**Exhibit 1**

**0400000176 Specifications**

The Bid shall show the ability of the Bidder to meet or exceed the following minimum mandatory specifications in their entirety. Bidders must respond to each line of specifications indicating product bid meets that specification or explain any variation or exception to these minimum specifications in detail and item by item. The vendor must provide product brochures and/or published literature detailing the instrument specifications.

Gas Chromatograph (GC) must include the following features:

**1. One (1) capillary injection port.** Injection port must include the following features:

1. Designed for both split & spitless type injections.
2. Incorporate forward-pressure regulation design for split injection mode.
3. Fixed septum purge
4. Modular in design.
5. LAN interface and MSD interface.
6. User programmable temperature range up to 400 degrees C in 1 degree increments.
7. Electronic pneumatic control design which must include the following features:
	1. Pressure Range of 0-100 psi in 0.01 psi increments, upgradable to 150 psi
	2. Total Flow Range of 0-200 mL/min for nitrogen, 0-1000 mL/min for hydrogen and 0-1000 mL/min for helium.
	3. User selectable for pressure or flow mode.
	4. Multiple ramp programming of flow rat
	5. Programmable purge times in 0.1 minute increment
	6. User adjustable split ratio, independent of column flow in split injection mode.
	7. Temperature compensating.
	8. Reads atmospheric pressure in real time and compensates for ambient laboratory changes.
	9. Carrier gas switching module for conserving Helium
	10. User programmable for reduction of split-vent flow during analysis.
	11. Flip Top Inlet Sealing System for easy changing of liner, with inlet O-Rings for Flip Top Sealing System.

**2. One (1) capillary detector of the following type: Mass Spectrometer**. The Detector must include the following features:

1. Inert ion source, programmable up to 350°C.
2. Hyperbolic quadrupole has the ability for analyzer to be heated to 200°C.
3. Trace Ion Detection and Deconvolution Reporting Software.
4. Synchronous SIM/Scan mode.
5. All ionization modes (PCI, NCI and EI) in one automated sequence using the standard CI source.
6. Pesticide database spectral library of at least 900 compounds.
7. Ion gauge controller.

**3**. **Gas Chromatography Oven.**  GC oven must include the following features:

1. Internal dimensions not less than 28 cm x 31 cm x 16 cm.
2. Operating temperature range of ambient + 4 degrees C to 450 degrees C in 1 degree increments with ambient rejection of less than 0.01 degree/degree C.
3. Upgradeable to cryogenic temperature range of -80 degrees C to 450 degrees C.
4. Six (6) or more user programmable oven temperature ramps.

**4.** **Gas Chromatography Control Pad.** GC control pad must include the following features:

1. Browser Interface.
2. Full functional control of all GC features, including simultaneous control of the injection port and detector.
3. Full functional control of the autosampler in this bid specification, including simultaneous control of the injection module.
4. Instrument monitoring, diagnostic logging, and evaluation.
5. Stopwatch function.

**5.** Plumbed for direct connection to a regulated gas supply (tank regulator) without the addition of external regulating devices.

**6.** Allows full functional control of all GC features using the data station in this bid specification.

**7.** Automatic shut-off of gases in the event of a leak.

**8.** Designed for use with capillary fused silica columns.

**9.** Includes a cross-linked 100% dimethylpolysiloxane 20m x 180um x 0.18um.

**10.** Reproduces retention times from run to run within 0.01 minutes or less, using n-decane.

**11.** Standard configuration of six (6) user programmable heated zones, in addition to the oven temperature control, with independent temperature control of all six (6) heated zones to a maximum temperature of 400 degrees C in 1 degree increments.

**12.** Run-time and clock-time programmable.

**13.** Built-in diagnostics functions including comprehensive self-testing, automatic capture and storage of control deviation events, and power failure memory protection.

**14.**  There must be column bleed baseline compensation.

**15.** The system must be equipped with a LAN communications interface, IEEE-488 (HPIB)/RS-232-C communication interface, and two (2) analog output ports.

