U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

April 17, 2015

Exemption No. 11365
Regulatory Docket No. FAA–2015–0101

Mr. Daniel J. Murray
Founder
Unmanned Sensing Systems LLC
16000 Horizon Way, Suite 700
Mount Laurel, NJ 08054

Dear Mr. Murray:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

The Basis for Our Decision

By letter dated January 14, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Unmanned Sensing Systems LLC (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct precision aerial survey operations for the primary benefit of agricultural sensing and data gathering, aiding growers in planning and monitoring yields and providing a platform with which to develop techniques and applications to directly benefit the agricultural industry as a whole.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner is a US2 GreenHawk.

In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Unmanned Sensing Systems LLC is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Unmanned Sensing Systems LLC is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the US2 GreenHawk when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents,

the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS-80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g. inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N-Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS-80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N-Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on April, 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John S. Duncan
Director, Flight Standards Service

Petition for Section 333 Exemption

Unmanned Sensing Systems LLC

SUBMITTED VIA FACSIMILE TRANSMISSION, JANUARY 16 2015

January 14, 2015

US Department of Transportation
Docket Management System
1200 New Jersey Ave SE
Washington DC 20590

Re: Section 333 Exemption Request

Dear Sir or Madam:

Pursuant to the FAA Modernization and Reform Act of 2012 Section 333 and the requirements contained within 14 C.F.R. §11.81, Unmanned Sensing Systems LLC ("US2"), a developer and operator of small unmanned aircraft systems (sUAS), hereby requests exemption from the below listed Federal Aviation Regulations (FARs). These exemptions would allow US2 to commercially operate the US2 GreenHawk, a proprietary fixed-wing sUAS weighing less than 5lbs, within airspace regulated by the FAA, pursuant to and under the conditions defined herein and by the FAA.

As described below, the exemptions requested would permit US2 to operate the sUAS in a safe and coordinated manner, within a predetermined and pre-communicated airspace, subject to standardized procedure and planning. US2 desires to perform precision aerial survey operations for the primary benefit of agricultural sensing and data gathering, aiding growers in planning and monitoring yields and providing a platform with which to develop techniques and applications to directly benefit the agricultural industry as a whole.

We have closely reviewed the FAA's existing exemption grants under Section 333, and believe our request to be materially similar to Exemption 11136, 11062, 11067, 11109, 11111, and 11110, among others. We are fully prepared and willing to operate under and abide by the exemptions already granted and the conditions required in Exemption 11110. The below detailed requests are provided to further demonstrate our understanding of the rationale for the FAR exemption requests and associated decisions by the FAA, as well as provide a basis for establishing our need for the same.

We are willing and prepared to discuss, and if necessary modify, this request to fully satisfy the FAA's requirements for safe and controlled sUAS operation. We look forward to working with the FAA, and welcome you to contact us at any time.

Sincerely,

Daniel J. Murray
Founder, Unmanned Sensing Systems LLC

1. Application Information

Name and address of the applicant:

Unmanned Sensing Systems LLC
16000 Horizon Way, Suite 700
Mount Laurel, NJ 08054
Phone: 856.316.0070
Email: dmurray@unmannedsensing.com

2. Summary Exemption Requests:

US2 requests exemption from the following regulations:

14 C.F.R. §61.113(a) & (b)
14 C.F.R. §61.133(a)
14 C.F.R. §91.7(a)
14 C.F.R. §91.119(c)
14 C.F.R. §91.151(a)
14 C.F.R. §91.405(a)
14 C.F.R. §91.407(a)
14 C.F.R. §91.409(a)(1) & (2)
14 C.F.R. §91.417 (a) & (b)

Further discussion regarding these exemption requests can be found below.

3. Detailed Exemption Requests

14 C.F.R. §61.113(a) & (b) and §61.133(a) – Airman Certificate Requirements

Section 61.113(a) prescribes that "no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft."

Section 61.113(b) prescribes that "A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if: (1) The flight is only incidental to that business or employment; and (2) The aircraft does not carry passengers or property for compensation or hire."

Section 61.133(a) prescribes that "(1) General. A person who holds a commercial pilot certificate may act as pilot in command of an aircraft— (i) Carrying persons or property

for compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation; and (ii) For compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation."

Exemption from sections 61.113 (a) and (b), and section 61.133(a) is requested because our proposed operations include commercial operations. Considering the size, weight, and operating characteristics of the sUAS in question, and considering that the operation of the sUAS is to be confined to an area over private property with controlled access, US2 requests an exemption from section 61.113 (a) & (b) with the following conditions:

- The Pilot in Command (PIC) of the sUAS must hold at least a private pilot airman certificate and a third-class airman medical certificate and:
- sUAS operation will additionally require a Visual Observer (VO) and the VO must have acceptable vision such that they can maintain visual line of sight (VLOS) with the sUAS at all times

These conditions are not unlike those required of Astraeus Aerial under Grant of Exemption 11062.

Additionally, the US2 GreenHawk is equipped with an onboard autopilot for autonomous flight, capable of being (and required by the operating manual to be) monitored by a Ground Control Station (GCS) at all times. The onboard autopilot will also ensure flight operation is kept within the controlled airspace, including prohibiting operation above a defined maximum altitude, as discussed in more detail below.

