Addendum #2 **January 19, 2024**

MECKLENBURG COUNTY RAPID FLOOD FORECASTING

FINAL SUBMITTAL DATE: JANUARY 29, 2024 @ 2:00 PM

Notice to Submitters: This addendum modifies the original Request For Proposals dated December 22, 2023, as noted below.

Below is a list of submitted questions and answers:

1. **Are the Business Diversity and Inclusion (BDI) goals of 11% MBE and 4% WBE mandatory goals or good faith goals?**

   Achievement goals are being used for this project. While the stated goals (11% MBE **&** 4% WBE) are not mandatory, Mecklenburg County encourages prospective primes to be intentional with identifying subcontracting opportunities, and the MWBE Inclusion Plan (Form D) is a good way to explore strategies for meaningful MWBE engagement and utilization. The prime firm that wins this contract will be held to whatever percentage of engagement is indicated on the Identification of Subcontractor Participation form (Form B).

2. **Is the Vendor Cloud Assessment form required to be filled out and submitted with the proposal?**

   The Vendor Cloud Assessment is not required to be included with the proposal; however, the requirements indicated within the Vendor Cloud Assessment must be met to complete a contract for this work.

3. **Is the $250,000 the budget for this year or the budget for every subsequent year?** ***(Page 4, Section III)***

   This is not an annual budget. CMSWS is looking for solutions that can be setup and fully functional at $250,000 cost point. Any firm that proposes value-added features, which go beyond the minimum requirements, should present the associated costs. All proposed solutions that require an annual maintenance fee must outline the annual costs in the proposal.

4. **What are the storage management requirements for this project specifically and what are you looking for specifically from DoD 5220.22-M?** ***(Page 11, Section VIII.D)***

   Please note that the software requirements are not to be part of the proposal but will be requested of firms short-listed for an interview. Proposing firms should understand their storage management capabilities and destruction of data procedures to share with the County as requested.

5. **Would you agree to an MNDA? We would need this to share more technical details of our flood solution.** ***(Page 3, Section II)***

All proposals submitted are public information and cannot be protected. Any request for non-disclosure agreements would be considered and reviewed by County attorneys as part of contract negotiations.

6. **Please define 'all internet browsers.' *(Page 11, Section VIII.D)***

   Please note that the software requirements are not to be part of the proposal but will be requested of firms short-listed for an interview. 'All internet browsers' should be understood to mean a web browser application intended for accessing websites. Any solution that is accessible via the internet should be supported through Google Chrome, Microsoft Edge, Mozilla Firefox, and Apple Safari.

7. **Is the gauge information you own accessible via API? *(Page 2, Section I)***

   Yes, CMSWS gage information is accessible via API. Here is a site metadata API: http://cs-059-exchange.onerain.com:8080/OneRain/DataAPI?method=GetSiteMetaData&system_key=c57f3913-ac01-4aa7-b633-e8311f45f74a&format=xml. Here is an API with the most recent sensor data: http://cs-059-exchange.onerain.com:8080/OneRain/DataAPI?method=GetSensorData&system_key=c57f3913-ac01-4aa7-b633-e8311f45f74a&format=xml.

8. **Are you able to disseminate the alerts we provide to your residents, or do you expect the company you agree to move forward with to handle that? *(Page 6, Section V.A)***

   We do not expect the selected vendor to disseminate alerts to residents as part of the solution. CMSWS can disseminate alerts, but currently alerts are only provided by Emergency Management. Related question 27 can be found below.

9. **How long does Mecklenburg County expect archive data/e-discovery to last? (Our policy is 30 days.) *(Page 11, Section VIII.D)***

   Please note that the software requirements are not to be part of the proposal but will be requested of firms short-listed for an interview. If uncertain whether data can be ingested by Contrail (see question 11 response), then data archival information will be requested.

10. **Please explain how private sector businesses and residents will utilize this data. Are they expected to be just users of the FINS Live Website? *(Page 2, Section I)***

    It is expected that any public presentation of the forecasts would be made available through the FINS Live website.

11. **If there are requirements to see the flood inundation forecast or probability of flooding map layers in your FINS Live and/or Contrail Software, what formats of data can those tools use (WMS/WFS/ESRI REST/Vector Tiles/Raster Tiles)? And would county personnel be tasked with adding those layers to your sites? *(Page 1, Section I)***

    County personnel are responsible for integrating Contrail data sources into FINS Live for public use purposes. Contrail is capable of inputting GIS data layers via the following sources: ArcGIS REST (image), ArcGIS REST (Tile), GeoJSON, KML, Tile Server, Web Map Service (WMS), Web Map Tile Service (WMTS). Related question 32 can be found below.