**16.** Run time maximum of 999.99 minutes or longer.

**17.**  Overall GC dimensions of 50 cm x 68 cm x 54 cm (H x W x D) or less and weight of 49.0 kg or less.

**18.** Consumable parts are interchangeable with laboratory’s exiting stock of gas chromatograph supplies (i.e. Hewlett-Packard/Agilent 6890 II type septa, liners, O-rings, seals, columns, column nuts, etc.)

**19. Autosampler must include the following features:**

1. Designed for use with the GC in this bid specification.
2. One (1) injection module for the injection port of the GC in this bid specification.
3. All mounting hardware for use with the GC in this bid specification is included.
4. The autosampler must be driven entirely by electronics (no gas-driven features.)
5. Allows full functional control using the data station in this bid specification.
6. Regular instrument maintenance is done without using tools to physically relocate the autosampler component & no tools are required for re-alignment if injection module is moved for regular instrument maintenance.
7. All necessary communications hardware for use with the GC and data station in this bid specification is included.
8. Minimum capacity of 100 samples with sample holding tray mounted away from the oven.
9. User selectable injection depths.
10. Reproduces area counts within 0.3% RSD or less.
11. The injection module can access the entire sample holding tray, both sequentially and randomly, without user intervention.
12. Upgradeable for reading bar-code sample labels with information annotated on the sample report.
13. Syringe cleaning cycle can use 2 different solvent types.
14. User programmable pre-& post- injection syringe cleaning.
15. User programmable pre-injection rinsing and syringe pumping with the sample.
16. User programmable injection speeds including 10 m-sec/uL and viscosity delay.
17. User programmable replicate injections from a single sample vial.
18. Volumes can be sampled from 5, 10, 25, 50 & 100 uL syringes in the following increments: 2%, 10%, 20%, 30%, 40%, or 50% of syringe volume with volume linearity correlation of 99%. (Equivalent volume range of 0.1 uL to 50uL.)
19. Consumable parts are interchangeable with laboratory’s existing stock of autosampler supplies (i.e. Hewlett Packard 7683 type syringes, sample vials, vial caps and solvent wash vials.)

**20.** **Data Station- To include:**

 **20.1 Computer and peripheral accessories with the following features:**

* 1. Windows current version, 64bit, Professional.
	2. 8 core CPU or better.
	3. 2.2 GHz processor speed or greater.
	4. 1 TB HDD for storage. 500GB M.2 NVME PCIe SSD for applications.
	5. A minimum of 16 GB of RAM.
	6. DVD-ROM/DVD-RW drive, at 48x or faster.
	7. Monitor, linkable via display port.
	8. Windows compatible keyboard.
	9. Windows compatible mouse with wheel.

 **20.2** **Printer with the following features:**

* 1. Laser, color, plain paper.
	2. 4 Mb memory or more
	3. 1200-dpi print quality (default model)
	4. 17 ppm printing engine
	5. Adobe Postscript Level 2 Emulation.
	6. 500 Sheet paper tray

 **20.3** Separate Ethernet LAN card (100/1000) for connection to in house network.

 **20.4** All additional communications hardware necessary for use with the GC and autosampler.

 **20.5** Desktop style case with additional expansion slots and drive bays.

 **20.6** Chromatographic/Instrument Control software with the following features:

* 1. Provides full functional control of all features of the GC and autosampler as specified.
	2. Based on, and fully compatible with, Windows operating environment.
	3. Graphical User Interface (GUI) to access instrument parameters.

 **20.7** Computer based training (CBT) software on the following subjects:

* 1. System maintenance & diagnostics.
	2. Chromatographic/Instrument software use.

 **20.8** Analyzes samples by:

* 1. Single sample mode
	2. Multiple instrument parameters and multiple data evaluation conditions without user intervention.

