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SINGLE SOURCE AWARD **BID # SS-13105-22**

Subject: MAPPING OF DUVAL COUNTY FOR STORMWATER UTILITY

Department: PUBLIC WORKS

Description of Purchase:
Recommend approval of single source award to Ecopia Tech Corporation for stormwater parcel mapping and creation of geodatabase shape files. Period of service is one (1) year from date of award. Total estimated expenditure not to exceed $100,000.00.

Funding Source: 44101.156002.531090.000000.00000000.00000.0000000 – To be encumbered by purchase order

Single Source Award To: Ecopia Tech Corporation

Price Justification: See attachment

Total Award: $100,000.00 **Requisition #:** PWOD-500343-22

Attachments: Recommendation Memo, Single Source Request Form, and Vendor Letter

Certification as to Single Source: John Pappas, Director, Public Works

THE ABOVE PURCHASE IS RECOMMENDED FOR AWARD IN ACCORDANCE WITH CHAPTER 126.206.

Analyst: Jaclyn Stames

Dustin Freeman, Acting Chief
Procurement Division

APPROVAL OF GENERAL GOVERNMENT AWARDS COMMITTEE

"ALL AWARD ACTIONS SUBJECT TO LAWFULLY APPROPRIATED FUNDS"

CHAIRMAN ***DATE***

ACTION OF AWARDING AUTHORITY DATE: _____

APPROVED_____ DISAPPROVED _____

OTHER _____

SIGNATURE OF AUTHENTICATION _____

City of Jacksonville, Florida

Lenny Curry, Mayor

Department of Public Works
Office of the Director
214 N. Hogan Street, 10th Floor
Jacksonville, FL 32202
(904) 255-8786
www.coj.net

ONE CITY ONE JACKSONVILLE

September 2, 2022

MEMORANDUM

TO: Gregory W. Pease, Chief of Procurement

THRU: John Pappas, P.E., Director

FROM: Carmen R. Martin, Billing & Operations Manager

SUBJECT: APPROVAL OF SINGLE SOURCE AWARD FOR ECOPIA TECH CORPORATION FOR MAPPING OF DUVAL COUNTY IMPERVIOUS AND PERVIOUS AREA SURFACE DEFINED ON INDIVIDUALLY IDENTIFIED PARCELS

The Public Works Stormwater Service Utility recommends approval to award mapping of the Duval County area impervious and pervious surface defined on approximately 363,000 individually identified parcels. Ecopia Tech Corporation will use a list provided by Public Works using the most current imagery collected. The results are to be used for calculating the billing of the Stormwater Utility City User Fees for 2023 and possibly, beyond.

Ecopia Tech Corporation uses Artificial Intelligence to measure the impervious and pervious surfaces using the City's ariel imagery and, as a result, gives them a huge price/cost advantage. Consequently, the price per parcel quoted by this vendor is 84% lower than a price per parcel compared to a different vendor that was used by Public Works a year ago.

The recommendation is for Ecopia Tech Corporation to measure 363,272 identified parcels within Duval County at $0.28 per parcel for $100,000 using the funding source Stormwater Service 44101.156002.531090.000000.00000000.00000.0000000

Your assistance in concurring with this recommendation would be appreciated. If you have questions or need additional information regarding this request, please contact Carmen Martin at 255-8116.

Attachments: Vendor Proposed Agreement
Single Source Request Form

cc: Dina Riddle, Public Works Financial & Administrative Manager

Public Works Department
Stormwater Parcel Mapping
Scope of Work

In an effort to ensure that the City of Jacksonville stormwater fee billing is as accurate and efficiently calculated as possible, the Public Works Department desires to acquire services which will allow for a more automated approach to stormwater parcel mapping and creation of geodatabase shape files.

