection Vehicles will be listed separately.
- (d) The Contractor shall, in addition to the records specified above, maintain, and provide to CMO, in a format acceptable to CMO, a monthly, summary report of Blue Box Material collected (by Eligible Community and by route within each Eligible Community) under this Statement of Work. This shall include Monthly Blue Box Material Collected Report: Collection summary by Valtype, weight of each Collection Vehicle, material stream (weigh scale receipts must be maintained and made available in a format and manner as requested by CMO).
- (e) For all Collection Vehicles that have automated vehicle location equipment, the Contractor shall ensure such equipment complies with the requirements specified in Exhibit 6.

- (f) The Contractor shall:
- (i) electronically transfer all Collection Data to CMO; and
 - (ii) make all Collection Data available for transfer to, and access by, CMO,
via an Application Programming Interface or web-based portal, in a format, and in accordance with other requirements, established by CMO.

ARTICLE 5
DOCUMENTATION AND PAYMENT

5.1 Documentation and Payment

- (a) Starting in the first calendar month after the Statement of Work Eligible Community Service Commencement Date for an Eligible Community, the Contractor shall submit to CMO a monthly work report for the Work performed in the prior calendar month for such Eligible Community. The monthly work report must be submitted within the first fourteen (14) calendar days after the start of the calendar month.
- (b) Each monthly work report submitted by the Contractor shall be in a form acceptable to CMO and shall include the following in respect of the period covered by the applicable monthly work report:
 - (i) total number of Public Space Collection Locations serviced; and
 - (ii) Blue Box Material collection summary report that complies with the requirements of Section 4.1(d) of this Exhibit 1.
- (c) If requested by CMO, the Contractor shall provide Collection Vehicle weighscale records.
- (d) For clarity, the Contractor may only be paid for Work under this Statement of Work every calendar month provided the Contractor has submitted monthly work reports in accordance with Section 5.1(a) of this Exhibit 1 for such calendar month.
- (e) For greater certainty, except as expressly set out in the MSA there shall be no increase to the prices set out in the Statement of Work for any changes to the Contractor's responsibilities.

EXHIBIT 2: PUBLIC SPACE COLLECTION LOCATIONS AND CONTAINER TYPES

Eligible Community	Address or Site of Public Space Collection Location	Blue Box Material Public Space Collection Container		Non-Blue Box Material Public Space Collection Container	
		Type	Number at Location	Type	Number at Location
A					
B					
C					
Total					

***NOTE: The Contractor is to complete this Exhibit with current information prior to execution of the Statement of Work. CMO holds no responsibility or liability for actual information that is different from the information presented in this Exhibit.**

**EXHIBIT 3: BLUE BOX MATERIAL ACCEPTED IN BLUE BOX MATERIAL PUBLIC SPACE
COLLECTION CONTAINERS**

No.	Eligible Community	Blue Box Material accepted in Blue Box Material Public Space Collection Containers by the Eligible Community for this Statement of Work
1.		
2.		
3.		

***NOTE: The Contractor is to complete this Exhibit with current information prior to execution of the Statement of Work. CMO holds no responsibility or liability for actual information that is different from the information presented in this Exhibit.**

EXHIBIT 4: SERVICE COMMENCEMENT DATES

The table included below lists the Statement of Work Eligible Community Service Commencement Date when services, forming the Work described by this Statement of Work, are to commence in each Eligible Community (e.g. Public Space Collection Services will begin on date A in Eligible Community B).

No.	Statement of Work Eligible Community Service Commencement Date	Eligible Community
1.	A	B
2.		

