NORTH COAST RESOURCE PARTNERSHIP

EXHIBIT A
PROPOSAL COVER PAGE

Proposal Type

☑ Concept Proposal for Demonstration Projects and Processes

Organization Name (Lead Applicant)

Humbots Data & Analysis

Organization Type

☐ Federally recognized Indian Tribe

☐ California State Indian Tribe

☐ Public agency

☐ Local or state agency/special district

☐ Resource Conservation District

☐ Non-profit organization

☐ Public utility

☑ Other: Private business (L.L.C)

Contact Name/Title

Name: Joe Snipes

Title: C.F.O.

Email: Joe.snipes@humbotsda.com

Phone Number (include area code): 707.382.8702

Organization Address (City, County, State, Zip Code):

PO Box 92 Hydesville CA. 95547

Authorized Representative (if different from the contact name)

Name: _____

Title: _____

Email: _____

Phone Number (include area code): _____

Certification of Authority

By signing below, the person executing the certificate on behalf of the proposer affirmatively represents that s/he has the requisite legal authority to do so on behalf of the proposer. Both the person executing this proposal on behalf of the proposer and proposer understand that the NCRP is relying on this representation in receiving and considering this proposal. The person signing below hereby acknowledges that s/he has read the entire Request for Proposals document and has complied with all requirements listed therein.

Official Authorized to Sign for Proposal

_____
Signature

_____3/13/2020_____
Date
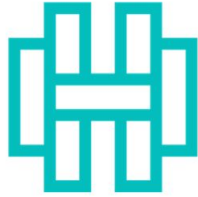
1. Key personnel and their qualifications
   a. **Joe Snipes**

   Joe Snipes is a devoted business owner to ForestScapes and Humbots Data & Analysis. He has a degree in Forestry and Natural Resources from College of the Redwoods. He has work experience on fuels reduction and fire suppression with the National Park Service and the U.S. Forest Service. His experience is in sales/customer relations and in safety training and implementation. He is a licensed FAA 107 certified pilot, and has training or experience in many fields of forestry management.

   b. **Danny Kelley**

   Danny Kelley is a passionate business coach and leader. Owns a public benefit corporation with a specific purpose of using its business to inspire individual, social, and environmental change that improves the human condition. His experience includes a 20-year career in software development using Agile methodologies. Danny holds a BA in Cross-Cultural Studies and an AA in Business. He holds several certifications in business and executive coaching and is affiliated with the International Coaching Federation (ICF).

   c. **James Lamping**

   James is a graduate student at Humboldt State University with a B.S. in Forestry and a minor in geospatial analysis. He is interested in the implementation of remote sensing applications in forestry. This past field season, James worked at Teakettle Experimental Forest, assisting in tree coring, regeneration surveys, canopy photos, stem mapping, and very high-resolution imagery collected using unmanned aerial systems (UAS) platforms.

   d. **Omar Padilla**

   Omar has been working with Humbots since March 2019, shortly after relocating from New York City. Largely self-taught, he is driven by a love of learning and exploring new technologies. Born in Puerto Rico and raised on Manhattan's Upper West Side, Omar began his career at Intellispace, an Internet service provider located near Times Square. From there, he moved to New York-Presbyterian Hospital in Upper Manhattan where he worked as Information Systems Manager. Three years later, he literally crossed the street to work for Columbia University Medical Center as Senior Systems Manager for Columbia Doctors. In his spare time, his constant inquiry and research on the tech front led him to develop an interest in UAV technology.
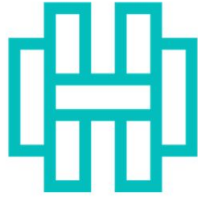
Omar has been working with drones for three years and is an FAA certified remote pilot. He is responsible for the electronic & hardware platform build and support for our new lidar development effort. Omar is currently an IT Security Analyst at County of Humboldt Information Technology.

e. **Aaron Zuspan**

Aaron Zuspan graduated *magna cum laude* from Humboldt State University with a degree in Forestry Restoration and Geospatial Analysis, and is currently pursuing a master's degree in Geographic Information Systems through the University of Central Arkansas. With a strong background in geospatial science, data analysis, and computer programming, he is passionate about using those skills to help manage and protect natural resources.

f. **Jeffrey Laikam, PE**

Jeffrey Laikam is a California registered civil engineer with a Bachelor of Science in Environmental Resource Engineering. His experience includes a 20 year career performing topographic surveying, land development, utility design, stormwater modeling, and infrastructure design. He has supported projects ranging from development of improvement plans for public jurisdictions, site restorations ranging from cannabis notice of violations to final site restoration for a decommissioned power plant, large subdivision design including low impact development stormwater design, CEQA initial studies, sewer and water system model and roadway and mass grading design.

g. **Cassie Snipes**

Cassie is Joe's spouse. She has a degree in Art and has 5+ years of experience in bookkeeping, A/P, and other various clerical work. She serves as HumBots bookkeeper and maintains contact with the it's CPA.
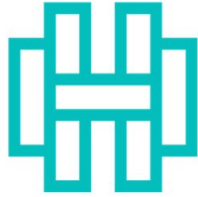
2. Proposed subcontractors
   a. N/A

3. Hourly rates - $80 per hour for all operations involving drone piloting and processing. For a visual observer and bookkeeper the rate is $40 per hour.