Public Works would like to update the City's existing aerial imagery within the COJ GIS using artificial intelligence to include layers that allow for measuring (in square feet) each individual type of impervious and pervious area for all parcels within the County, to include the following types:

- Buildings
- Roads
- Roads Unpaved
- Driveways
- Driveways Unpaved
- Parking
- Parking Unpaved
- Sidewalk
- Pavement
- In-ground Swimming Pool
- Sports Field (Recreation Area) – Paved
- Sports Field (Recreation Area) – Unpaved
- Bridges
- Patio (non-concrete)
- Patio Concrete
- Permeable pavement (compacted surface)
- Railway
- Open Water
- Tree Canopy
- Grass
- Bare Land

FINANCE & ADMINISTRATION DEPARTMENT, PROCUREMENT DIVISION

JUSTIFICATION FOR SINGLE SOURCE (JSS)	
Pursuant to the City of Jacksonville Procurement Code§ 126.206 & § 126.312, when requesting a purchase from a vendor subject to the referenced sections, please complete this form to justify your request and submit to Procurement with applicable attachments	
1. Requesting Agency:	Office of the Director
2. Nature and/or description of the requirement being requested. ***Identify each item, component or service being procured. (Attach quote/proposal):*** ***Why does the City need these particular goods or services?***	Measure impervious area for all parcels in Duval County for the purpose of the Stormwater Utility.
3. Provide a detailed justification as to why the requested goods/services can only be efficiently and effectively procured through the recommended Single Source vendor:	Ecopia leverages artificial intelligence ("AI") to mine geospatial big data, rapidly generating HD Vector Maps at-scale. Ecopia is able to identify different types of Impervious Area for each parcel in the entire county for only $0.28 per parcel (363,272 total parcels for $100,000 in the 1st year). For comparison, in 2020, Pictometry charged the City $2.95 per premise ($76,027.40 for 25,772 parcels) to measure IA and their results were not as detailed as Ecopia's product. Also, in 2021, Pushpin charged $1.80 per premise, also for less detailed information in comparison to Ecopia.
4. Date of Request	9/2/2022

5. Summary of Market Research

[Provide a description of the market research performed, how it was performed, by whom, and market research results. Please spell out acronyms.]

[See Box 3 above]

6. Other Documentation (Check and attach all that apply)

√ Supplier Quote

√ Single Source Memo signed by Director

☐ Other [Click here to list other documentation.]

CUSTOMER AGREEMENT
COVER SHEET

This Customer Agreement (the "Agreement") is between Ecopia Tech Corporation ("Ecopia"), and the "Customer" identified below. This Agreement governs Ecopia's provision of services or products to the Customer. This Agreement consists of this Cover Sheet, the Product Terms and Conditions (attached as Schedule A), and the license agreement noted below in Schedule A and attached as Schedule B.

Customer	
Primary Contacts	**Ecopia** **Address**: 101 College St. Suite 440, MaRS Centre, Heritage Building, Toronto, Ontario, Canada M5G 1L7 **Contact Name: Brandon Palin** **Phone: 647-405-4309** **Email: brandon@ecopiatech.com**
	Customer **Company Name: Duval County – Department of Public Works** **Address:** **Contact Name:** **Phone**: **Email:**
Effective Date	The Effective Date of this Agreement is the date of the last signature below.
Products	See Schedule A
Fees	See Schedule A
License Terms	See Schedule B
Payment Instructions	Beneficiary name: Ecopia Tech Corporation Beneficiary address*: 101 College Street, Suite 440, MaRS Centre, Heritage Building, Toronto, Ontario, Canada M5G 1L7 Beneficiary Account Number: 003024824003489 Beneficiary Bank: Royal Bank of Canada Beneficiary Bank Address: 32 Duke Street West, Kitchener, Ontario, Canada N2H 3W4 Beneficiary Bank SWIFT: ROYCCAT2 Intermediary Bank ABA: 021000021

This Order Form is subject to and governed by the terms and conditions of the End User License Agreement attached hereto as Schedule B and incorporated by reference in its entirety. Together, this order form, the specific terms in Schedule A and the End User License Agreement constitute the **"Agreement"**. Capitalized terms not otherwise defined in this order form have the meaning ascribed to them in the End User License Agreement. And by signing below, each party acknowledges that it has read and understood the terms of this Agreement as set out in the table above and agrees to be bound by this Agreement.