EXHIBIT 5: COMPENSATION

1.1 For each calendar month during the SoW Term, the Contract Price for the Work performed under this Statement of Work in accordance with the requirements of the MSA shall be calculated as:

- (a) the Unit Price multiplied by the total number of Public Space Collection Locations in Exhibit 2 at the start of the applicable calendar month (provided that the Unit Price shall be prorated for Public Space Collection Locations that did not receive Collection Services for the entire calendar month). For clarity, the number of Public Space Collection Locations listed in Exhibit 2 shall be used in the calculation of the Contract Price even if the number of Public Space Collection Locations listed in Exhibit 2 is not the actual number of Public Space Collection Locations at the start of the applicable calendar month; plus
- (b) for each New Public Space Collection Location added during the applicable calendar month, the Unit Price prorated based on the number of Business Days during the calendar month after the effective date of the Change Order that added the New Public Space Collection Location.

For the purposes of this Statement of Work, “Unit Price” means ● **[NTD: Set out applicable Unit Price.]**

1.2 Fuel Price Adjustment

(a) Diesel Fuel

- (i) If the Contractor utilizes diesel fueled Collection Vehicles for the performance of Collection Services, for the first calendar month immediately following the first anniversary of the Statement of Work Effective Date and for each subsequent calendar month in which diesel fueled Collection Vehicles are used for the performance of Collection Services, the Unit Price shall be adjusted to account for changes in the cost of diesel fuel. The diesel fuel price adjustment shall be (1) twenty percent (20%) of the Unit Price for the prior calendar month multiplied by (2) the percent change in the Southern Ontario Diesel Price published in the table of Fuel Prices located at <https://data.ontario.ca/dataset/fuels-price-survey-information> (“Diesel Fuel Index”) over the prior calendar month (“Percent Change for Diesel”) multiplied by (3) the prorata amount of diesel fuel (measured in litres) used in the Eligible Communities for the calendar month for the Collection Vehicles. The diesel fuel price adjustment amount will be added to or subtracted from the Unit Price.
- (ii) An example of the payment adjustment calculation is shown below:

Diesel Fuel Price Adjustment = Unit Price for the prior calendar month x 0.20 x (Percent Change for Diesel) x prorata amount of diesel fuel (measured in litres) used in the Eligible Communities for the calendar month for the Collection Vehicles

(b) Natural Gas

- (i) If the Contractor utilizes compressed natural gas fueled Collection Vehicles for the performance of Collection Services, for the first calendar month immediately following the first anniversary of the Statement of Work Effective Date and for each subsequent calendar month in which natural gas fueled Collection Vehicles are used for the performance of Collection Services, the Unit Price shall be adjusted to account for changes in the cost of natural gas. The natural gas price adjustment shall be (1) twenty percent (20%) of the Unit Price for the prior calendar month multiplied by (2) the percent change in the Ontario Compressed Natural Gas Price published in the table of Fuel Prices located at <https://data.ontario.ca/dataset/fuels-price-survey-information> (“Natural Gas Index”) over the prior calendar month (“Percent Change for Natural Gas”) multiplied by (3) the prorata amount of natural gas (measured in litres) used in the Eligible Communities for the calendar month for the Collection Vehicles. The natural gas price adjustment amount will be added to or subtracted from the Unit Price.
- (ii) An example of the payment adjustment calculation is shown below:

Natural Gas Price Adjustment = Unit Price for the prior calendar month x 0.20 x (Percent Change for Natural Gas) x prorata amount of natural gas (measured in litres) used in the Eligible Communities for the calendar month for the Collection Vehicles

1.3 Consumer Price Index Price Adjustment

- (a) For the first calendar month immediately following the first annual anniversary of the Statement of Work Effective Date and for each subsequent annual anniversary, the Unit Price shall be adjusted to account for changes in the Consumer Price Index and the adjustment shall be equal to eighty percent (80%) of the Unit Price for the prior calendar month (“Prior Calendar Month”), multiplied by the CPI Change. The Consumer Price Index price adjustment amount will be added to or subtracted from the Unit Price.