12. **Can the county area be divided into multiple sub-catchments which are hydrologically independent? If yes and it is known how many exist, can we create separate flooding models for each sub-catchment?**

    Yes, the County area can be divided into multiple, hydrologically independent sub-catchments as needed. If it helps, a layer showing Mecklenburg County Storm Water Watersheds can be

obtained at the following link: https://mecklenburgcounty.hosted-by-files.com/OpenMapping/Floodplain%20Models/GIS/Meck_Subbasins_20160822.zip.

13. **Can the full deployment of a solution be in stages from a timeline perspective?**

    Yes, please review the project requirements within Page 5, Section IV for expected timelines..

14. **Can the full deployment of a solution be in stages from an area perspective as well?**

    Yes.

15. **The RFP briefly mentions about the accuracy of model results. Can you please elaborate how accuracy will be measured and what is the expected model accuracy?**

    Accuracy will be determined by comparing forecasted flood stages (feet) with actual recorded stages during an event. We understand that forecast accuracy will primarily depend on any error in the inputs used for flood forecasting. Because of this, firms should be able to provide confidence intervals with their forecasted stages. Related question 54 can be found below.

16. **The project budget for the initial setup and deployment is $250,000 – is this the expected annual budget for the project? Our models may require tuning as more data is collected by the sensors and there is a potential annual software license fee, hence we would like to understand the "maintenance" budget moving forward.**

    Please see the response to Question 3. A budget for an annual maintenance/license fee has not been established at this time. If the proposed solution requires this, the annual costs must be shown in the proposal and will be a consideration in the selection.

17. **If we are selected, is the contract a single year or a multi-year contract?**

    The contract will span the time needed to develop and fully implement the solution. Any annual maintenance/licensing would likely be a separate agreement.

18. **Does the county expect the selected vendor and proposal to include additional hardware/sensors?**

    No, and if additional hardware or sensors are expected to be needed to provide a final solution, please indicate as such within the proposal.

19. **Is FINS Live developed using Esri technology? *(Page 2, Section I)***

    Yes, FINS Live was created by Mecklenburg County GIS, and you can find the source code here: https://github.com/lkrishnan/FinsLiveV3. Pull requests are welcome! FINS Live was built with ArcGIS API for JavaScript, Vue.js, and Vuetify.

20. **Who currently maintains the FINS Live platform, Mecklenburg County staff or outside consultant? *(Page 2, Section I)***

    Mecklenburg County staff maintain the FINS Live platform. Please see response to comment 19.

21. **It doesn't appear that any current inundation maps (e.g., RARR Now, RARR Storm) are publicly facing on the FINS Live or Contrail websites. *(Page 2, Section I)***

    a. **Do you plan to incorporate RARR Now and RARR Storm on the FINS Live or Contrail websites or are they hosted elsewhere? *(Page 2, Section I)***

       Elements of RARR Now and RARR Storm can be viewed in the layers on FINS Live. We are considering making changes to the FINS Live UI to display more RARR mapping outputs. Currently, the full RARR outputs are displayed on an internal dashboard application to evaluate storm impacts and evaluate mitigation efforts.

b. **Will the RARR ForeCast be hosted on the same platforms as RARR Now and RARR Storm?** ***(Page 2, Section I)***

We would plan to host a RARR Forecast layer on the same platforms as RARR Now and RARR Storm.

c. **Will the RARR ForeCast be public facing?** ***(Page 2, Section I)***

Forecast stages should be provided to CMSWS, and they may be made public facing either directly (stage records) or via an inundation mapping layer.

22. **Does the $250,000 budget cover implementation costs or implementation costs and annual fees for one year?** ***(Page 4, Section III)***

a. **Is there budget available for subsequent years after the solution has been implemented? If so, what is that annual recurring budget?** ***(Page 4, Section III)***

Please see responses to comments 3 and 16.

23. **Will all municipalities (e.g., City of Charlotte) within Mecklenburg County have access to the RARR Forecast and be able to conduct analytics, run queries, etc. in addition to Mecklenburg County staff?** ***(Page 2, Section I)***

Yes, as requested.

24. **What is the temporal reporting frequency of the 63 Intellisense stage sensors (e.g., 15 mins, hourly, etc.)?** ***(Page 2, Section I)***

The Intellisense stage sensors report every 10 minutes.

25. **Is Mecklenburg County open to hosting data on additional platforms, other than Contrail and/or FINS Live?** ***(Page 2, Section I)***

FINS Live is not a data hosting site, that is the job of the Contrail software. If data hosting on an additional platform is needed or beneficial to the flood forecasting solution, please indicate this within the submitted proposal.

26. **The RFP identifies that the solution must interface with the Contrail system. Does this require the selected vendor to partner with AEM/OneRain?** ***(Page 11, Section VIII.D)***

The selected vendor is not required to partner with AEM/OneRain for this project. Contrail has the ability for output and input API to share or ingest data. Data would need to be transmitted using a data agent available in Contrail.