SIGNED FOR:	SIGNED FOR: Ecopia Tech Corporation
Signature:	Signature:
Print Name:	Print Name: Jon Lipinski

Title:	Title: President
Date:	Date:

SCHEDULE A
PRODUCT TERMS AND CONDITIONS

1. **DESCRIPTION OF PRODUCTS**. Ecopia will provide the product features listed in the table below across the designated area of interest ("AOI") derived from Duval provided imagery in Year 1 and 3, and Ecopia-sourced imagery in year 2 (the "**Products**").

Product Features	Impervious Surface + Natural Map – Defined in Schedule C
AOI	Duval County
Fees	Year 1: $100,000 ; Year 2: $66,000 ; Year 3: $50,000
Timeline	4 weeks (each deliverable) – from date of imagery receival

2. **DELIVERY OF PRODUCT**. The Products will be delivered in a shapefile vector map format, and made available to Customer.

3. **FEES.** Total fees due for the license to the Products and any related services set out in this Schedule A will be the amount(s) listed in the table in Section 1 ("Description of Products") above, payable in USD unless otherwise specified, exclusive of any applicable tax. The fees shall be invoiced upon delivery of the Products, and payment will be due 30 days after invoice date.

4. **TIMELINE.** The Product will be delivered within the period of time listed in the table in Section 1 ("Description of Products") above, subject to availability of the applicable imagery.

5. **GRANT OF LICENSE**. Subject to the license agreement in Schedule B, the type and Term of Customer's license will be:

   (a) *Type. End User License – gov shared + public viewing (attached as Schedule B)*
   (b) *Term. Perpetual Access, Annual Commitment*

6. **COUNTERPARTS**. This Agreement may be executed in one or more counterparts, each of which when executed will be deemed to be an original but all of which taken together will constitute one and the same Agreement.

7. **INTERPRETATION.** The Customer is the "End User" for the purposes of the End User License Agreement of Schedule B. The Cover Sheet, this Schedule A, and Schedule B are intended to be interpreted harmoniously. However, if there is any conflict between the terms of these Product Terms and Conditions and the terms of the End User License Agreement of Schedule B, these Product Terms and Conditions will control.

8. **SPECIAL TERMS.**

Online Viewer Publication. The Customer may display the Products in a public-facing, secure, Customer-controlled web-portal, in a non-downloadable format for viewing, and ensuring that the following attribution is clearly visible on the Customer-controlled web-portal: Vector Maps © 2022 Ecopia Tech Corporation.

SCHEDULE B
END USER LICENSE AGREEMENT

The applicable End User License Agreement is available at: https://www.ecopiatech.com/eula
Ecopia may update these End User License Terms from time to time

Ecopia

SCHEDULE C
PRODUCT TERMS AND CONDITIONS

1. **DESCRIPTION OF PRODUCTS**. Ecopia will provide the product features listed in the table below (Impervious Vector Data) across the designated area of interest ("AOI"), derived from customer provided aerial imagery, (the "**Products**").

Product Features	Delivery 1: Land Cover Vector Map 1. *Building* a. Greater than 100 sq. ft 2. *Road* a. Greater than 8' wide 3. *Road Unpaved* a. Greater than 8' wide 4. *Driveway* a. Greater than 8' wide 5. Driveway Unpaved a. Greater than 8' wide 6. *Parking* a. Greater than 1000 sq. ft 7. *Parking Unpaved* a. Greater than 1000 sq. ft 8. *Sidewalk* a. Greater than 4' wide and 10' long 9. *Pavement* a. Greater than 100 sq. ft 10. *In-Ground Swimming Pool* a. Greater than 100sq. ft 11. *Sports Field (Recreation Area) - Paved* a. Ecopia's Discretion 12. *Sports Field (Recreation Area) – Unpaved* a. Ecopia's Discretion 13. *Bridges* a. Greater than 8' wide and 20' long 14. *Patio (non-concrete) – labeled as deck-height* a. Greater than 100 sq. ft 15. *Patio Concrete* a. Greater than 100 sq. ft 16. *Permeable Pavement (compacted surface)* a. Greater than 1000 sq. ft 17. *Railway* a. Ecopia's Discretion 18. *Open Water* a. Greater than 500 sq. ft 19. *Tree Canopy* a. Greater than 200 sq. ft 20. *Grass* a. Greater than 200 sq. ft 21. *Bare land* a. Greater than 500 sq. ft