4. References

   a. Harold Zald - professor at HSU Forestry and GIS departments - 707.826.5484, hsz16@humboldt.edu

    b.   Jim Graham - professor at HSU Environmental Science and GIS departments - 707.826.3823, james.graham@humboldt.edu

    c.   Jim Baskin - retired Coastal Commission, owner of Lems Ridge LLC a private forestry business in Del Norte County - 707.601.8392, jim.baskin.54@gmail.com

    d.   Mickey Jarvi - professor of Forestry and Geomatics at Michigan Tech - 906.369.4221

    e.   Tim Baker - Professor of Forestry at College of the Redwoods - Tim-Baker@redwoods.edu

    f.   Greg Foster - Executive Director for Redwood Economic Development Commision - 707.445.9651, gregg@rredc.com

5.   lists /hyperlinks to examples of relevant work that support the proposal

    a.   Google - Drone amplified IGNIS for more information.

NCRP DEMONSTRATION PROJECT AND PROCESSES CONCEPT PROPOSAL BUDGET AND SCHEDULE

Project Name: IGNIS Fire Starting Drone

Major Tasks	Task Description	NCRP Task Budget	Funding Match *	Total Task Budget	Scaled NCRP Budget **	Start Date	End Date
Project Administration	In cooperation with the County of Humboldt sign a sub-grantee agreement for work to be completed on this project. Develop invoices with support documentation.	$0.00	$0.00	$0.00	$0.00		
Project Reporting	Data collection, performance measures, and project reporting of outcomes/lessons learned	$0.00	$0.00	$0.00	$0.00		
Non Labor - Cost of goods sold (perdium, gas, bar oil, mix, propane,)	[ADD ROWS AS NEEDED]	$0.00	$0.00	$0.00	$0.00		
Labor		$0.00	$0.00	$0.00	$0.00		
Fixed Expenses		$0.00	$0.00	$0.00	$0.00		
IGNIS Drone		$0.00	$0.00	$0.00	$48,000.00		
		$0.00	$0.00	$0.00	$0.00		
		$0.00	$0.00	$0.00	$0.00		
		$0.00	$0.00	$0.00	$0.00		
		$0.00	$0.00	$0.00	$0.00		
		$0.00	$0.00	$0.00	$0.00		
		$0.00	$0.00	$0.00	$0.00		
Project Closeout		$0.00	$0.00	$0.00	$0.00		
Total NCRP 2020 Demonstration Project Request		**$0.00**	**$0.00**	**$0.00**	**$70,000.00**		

Note per email 3/14: From: Joe Snipes <joe.snipes@humbotsda.com>
The total budget is $70K. The drone itself is $48K. There were no schedules added because we were unable to confirm with any agency that would allow us to use their land for the demonstration. I have had several emails to USFS, Redwood NPS, BLM and Cal Fire and have not had any solid dialogue. I was hoping that the NCRP would be able to assist or be lenient on this. I will continue to reach out to them as with or with our this demonstration proposal we would like to offer these services. We would expect to complete everything before the July 30th, 2021 deadline.

** Is Requested Budget scalable? If yes, indicate scaled totals; if no leave as $0.
Project scalability information for the reviewers (optional):

IGNIS Fire Starting Drone

1. Project Description

The rise of the use of prescribed fire in the North Coast and California has warranted new and innovative ways to reduce costs, lower liability, increase response time, and increase the burn window in order to facilitate more prescribed burning.

Our company, Humbots Data & Analysis would like to demonstrate the use of a *fire starting drone* that is capable of precisely dropping fire "ignition spheres' ' or ping ping balls that can start fires. We would like to use this to demonstrate in prescribed fire applications as well as wildland fire operations.

We would like to demonstrate this is a variety of fuel types - from douglas - fir invaded grasslands to densely packed forest lands.

We plan to fly automated flight paths, in which we can fly hundreds of acres per day.

To begin any project we will need a KMZ or KML file to determine our flight plan, ground control points, line of sight restrictions, and take off and landing zones. We then set up a date and time to go fly the site. Once we arrive on site, a team of three will begin setting up ground control points (GCPs). Once all the GCPs have been set up we go over our pre flight checklist. Once everything has been checked off, we fly. We have one person who is designated "pilot in command" (PIC) and is responsible for giving final authority as to the operation of the UAV. This person will hold a FAA 107 license to legally fly and abide by all FAA rules and regulations. A second person will be designated visual observer, whose main responsibilities are to always have eyes on the drone (FAA law).
The third person will….