27. **The proposal requests each vendor to "outline the expected approach to disseminating flood warnings to residents." Typically, emergency managers and other local decision-makers are responsible for deciding whether a flood warning is issued.** ***(Page 6, Section V.A)***

a. **Will the dissemination of flood warnings to the public be the responsibility of the vendor?** ***(Page 6, Section V.A)***

Please see the response to question 8.

b. **Does the software intended for integration (e.g., FINS Live, Contrail) have the capability to issue warnings or will development of this feature be required by the vendor?** ***(Page 6, Section V.A*****)**

Contrail has the capability to issue notifications, but all flood warnings are currently issued by Emergency Management to the public.

c. **Is there a preferred medium of communication (e.g. Website, SMS, Email)? *(Page 6, Section V.A)***

No.

28. **Is Business Registration with the State required and included as part of evaluation criteria or can this step be completed after vendor selection? *(Page 9, Section VII)***

Part of the pre-audit to determine if a vendor is responsive is that they must be registered with the NC Secretary of State. If they happen to be registered in another state, they cannot have any offices or staff in NC **and** they cannot require any employees to come to NC to deliver and/or implement any purchased products or services.

29. **Is SOC2 compliance required prior vendor selection or can the selected vendor work towards SOC2 compliance by the product deliverable (estimated end of 2024)? *(Page 11, Section VIII.D)***

a. **Are subcontractors also required to be SOC2 compliant? *(Page 11, Section VIII.D)***

Working towards compliance during the proposal process is acceptable. During the selection process and internal security compliance review, the SOC2 report (or equivalent) will be required. Subcontractors should also supply a SOC2 report (or equivalent). Related question 55 can be found below.

30. **The proposal states that the "software application must integrate with Azure Active Directory to enable Single Sign on." However, the proposal also states that the software platforms that the RARR Forecast must integrate with are pre-existing: FINS Live and Contrail. Is the vendor required to update the existing software applications (e.g., FINS Live and Contrail) to meet this requirement? *(Page 11, Section VIII.D)***

New potential vendors would be responsible for their solution and not any existing solutions. Existing Mecklenburg County software applications would not need to be updated.

31. **What delivery formats are acceptable for RARR Forecast to integrate with Contrail and FINS Live? Examples include WMS, WFS, etc. *(Page 11, Section VIII.D)***

Please see the response to question 11.

32. **The proposal states that "the solution must be able to add new users as needed" and that "the solution must be able to add more functionality as needed." However, the proposal also states that the software platforms that the RARR Forecast must integrate with are pre-existing: FINS Live and Contrail. It is assumed that adding new users and additional functionality would be inherent to the platforms that are hosting the data. Is it the selected vendor responsibility to update the FINS Live and Contrail platforms to ensure these capabilities exist? *(Page 11, Section VIII.D)***

Vendors should be committed to continue updating their solution in the future. A vendor with no future development plans or willingness to add to their solution may be problematic for the County. Additionally, if the solution utilizes software that restricts the number of user logins, then the solution should be flexible to add users as needed or add functionality as required.

33. **The proposal expects that forecasts would produce forecasted flow stages and utilize established mapping routines; are these routines part of the existing FINS System?**

Established mapping routines are used to develop the RARR Now and RARR Storm inundation mapping. In a sense, gage readings are interpolated across the County to produce inundation

mapping. By obtaining forecasted stages at existing gage locations, the same routines would be able to be used to produce equivalent maps. Related question 37 can be found below.

34. **Which Rapid Refresh precipitation forecast is currently being used?** ***(Page 4, Section III)***

    No precipitation forecasts are currently being used by any County applications.

35. **Would those staff who are reviewing models, code, and or flood forecasts be able to sign non-disclosure agreements to protect the VENDOR's intellectual property?** ***(Page 5, Section IV)***

    Any request for non-disclosure agreements would be considered and reviewed by County attorneys as part of contract negotiations.

36. **The requirements state that Mecklenburg County data shall be encrypted in transmission and at rest – is there a sense of what sensitive information would need to be provided by Mecklenburg?** ***(Page 11, Section VIII.D)***

    The County expects our data on external applications to be encrypted in transmission and at rest.

37. **The requirements state that the Vendor should describe how on-demand forecasts would be generated. How are on-demand now-casts currently generated?** ***(Page 5, Section IV)***

    Please see the response to question 33 describing the mapping process. On-demand RARR Now inundation can be generated by manually running the existing mapping process using current gage readings. Presumably, once a forecast is generated, an updated forecast could be produced on-demand at any point until the next scheduled forecast is generated.

38. **The requirements state several Storage Management criteria. What types of data are expected to be stored by the vendor?** ***(Page 11, Section VIII.D)***

    Please note that the software requirements are not to be part of the proposal but will be requested of firms short-listed for an interview. Data types may differ depending on the proposed solution.