14 C.F.R. §91.7(a) - Airworthiness

Section 61.113(a) prescribes that "No person may operate a civil aircraft unless it is in an airworthy condition."

Exemption from 61.113(a) is requested due to the lack of standards with which to certify the US2 GreenHawk sUAS. Despite the inability to retain an airworthiness certificate, operations will be conducted in accordance with the GreenHawk Operating Manual and US2 Safety Parameters.

The exemption request is not unlike exemptions granted in exemptions 11062, 11080, and 11109, among others.

14 C.F.R. §91.119(c) – Safe Altitudes

Section 91.119(c) prescribes, in part, that aircraft may not be operated: "closer than 500 feet to any person, vessel, vehicle, or structure."

Proposed operations of the sUAS are confined to the airspace below and inclusive of 400ft AGL. As such, the entirety of the sUAS operation would occur in violation of section 91.119(c). US2's Safety Parameters require that operations be performed 400ft AGL, as well as require setting the onboard autopilot maximum altitude (as determined by onboard GPS and barometric sensors) to 400ft AGL, preventing accidental encroachment into airspace utilized by full scale aircraft.

The exemption request is not unlike exemptions granted in exemptions 11062, 11136, and 11111, among others.

14 C.F.R. §91.151(a) – Minimum Fuel Requirements

Section 91.151(a) prescribes that "(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed— (1) During the day, to fly after that for at least 30 minutes; or (2) At night, to fly after that for at least 45 minutes."

Due to the size and expected flight time of the sUAS, flight times are often planned for durations of less than one hour. As such, it is often impractical for the sUAS to carry enough fuel (in this case, electric charge) to fly for an additional 30 minutes beyond the intended landing point. The US2 GreenHawk is powered by a battery, and the maximum flight time is typically 55 minutes under normal flight conditions. Additionally, the sUAS will only be flown during daylight conditions.

US2 proposes the following conditions, taking into account the size and flight time of the sUAS:

- sUAS flight may not begin unless there is enough power to fly to the point of intended landing and attempt a landing with at least 30% reserve power remaining
- If already in flight, the PIC should make the first landing attempt with no less than 30% reserve power remaining

These requirements were adapted from existing FAA exemption grants, and the request is not unlike exemptions granted in exemption 11136, among others.

14 C.F.R. §91.405(a), 407(a), 409(a)(1) & (2), 417(a) & (b)

Section 91.405(a) prescribes that: "(a) Shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter;"

Section 91.407(a) prescribes that: "(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless— (1) It has been approved for return to service by a person authorized under § 43.7 of this chapter; and (2) The maintenance record entry required by § 43.9 or § 43.11, as applicable, of this chapter has been made."

Section 91.409(a) prescribes that: "(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had— (1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter; or (2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter."

Section 91.417(a) and (b) prescribe, in summary, that each registered owner and operator of an aircraft shall keep records of maintenance, alterations, service life, and inspections.

Since, if an exemption is granted, the sUAS in question will not carry and airworthiness certificate, and will not have established standards with which to determine its airworthiness, we request exemption from the above listed regulations.

Instead, the sUAS will be operated and maintained by the PIC per the operating manual, which contains instructions and procedures for inspecting, maintaining, and repairing the sUAS. Further, all flight operations will be recorded by way of an entry in the Log Book.

The exemption request is not unlike exemptions granted in exemptions 11136 and 11062, among others.

4. Public Interest

The purpose of this exemption request is to allow for commercial operation of sUAS for in the collection of precision aerial survey data.

Currently, most agricultural survey data is gathered via one of the following means:

- **Commercially available satellite imagery**, which can be expensive and out of date. Most commercial satellite imagery is weeks if not months old, providing very little value in the time-sensitive decision making process for planning the correct fertilization applications, determining crop yields, and identifying areas of concern. Additionally, most satellite imagery captures visible light only, and is unable to collect the same multispectral imagery the sUAS can, which further aids in determining crop health.
- **Manned aerial survey,** which employs the use of full size aircraft, a costly and time consuming process that requires planning and scheduling. While full size aircraft can provide similar results, they less able to operate safely close to the ground, reducing captured imagery resolution and increasing risk for pilots. Further, our sUAS operates off of stored electric energy, reducing emissions.
- **Ground analysis,** whereby personnel visually inspect crops for health and yield. Arguably the most accurate method, ground analysis is limited to the amount of area a person can cover on foot or in a vehicle over a period of time. Augmented with sUAS survey results, ground personnel can be more efficiently deployed to areas of concern, as well as have access to instant results from viewpoints above a large swath of land.

We feel that an exemption to allow commercial sUAS operation for agricultural survey is in the public interest because it provides timely access to large amounts of survey data via environmentally friendly means, enabling growers to increase yields and more accurately apply fertilizers, in some many cases reducing application in areas determined to already be healthy.