The expected benefits from this operation will be:

1. Precise and customizable ignition patterns (+/- 1 inch)
2. Reduced liability to implementation staff
3. Reduced costs compared to traditional methods.
4. Increased scale of landscape prescribed burning
5. Short term monitoring of vegetated landscape to determine effectiveness of prescribed burning.
6. Real time adjustments to ensure project completion.

How this process supports and achieves the objectives of the NCRP RFFC objectives

This project will support the objectives of the NCRP RFFC by providing a dedicated business that has goals improving California's watersheds and increasing community resiliency to natural disasters.

2. Specific project goals/objectives

1. To demonstrate that this technology can work in the North Coast in a variety of ecosystems/fuel types.

3. Describe how the project or process addresses the NCRP Goals and the intent of the NCRP regional forest and fire capacity program block grant

1. Respect local autonomy and local knowledge in Plan and project development and implementation
   a. Humbots is working on forming relationships with the Natural Resource and GIS departments of Humboldt State University.We strive to acknowledge, test and implement the newest and best practices available. We remain close to staff and students to keep updated on current program needs and future endeavours. We are also part of the airport advisory committees uav ad hoc committee that is committed to expanding and implementing a uav workforce in Humboldt County. We strive to always respect, incorporate and include indengnous/local knowledge of our lands and are always willing to listen to others' input.
2. Integrate Traditional Ecological Knowledge in collaboration with Tribes to incorporate these practices into North Coast Projects and Plans
   a. Indegenous knowledge towards prescribed burns is second to none. Even though this technology goes against traditional methods, the hope is that indeginous communities will recognize the value in this technology and accept and advise on best practices to implement landscape size prescribed burning.
3. Ensure that economically disadvantaged communities are supported and that project implementation enhances the economic vitality of disadvantaged communities by improving built and natural infrastructure systems and promoting adequate housing
   a. We are structured as a public benefit LLC which means that we donate a percent of our profit to environmental and social justice.
4. Conserve and improve the economic benefits of North Coast Region working landscapes and natural areas
   a. The costs of large scale wild fire has long term economic consequences on a region.

5. Address climate change effects, impacts, vulnerabilities, including droughts, fires, floods, and sea level rise. Develop adaptation strategies for local and regional sectors to improve air and water quality and promote public health.
   a. This will address one of the region's top priorities of implementing more landscape prescribed fire.
6. Improve flood protection, forest and community resiliency to reduce the public safety impacts associated with floods and wildfires
   a. More prescribed fire equals less wildfire which equals reslient communites and ecosystems.

4. Describe how this project is scalable, replicable, measurable, innovative and results in outcomes that will increase the scope and scale of multibenefit forest management in the North Coast.

a. Scalability - With over 30 million acres of forest land in California, the amount of proposed fuels reduction projects and California's plan to implement more prescribed fire, this process can be scalable as long as people continue to manage their forests. We are located near Humboldt State University that has a top notch Forestry program that can aid to our growing workforce when we are ready to scale up. We have financial ties through family and friends as well as the local lending agency, Redwood Region Economic Development Commission that can help with loans and our cash flow needs.
b. Replicable - no limits on replicability
c. Measurable - The effects of this new technology can be measured with other drones equipped with high resolution RGB and multispectral cameras that can output NDVI indices and fuel loads.
d. Innovative - Compared to traditional methods, this is highly innovative.

5. Describe the need for the project and how the project addresses forest health and climate change/extreme event resiliency.

a. The need for fast, accurate and safer ways to enhance ignition operations in the prescribed burn world is much needed. The reduced personnel, safety and increased precision and timing of ignitions will significantly increase the possibility of increased landscape scale prescribed fire.

6. Describe the location and size of the project and the communities served by this project.

   a. TBD. We have been in contact with USFS and Redwood National Park.

7. List and describe the partnerships involved in the project and local and/or political support.

    a. College of the Redwoods - Professor Tim Baker, HSU, RREDC, SBDC (Small Business Development Center), Edge Caliber - *See Statement of Qualifications for contact information.*

8. List the estimated quantifiable, measurable, benefits expected to result from the proposed project

    a. Fuel load reduction (cubic feet)
    b. NDVI values

9. List and scientific studies, plans, designs or reports completed for the project of process.

    a. Attach website and University of Nebraska white paper

10. Describe the approach to data collection, performance measures, and project reporting of outcomes/lessons learned.

    a. Data will be collected by a UAV that will fly in automated flight paths around the proposed unit(s). We typically fly it in a gridded pattern to allow for a controllable amount of overlap.
    b. Performance measures - We always track each of the following performance measures
        i. Prepare flight plan
        ii. Prepare equipment
        iii. Schedule inspection/implementation
        iv. Conduct inspection had to fly it twice as the first time it did not do the correct flight path.
        v. Conduct post inspection
        vi. Data processing & delivery of service
   c. Project reporting of outcomes/lessons learned -
       i. We can cater to the needs of the NCRP. We can either meet in person, do a virtual meeting or have a standard report of our outcomes/lessons learned.