- (b) An example is shown below:

Consumer Price Index Price Adjustment = Unit Price for the Prior Calendar Month x 0.80 x (CPI Change)

- (c) For the purposes of this Section 1.3, CPI Change means (1) the average of the values for each of the prior twelve (12) calendar months for the Consumer Price Index, monthly, not seasonally adjusted – Ontario (Table 18-10-0004-01)(Formerly CANSIM 326-0020) (<https://www150.statcan.gc.ca/t1/tb11/en/tv.action?pid=1810000401>), up to and including the Prior Calendar Month divided by (2) the average of the values for each of the prior twelve (12) calendar months for the Consumer Price Index, monthly, not seasonally adjusted – Ontario (Table 18-10-0004-01), up to and including the calendar month one (1) year prior to the Prior Calendar Month. The Consumer Price Index table used to determine the CPI Change shall be subject to revision as agreed by the Parties in the case Statistics Canada materially changes such index or discontinues or replaces it.

**EXHIBIT 6: AUTOMATED VEHICLE LOCATION SYSTEM MINIMUM SPECIFICATIONS FOR
COLLECTION VEHICLES CURRENTLY EQUIPPED WITH GPS/AVL HARDWARE**

1.0 General GPS/AVL Hardware Requirements

1.1 Where Collection Vehicles are currently equipped with GPS-AVL hardware, the Contractor shall ensure the GPS-AVL hardware and software in Collection Vehicles, spare Collection Vehicles and on-road supervisor vehicles are functional and maintained, with manuals necessary to operate the system, at the Contractor's expense.

1.2 The Contractor's system shall provide, at all times, unrestricted and direct access by CMO staff via the internet, including the ability to produce reports on demand in a form acceptable to CMO.

1.3 The Contractor shall retain ownership of the GPS-AVL system throughout the term of the MSA. All maintenance, installations and removals are the responsibility of the Contractor.

1.4 The Contractor shall manage telecommunications agreements/contracts. Service and data transmission costs are the responsibility of the Contractor.

1.5 The Contractor shall utilize the GPS-AVL system for quality control to ensure delivery of the Work.

1.6 The Contractor shall ensure the GPS-AVL system and associated web-based application are operating to the satisfaction of CMO a minimum of one (1) month before the earliest Statement of Work Eligible Community Service Commencement Date. The GPS-AVL system and associated web-based application shall be tested, on a minimum of one (1) Collection Vehicle, one (1) month prior to the earliest Statement of Work Eligible Community Service Commencement Date to confirm operation to the satisfaction of CMO.

2.0 GPS-AVL Software Requirements

2.1 The Contractor shall provide CMO with a secure web-based application to view location and event data. The Contractor shall provide CMO with access to test the application two (2) months prior to the earliest Statement of Work Eligible Community Service Commencement Date.

2.2 The GPS-AVL data system must automatically collect the time and location of every identified event and all Collection Vehicle activities from ignition-on to ignition-off. Each event must be time stamped, recorded by the system and provided to CMO and shall include, but not be limited to:

- a) Collection Vehicle ignition time on and off;
- b) Collection Vehicle arrival time at and vehicle departure time from the Contractor's facility and RF;
- c) Unloading of each compartment at the RF;
- d) Time spent at the RF;
- e) For front-end Collection Vehicles, time of arrival at, time of containerized lift and time of departure from each location;
- f) Time of each compaction cycle made;
- g) Time of arrival at and departure from the Collection Vehicle storage location;
- h) Time spent on route;
- i) Speed and direction of Collection Vehicle;
- j) Idle times;
- k) Time of stops; and
- l) Time of Collection Vehicle breakdown and towing time.

2.3 Location data is to be collected in 15 second intervals. Location data must be in a format (i.e. UTM coordinates or address) acceptable to CMO.

2.4 CMO reserves the right to modify the events on which data must be collected.

2.5 The Contractor shall guarantee complete back up of all GPS-AVL data collected during the SoW Term with the ability to recover data lost due to system failures. Recovered data shall be available in the system within five (5) days of system failure or data restore request.

3.0 GPS-AVL Maintenance Requirements

3.1 The Contractor shall ensure that the GPS-AVL system is functioning promptly and shall promptly report all equipment malfunctions and damage to the equipment to CMO but in any event not later than eight (8) hours from the time of malfunction or damage.