 **20.9** Acquires sample data using the following features:

* 1. Instrument status continually monitored and updated on display.
	2. Chromatographic signals can be overlaid with one another or with instrument parameters.
	3. Chromatographic data can be processed before analysis is complete through snapshot feature.
	4. Default display parameters during acquisition are user definable.
	5. Deviation from instrument parameters can be recorded in a system log.
	6. Instrument parameters can be stored with the chromatographic data.

 **20.10** Displays and processes sample data using the following features:

* 1. Chromatographic data can be overlaid and chromatograms can be aligned vertically and horizontally.
	2. File names are displayed with chromatographic data.
	3. Retention times are labeled on all peaks while entire integrated chromatogram is displayed.
	4. Zoom and scroll functions are provided.
	5. Integrates automatically (auto integrate) or with user definable integration events including the following features:
		1. Integration events can be set interactively using the chromatogram.
		2. Manual integration can be recorded as a data analysis parameter for use during automated analysis.
		3. Baseline integration can be done manually or automatically.
	6. Annotations are user formattable including font, size, rotation & position.
	7. Stored data can be processed in a fully functional off-line analysis session during data acquisition.

 **20.11** Calibrates sample data using multiple compound calibration at multiple levels using multiple internal standards.

**21.** Calibration algorithm has user selectable multiple options for point weighting, origin, and calibration curve.

**22.** Quantitation limits are user definable and are used to identify results which are outside analysis limits on a report (flagged).

**23.** Calibrations can be done interactively or automatically.

**24.** Stores analysis information, including all of the following, in a format that is non-editable without the software:

1. Sample identification
2. Analysis date and time.
3. Analysis parameters.
4. Raw data signal(s)
5. Integration parameters
6. Quantitation parameters
7. Peak identification parameters.
8. Instrument parameters
9. Linked method, acquisition table and data processing parameters.

**25.** Compiles paper reports for the following:

1. Quantitation Results
2. Chromatographic Tabulations
3. Analysis Summary – including unexpected deviations from analysis parameters.
4. Result Summary
5. Trend Analysis
6. System Suitability
7. All printed reports can be previewed on-screen before printing.
8. Report information can be generated in ASCII, CSV, DIF and XLS formats for output to a file.
9. Imports and exports file information in Analytical Data Interchange (ANDI) chromatography format.
10. User definable custom report formats.
11. User definable data analysis macro programming.
12. Upgradeable for performing search and report functions on remote computers through a LAN connection.

**26. Installation, Training, Support & Service**

## Shipping costs must be included with FOB to the destination agency located in Oklahoma City, Oklahoma.

Oklahoma Department of Agriculture, Food & Forestry

Pesticide Section

2800 N. Lincoln Blvd.

Oklahoma City, OK 73105

 **26.1** Installation combined with initial onsite operator training on method development must be included and must be a minimum of two (2) days.

 **26.2** During installation the vendor must demonstrate operational qualification by validating the system performance.

 **26.3** All equipment must be able to operate in an environment with a temperature range of 15-35°C and with a relative humidity range of 5-95% (noncondensing).

 **26.4** Manufacturer must provide telephone support between the hours of 7:00 am and 6:00 pm Central Time. Call back times must not exceed four (4) business hours.

 **26.5** Manufacturer must provide a minimum of a one (1) year on-site warranty to include preventative maintenance, and costs for parts, travel, labor, and instrument control software updates.

 **26.6** Manufacturer must have factory trained service personnel within the physical boundaries of the State of Oklahoma.

 **26.7** Must operate on US standard 115 V AC/60 Hz.

 **26.8** Must be manufactured under an ISO 9001 registered quality system.

 **26.19** Software must be system validated by the manufacturer and a system validation certificate must be provided.

 **26.10** For the autosampler, manufacturer must have a ship-to-manufacturer repair service with optional use of loaned manufacturer’s equipment until a repair is affected.

 **26.11** Bid may include discount option for equipment trade-in.