SCHEDULE B
Product Specifications

Accuracy

Ecopia Land Cover Map is a polygonal representation of the geometric footprints of each of the defined feature types in a specific area of interest, as visible from geospatial imagery. The extraction will reflect the spatial detail of The Products that are discernable from the source geospatial imagery. The interpretation of these features in geospatial imagery can be a subjective process. Ecopia's Land Cover Map shall adhere to the thresholds stated below.

Leveraging an advanced AI digitization process, Ecopia is able to guarantee GIS professional accuracy at speeds and scales that enable rapid access to data. In addition, this methodology allows for seamless updating and minimizes the probability of interpretation error on new extractions. This methodology is not repeatable by any other firm, nor is it possible to be replicated. Additional details on this are included in the sole source disclaimer information and can be supported through reference public sector agencies.

Measure Name Threshold Across
Impervious Polygons
False Negatives <=5% All Polygons
False Positives <=5% All Polygons
Valid Interpretation >=95% All Polygons
Minimum Area 100% All Polygons
Valid Geometry 100% All Polygons

Measure Name Threshold Across
Natural Polygons
False Negatives <=5% All Polygons
False Positives <=5% All Polygons
Valid Interpretation >=90% All Polygons
Minimum Area 100% All Polygons
Valid Geometry 100% All Polygons

1.1 Quality Assurance Threshold Testing

Ecopia has defined a number of quality assurance thresholds which represent the quality of Ecopia Land Cover Map. Some of these quality assurance thresholds are not feasible to verify against the entire dataset, for these areas a statistical sampling is applied.

2. Quality Assurance

2.1 False Negatives Definition

The count of features that were missed, represented as a percentage of the total features that were supposed to be captured, within that feature class.

Assessment method: For the sample AOI, a manual analyst identifies any features from the source imagery with a geometric area greater that the standards set in section 1 that were not captured in the Ecopia Land Cover Map vector layer. The number of features missed is to be represented as a percentage of the total features that were supposed to be captured.

2.2 False Positives Definition

A count of the excess features that were wrongfully captured, represented as a percentage of the total features that were supposed to be captured, within that feature class.

Assessment method: For the sample AOI, a manual analyst identifies any features from the source imagery that should not have been captured as part of the Ecopia Land Cover Map vector layer. The count of excess features will be represented as a percentage of the total features that were supposed to be captured.

2.3 Valid Interpretation Definition

The number of polygons in the Ecopia Land Cover Map feature vector considered to be a reasonable representation of the underlying feature as visible from the source imagery, represented as a percentage of the total features captured in the Ecopia Land Cover Map vectors. The correct capture of a feature Footprint is defined as a vector covering 90% to 110% of the feature as visible in the source imagery.

Assessment method: For the sample AOI, a manual analyst will assess each polygon and determine whether it is a reasonable representation of the underlying feature as visible from the source imagery. The total count of those vector geometries deemed representative within the AOI are to be represented as a percentage of the total vector features delivered in the Ecopia Land Cover Map vectors.

2.4 Minimum Area Definition

A count of defined features with a geometric area measuring greater, or equal too, minimum threshold defined in section 1, represented as a percentage of the total vectorized features delivered in the Ecopia Land Cover Map vectors.

Assessment method: An automated script will be run to count the vectors with a geometric area measuring greater, or equal too, minimum threshold defined in section 1. To calculate this measure, extracted polygons will be mapped with an equal area projection. The number of valid features is to be represented as a percentage of the total features delivered in the Ecopia Land Cover Map vectors.

2.5 Valid Geometry Definition

A count of the buildings with geometry that is valid represented as a percentage of the total features delivered in the Ecopia Land Cover Map vectors. A polygon is considered to have valid geometry if it does not:

- Overlap with other feature polygons;
- Contain any spikes;
- Contain lines that are intersected with each other;

- Contain multiple polygons.