3.2 The Contractor shall provide seven (7) calendar days' notice to CMO of any scheduled hardware or software activities, such as but not limited to maintenance and upgrades, that may interrupt availability of the GPS-AVL system. Maintenance shall be scheduled outside normal working hours to deliver the Work.

3.3 Should the GPS-AVL system require emergency maintenance, the Contractor shall provide CMO with written notice including a detailed explanation of the issue, mitigation, validation and expected downtime a minimum of four (4) hours prior to the maintenance.

3.4 The Contractor shall repair any GPS-AVL system hardware or software problems within three (3) Business Days. CMO may require the Contractor to replace a Collection Vehicle whose GPS-AVL is malfunctioning with a spare Collection Vehicle with a functioning GPS-AVL system until such time as the GPS-AVL system on the Collection Vehicle removed from service is repaired and fully functional.

3.5 The Contractor shall make hardware and software updates and upgrades as they become available at the Contractor's expense.

3.6 The Contractor shall not remove a GPS-AVL system from a Collection Vehicle or deactivate a GPS-AVL system in a Collection Vehicle. The Contractor shall not utilize a Collection Vehicle that is not equipped with an activated and fully functional GPS-AVL system meeting the requirements of the Statement of Work.

4.0 GPS-AVL System and Web-Based Application Requirements

4.1 The Contractor shall provide a mobile-friendly web-based application that satisfies the functionality set out in this Exhibit. The mobile-friendly application must incorporate at a minimum functionality related to location of vehicles (in proximity and by specific vehicle ID) and the option to receive driving directions to a separate vehicle from the current position.

4.2 The Contractor shall provide a native mobile application that is a separate application for the secure mobile-friendly web-based application.

5.0 GPS-AVL Data Storage and Access Requirements

5.1 Event and location data must be stored and accessible in the web application for the SoW Term. The Contractor shall provide event and location data to CMO for storage on CMO's system in an agreed upon file format.

5.2 The GPS-AVL system must have the ability to store event and location data when the communication network is unavailable such that the stored data can be sent once the network is available.

5.3 CMO reserves the right to request an electronic transfer of the database or a subset of the database in a SQL Server 2016 compatible format, based on a query of the data, at any time. The Contractor shall provide the data within forty-eight (48) hours of the request.

5.4 The GPS-AVL system must automatically log all events with vehicle identification, time stamp, location and specified driver inputs, in a format readily suitable for importing to a common database program.

6.0 System Requirements

6.1 Infrastructure

6.1.1 The Contractor shall provide CMO with secure web-based access to all GPS-AVL data through a standard web browser. The application must be compatible with Google Chrome, Internet Explorer or upgraded versions as identified by CMO during the Term of the Statement of Work.

6.1.2 The Contractor shall provide access with a 24-hour response time from a request for access by CMO.

6.1.3 CMO will identify the specific role assigned to each end user provided with access by the Contractor.

6.1.4 The Contractor shall provide a web-based application 24/7 with 99.95% guaranteed availability.

6.2 Cloud Infrastructure

6.2.1 The Contractor shall establish a system backup and restoration protocol acceptable to CMO.

6.2.2 The GPS-AVL system data shall be stored in Canada.

6.3 Security

6.3.1 The Contractor shall utilize an Intrusion Detection System (IDS) or Intrusion Prevention System (IPS) or firewall equivalent meeting CMO's approval.

6.3.2 The Contractor shall have Antivirus/Antimalware detection in place and active on the GPS-AVL system.

6.3.3 The Contractor shall implement security controls to detect, block, monitor and mitigate security threats that may compromise the system including but not limited to:

- a) unauthorized access;
- b) disabling/bypassing security controls;
- c) denial-of-service attacks; and
- d) other malicious acts that may impact the data confidentiality and/or integrity.

6.3.4 The Contractor shall ensure that each operating system, network and application is hardened to provide only ports, protocols, and services necessary for the Work.