With respect to safety, we believe that the operation of a small UAS, weighing less than 5lbs and operating at less than 400ft AGL over controlled and private areas, presents a reduced risk compared to operations involving full scale aircraft. Such full-scale aircraft may be required to operate close to the ground for similar precision survey results, increasing risk to the pilot, occupants, and those on the ground in case of a failure.

5. Summary of Request for Federal Register

In accordance with 14 C.F.R. §11.81(f), a summary of our exemption request is provided for publication in the Federal Register:

Unmanned Sensing Systems LLC is requesting exemption from the following regulations:

14 C.F.R. §61.113(a) & (b)
14 C.F.R. §61.133(a)
14 C.F.R. §91.7(a)
14 C.F.R. §91.119(c)
14 C.F.R. §91.151(a)
14 C.F.R. §91.405(a)
14 C.F.R. §91.407(a)
14 C.F.R. §91.409(a)(1) & (2)
14 C.F.R. §91.417 (a) & (b)

The exemptions are requested in order to commercially operate a small unmanned aircraft system (sUAS), weighing less than 5lbs, below an altitude of 400ft AGL over controlled areas.

If granted, the exemptions would permit Unmanned Sensing Systems to utilize the sUAS to collect precision aerial survey data, including multispectral imagery, of crops and agricultural interests for its customers. Such data will allow its customers to make timely, informed decisions to maximize crop yield, reduce and fine-tune fertilizer application, and more closely and efficiently monitor crop health.

Compared to current survey methods, the exemption would eliminate the need for growers to rely on outdated satellite imagery, or to employ the use of low altitude full-scale aircraft, increasing safety for both pilots and those on the ground.

If granted, Unmanned Sensing Systems intends to operate sUAS in accordance with all applicable FAA regulations, and conduct all operations with the utmost regard for safety. All operations would be restricted to confined, sterile environments over private property, away from congested areas.

5. Additional Operating Restrictions

In addition to the applicable FAA regulations, and pursuant to the exemptions above (if granted), the operation of the sUAS will be subject to the following operational restrictions:

1. The sUAS will be operated solely within the United States of America
2. The sUAS will be operated at altitudes no greater than 400ft AGL
3. The sUAS will be operated in Class G airspace only, over private property, with the prior consent of the landowner
4. The sUAS will not be operated within 5 NM of an airport
5. The sUAS will not be operated over populated or congested areas
6. The sUAS will be operated only when both a PIC and VO are present
7. The designated PIC will hold at least a private pilot airman certificate and third class medical certificate
8. The sUAS will only be operated in visual meteorological conditions, where both the PIC and VO can maintain VLOS with the sUAS unaided (except for corrective lenses or sun protection) and
9. the sUAS will not be operated beyond 0.5 NM of the PIC, regardless of ability to maintain VLOS
10. The operating documents, including log book, will be maintained and made available to the FAA Administrator upon request
11. The sUAS will be inspected and maintained according to the Operating Manual, and log entries will be made to record repairs, alterations, and maintenance performed, to be validated with a signature of the PIC returning the sUAS to service (if applicable)
12. The sUAS will, at all times, be programmed to automatically return to a pre-determined location (in accordance with the Operating Manual) upon loss of signal or immediately upon a breach of the designated flight area
13. Prior to operation, the operator will obtain a Certificate of Authorization, and:
14. the operator will make a request for a Notice to Airman not more than 72 hours in advance, but not less than 48 hours prior to operation.

6. Aircraft Description

US2 is requesting exemptions for its proprietary GreenHawk fixed wing aircraft type, beginning with serial number US2FGH03 and higher. We understand that any exemption grants will be for this type only, and exemption requests for another airframe type will require the submission of an additional exemption petition or an amendment to this one.

7. Additional FAA Conditions and Restrictions

While US2 has made every attempt to anticipate the concerns and conditions the FAA will contemplate while evaluating this request, we understand that the FAA may wish to impose additional restrictions or conditions in order to grant the request.

We ask that the FAA prescribe any additional requirements necessary to grant the requested exemptions.

7. Willing to Accept Existing Conditions

We have provided the information above to assist the FAA in confirming that the exemption relief request is warranted.

US2 is aware that the FAA has previously issued a number of Grants of Exemption, many of which grant relief similar in nature to the exemptions requested above.

In the interest of timeliness, US2 is prepared and willing to accept the terms and conditions of any exiting Grant of Exemption which the FAA feels is similar and applicable to the exemption requests we have made.

For example, our exemption request is materially similar to that requested by Trimble Navigation, Ltd. and subsequently granted by Grant of Exemption 11110. More recently, Advanced Aviation Solutions LLC was issued a similar request of exemption, granted under Grant of Exemption 11136.

We are fully confident we can perform our desired operations under a Grant of Exemption with conditions similar to any of the above listed Grants of Exemption, or any other materially similar Grant of Exemption already issued concerning commercial sUAS operation.

8. Appendices

Appendix A: US2 GreenHawk Operating Manual
Appendix B: US2 Operational Checklist
Appendix C: US2 Logbook Entry - Flight

Please note: Appendices A, B, and C are confidential, proprietary information, being provided for the FAA's consideration in granting the exemptions requested herein. These materials are exempt from disclosure under the Freedom of Information Act.