Assessment method: An automated script will be run to count valid polygon geometries. A manual analyst will then go through each of the polygon geometries that have been detected as invalid by the automated script and confirm the correctness of the detection. The number of valid polygons is to be represented as a percentage of the total polygons delivered in the respective feature class.

2.6 Guidelines for Ecopia Land Cover Map feature capture

The following rules should be used for capturing features in general:

- Building Footprint corners that fall between 80° - 100° should be made 90°. This will be conducted on a best effort basis.
- When buildings or features are partially covered by shadows or vegetation, the correct location of the feature Footprint will be inferred using prior knowledge (i.e. the knowledge that buildings normally have parallel lines, symmetrical designs, etc.).
- Buildings, roads, and bridges under construction should be captured.

3. Customer Testing

3.1 Testing Methodology

Within each Ecopia Product, depending on AOI size, sample areas will be chosen at random for review (each a "Sample Site"). Within each Sample Site, five percent (5%) of the geographic area will be chosen at random (each a "Sample Cell"). Within each Sample Cell, Customer will assign a manual operator to review each feature (each vector representing a feature) to confirm accuracy in accordance with the Accuracy requirements.

3.2 Non-compliance

If any Sample Cell of the Ecopia Product does not comply in all material respects with the applicable Accuracy requirements, Customer will test one or more additional Sample Sites and Sample Cells. If after testing Sample Site and Sample Cells that comprise 5% of the Ecopia Product (5% of both features and geography), Customer determines that the samples do not comply in all material respects with the applicable Accuracy requirements, Customer may deem the Ecopia Product to be non-compliant with the Accuracy requirements and may require that Ecopia address any non-conformities within the Ecopia Product in satisfaction of Ecopia's warranty obligations by notifying Ecopia in writing describing with specificity such non-conformities (including the coordinates of such non-conformities).

<u>Feature Definitions</u>

Building
Definition: Any structure over 100 sq. ft

Road
Definition: Edge of roadway, including curbs

Road Unpaved
Definition: Edge of roadway, including curbs

Driveway
Definition: Paved Surface from edge of curb to structure.

Unpaved Driveway
Definition: Compacted Surface from edge of curb to structure.

Parking
Definition: Paved surface with visible parking Lanes

Parking Unpaved
Definition: Unpaved surface with visible parking lanes and/or cars uniformly parked
- Will only capture area where surface is compacted

Sidewalk
Definition: Private sidewalks include sidewalks outside the right of way of public property. An example is a sidewalk that leads from the edge of a driveway up to the front door of a house. Public sidewalks are defined as those that typically reside within the public right of way, parallel to a street

Pavement
Definition: Any paved surface that does not fall into the specific impervious feature classifications

In-Ground Swimming Pool
Definition: Sub-surface open water on residential or commercial property that is clearly not a natural body of water

Sports Field (Recreation Area) - Paved
Definition: Any paved recreational area, examples – tennis court or running track

Sports Field (Recreation Area) – Unpaved
Definition: Any unpaved recreational area, examples – baseball grounds or soccer field

Bridges
Definition: Driving surfaces that elevated from terrain level. This does not include walking paths.

Patio / Deck
Definition: Surface that is attached to a structure that is not concrete – as visible from imagery

Patio Concrete
Definition: Concrete slab that is attached to a structure

Permeable Pavement - Compacted Earth
Definition: Areas where vehicle traffic is prevalent, and earth/soil appear to be highly compacted.

Railway
Definition: A network of tracks along which trains run

Open Water
Definition: Areas where water is present, including streams, rivers, lakes, settling ponds, etc.

Tree Canopy
Definition: Crown of forest or large vegetation exceeding 15ft in height will be captured as a unique polygon layer. *It can either overlap impervious layers or be classified within the Land Cover file – customer discretion before start of project.*

Grass
Definition: Delineated surface that is primarily distinguished from bare land based on color, texture and location. (green/yellow, proximity to urban areas, natural texture)

Bare Land
Definition: Delineated surface that is primarily distinguished based on visual color. Brown/Light Yellow.