6.3.5 The Contractor shall prepare a vulnerability management and mitigation plan for CMO's approval.

6.3.6 The Contractor shall ensure that any hardware to be discarded is securely wiped and all data digitally destroyed using a DOD 2-pass methodology for erasing content. The Contractor shall provide a certificate of destruction to CMO.

6.3.7 The Contractor shall implement semi-annual network and application penetration tests (authenticated and unauthenticated) on all layers of the GPS-AVL system using industry best practices protocol and guidance. The Contractor shall provide the test results to CMO.

6.4 Encryption

6.4.1 The Contractor shall ensure the GPS-AVL system protects sensitive information, including but not limited to passwords, database storage and backup media, using a strong encryption/hashing algorithm.

6.4.2 The Contractor shall ensure the GPS-AVL system encrypts sensitive data transmitted into and out of the system utilizing Secure File Transfer Protocol.

6.4.3 The Contractor shall provide a GPS-AVL web-based application with SSL/TLS security for end user access that adheres to TLS 1.2 or greater, at a minimum.

6.5 System Performance

6.5.1 The Contractor shall ensure the GPS-AVL web-based application meets the following system performance:

- a) Mapping response time of less than five (5) seconds for initial map load;
- b) Mapping response time of less than two (2) seconds for any map display movement such as pan or zoom;
- c) Map data query response of less than five (5) seconds for retrieving and displaying data as a result of map interactions;
- d) Report initial load of less than five (5) seconds;
- e) Data query response of less than five (5) seconds; and
- f) Identification and display of selected vehicles of less than five (5) seconds.

6.6 Application Functionality

6.6.1 The Contractor shall ensure the GPS-AVL web-based application has the following functionality:

- a) The base map on the web-based application must include the Contractor's route boundaries and the collection container locations applicable to this Statement of Work (e.g. Public Space Collection Containers);
- b) Base layers must be undated on a yearly basis at a minimum;
- c) The vehicle GPS/AVL screen must display maps for viewing and interacting;
- d) The end user map display must be modifiable by adding or subtracting any number of landmark icons on the display by turning layers on and off;
- e) The end user must be able to independently assign labels and add or remove Collection Vehicles from the display; and
- f) The end user must be able to dynamically and statically change Collection Vehicle, Collection Vehicle route and collection category symbology type, colour and size.

6.6.2 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to navigate the application via a map interface with menus and a tool tip that appears when the user's cursor hovers over a GPS point showing: vehicle (name); date/time; speed; heading; and current position (address).

6.6.3 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to filter for one or more individual vehicles including:

- a) ID number;
- b) Driver's name;
- c) Route(s);
- d) Collection category;

- e) Area served;
- f) Specific material stream(s) which, if specific to a Collection Vehicle, shall be accurate on a daily basis; and
- g) Eligible Community, Eligible Communities or Collection Catchment(s).

6.6.4 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to:

- a) Select or deselect all Collection Vehicles, routes, specific material stream(s), driver's name;
- b) Select a Collection Vehicle via map and form;
- c) Select the closest Collection Vehicle to an address;
- d) Locate the closest Collection Vehicle to a location on any date through any of the following methods:
 - i) Visual analysis (i.e. the user can look at all of the current Collection Vehicle locations to visually determine the closest);
 - ii) Address or intersection query (i.e. an address is entered and the closest Collection Vehicle to that location on a specific date is returned); and
 - iii) User-specialist spatial location (i.e. the user clicks on the map and the closest Collection Vehicle to that location is returned).

6.6.5 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to:

- a) Zoom to a selected Collection Vehicle;
- b) Search for a specific Collection Vehicle by Collection Vehicle number, route, collection category, GPS unit, material stream(s), driver's name;
- c) Identify the nearest Collection Vehicle(s) to a selected address, customer, map location or latitude/longitude location including specifying date and time range and buffer zone (distance around location);
- d) Identify and map an address or intersection;
- e) Identify and map one or more routes or collection categories; and
- f) Identify and map Collection Vehicles associated with routes and collection categories.

6.6.6 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to:

- a) Display selected and/or all Collection Vehicle position and movement with unique onscreen identifier;
- b) Refresh Collection Vehicle position at a minimum every fifteen (15) seconds;
- c) Display the collection category for all assigned Collection Vehicles;
- d) Display Collection Vehicle location co-ordinates expressed in Latitude/Longitude using degrees, minutes and seconds;
- e) Display all Collection Vehicle information collected by GPS;
- f) Display the condition and last reported time of on-board sensors (i.e. for compaction cycles and unloading of specific material compartments) and graphically display sensor status;
- g) Indicate the direction of travel of each displayed Collection Vehicle;
- h) Provide Collection Vehicle location by street address and GPS co-ordinates; and
- i) Monitor both current position and route progress (tracking) as part of mapping functionality.

6.6.7 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to:

- a) Playback selected date and time rate for a Collection Vehicle and collection category for the SoW Term;
- b) View a history of a Collection Vehicle's location and events based on criteria such as time and date ranges;
- c) Display a selected Collection Vehicle's position history with an arrow icon and the Collection Vehicle's events (e.g. ignition on/off, movement starts/stops) with appropriate symbols;
- d) Select a day of the week, a route and date range, and access the playback of all Collection Vehicles used for collection within the defined parameters;
- e) View a Collection Vehicle's compaction cycle data based on end user criteria including time and date ranges on a map playback that includes date and predefined symbology representing the compaction cycle;
- f) View the time that a user-specified address was serviced and the Collection Vehicle that serviced the address;
- g) Print an end-user defined view of the current map display; and
- h) Print a standard print display.

6.6.8 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to:

- a) Export the end user view of the current map display in PDF; and
- b) Export the end user view of the current map display in an Esri supported format approved by CMO.

6.6.9 The Contractor shall ensure the GPS-AVL web-based application interface allows the end user to:

- a) Send system-generated standard and custom SMS text to identified end users;
- b) Send system-generated emails to identified end users; and
- c) Send automated notification of GPS-AVL units that are not communicating properly or that are experiencing issues via SMS text and emails to identified end users.

6.6.10 The Contractor shall ensure the GPS-AVL web-based application:

- a) Records the speed traveled by the Collection Vehicles;
- b) Records distances traveled by Collection Vehicles on any given day and total distances since the Collection Vehicle became operational; and
- c) Records all Collection Vehicles GPS/AVL data at fifteen (15) second intervals.

6.7 Data Extracts

6.7.1 The Contractor shall provide, within forty-eight (48) hours of a request from CMO, a whole and/or partial data extract from the application database.

6.7.2 The Contractor shall provide all data extract files via Secure File Transfer Protocol (SFTP) to CMO using the file path and server credentials provided by CMO.

6.7.3 The Contractor shall provide CMO, via SFTP, a full database backup in SQL Server version 16.x format with a data schema at the end of each calendar year through the Term of the Statement of Work.

6.8 Training Requirements

6.8.1 The Contractor shall provide training in accordance with a training plan to be submitted to CMO for approval.

6.8.2 The Contractor shall provide professional demonstration and training session(s) on the features, functionality, workflow of the web-based application, as set out in the approved training plan, to the identified end users. The demonstration and training session(s) will be conducted at times and locations acceptable to CMO not later than sixty (60) days prior to the Statement of Work Effective Date.

6.8.3 The Contractor shall provide, as part of the training, printed and searchable electronic format training manuals for the web-based application. The Contractor shall prepare self-paced training on its web-based application that can be used on demand.

6.8.4 The Contractor shall provide, at the Contractor's cost, refresher training and training for newly employed staff at CMO's request within two (2) weeks of the request.

6.9 Testing and Evaluation

6.9.1 The Contractor's web-based application shall be evaluated for a two (2) week period to confirm it meets CMO's requirements and capabilities.