39. **Availability is often described in terms of % uptime e.g. 99.95% uptime.**
    Is the expectation of 24 hours a day, 7 days per week, 365 days per year assuming 100% uptime? ***(Page 11, Section VIII.D)***

    Generally, the solution would be expected to have 100% uptime outside of scheduled maintenance. It is expected that there could be a lag when pushing updates to the production environment.

40. **The requirements request access to a self service log reporting system. Could you provide an example of what log reporting systems are currently being used?** ***(Page 11, Section VIII.D)***

    Please note that the software requirements are not to be part of the proposal but will be requested of firms short-listed for an interview. Log reporting systems will depend on what the vendor chooses to provide and their business requirements.

41. **Can you give an example of what types of Protected Health Information must be shared?** ***(Page 12, Section VIII.D)***

    The final bullet on page 12 of the original Request For Proposals is not part of the project requirements and can be ignored. For reference, this bullet mentions disclosure of Protected Health Information, the Health Insurance Portability and Accountability Act, and a Business Associate Agreement.

42. Can you provide a pervious vendor that has been used to provide data integrity audits? *(Page 13, Section VIII.D)*

No, the County would not like to show or provide preference for any vendor.

43. If the solution is hosted on the cloud, is the vendor expected to provide onsite inspection of AWS or Azure Datacenters, or simply the primary place of business for the vendor? *(Page 13, Section VIII.D)*

Both would be applicable.

44. Does the County prefer a hydrologic modeling only solution for the forecast component or does the County want a hydrology and hydraulic modeling solution? *(Page 4)*

The County envisions a solution that predicts countywide flood stages. We do not have a preference for the methodology used to obtain the forecasted flood stages.

45. Does the County have any intentions of using previously developed Aviso Watch data as part of a solution? *(Page 5)*

The majority of Aviso Watch/Watchdog rules/alarms have been transferred over to Contrail. FINS alarms are still based on creek stage thresholds and rainfall intensity (accumulated rainfall and time).

46. Does the County anticipate the selected vendor will perform hydrologic, hydraulic modeling and/or engineering computations for the rainfall-runoff response and will oversight of a NC Professional Engineer be required? *(Page 7)*

There are multiple approaches to developing forecasted flood stages. Any work within the proposed solution that would be considered as practicing engineering by the NC Board of Examiners for Engineers and Surveyors should have oversight of an NC PE.

47. Is there an interest in mapping flooding forecasts beyond the gage network (much like is currently done with the annual chance grid)? If so, all reaches with effective mapping? Any requirement or benefit to expanding to additional reaches? *(Page 5, Section IV)*

The County plans to use established mapping procedures as mentioned in the response to question 33 to map forecasted flood stages. There is no requirement to expand to additional reaches.

48. Should the added forecasting functionality be integrated into FINS or is there an expectation of a stand-alone yet compatible solution/platform? Will the County bear/maintain the long-term associated IT costs with hosting an external server and computations? *(Page 5, Section IV and Page 11, Section VIII.D)*

It is expected that the forecasting process be run external to the County network. Any process that can be simply run on internal County IT infrastructure would be considered but require additional documentation to ensure compatibility. Forecast results do not need to be integrated into FINS, but this would be preferred to consolidate flood information for the public. The County would take on any long-term hosting or cloud computing costs as needed for this process.

49. What level of support, collaboration, or access is possible for modifications to be made to the code for FINS? *(Page 5, Section IV)*

FINS is an existing web application and can be modified as needed to support the final project solution. Please see the response to question 19 for more information.

50. Is the County's existing capabilities accessible through an API or would the County be open to developing that API (for mapping component specifically)? *(Page 5, Section IV)*

Yes, the API for site metadata is available here: http://cs-059-exchange.onerain.com:8080/OneRain/DataAPI?method=GetSiteMetaData&system_key=c57f3913-ac01-4aa7-b633-e8311f45f74a&format=xml. Also, the API for the most recent sensor data reported is here: http://cs-059-exchange.onerain.com:8080/OneRain/DataAPI?method=GetSensorData&system_key=c57f3913-ac01-4aa7-b633-e8311f45f74a&format=xml.

51. If a component of the solution needed to be developed on the county's systems, what more can they share about their technology stack? On-premise? Cloud? Languages and technologies? *(Page 5, Section IV)*

The County uses primarily windows-based servers. Any further details would need to be discussed after short-listing firms for interviews.

52. Could a copy of the Contrail HEC-HMS be provided, or a report/documentation, or at a minimum, a table of output nodes and a figure/schematic of the basins and nodes and description of its use? *(Page 5, Section IV)*

A comma should have been included after Contrail. This was an editorial oversight. There are no HEC-HMS or HEC-RAS models associated with Contrail. HEC-RAS and HEC-HMS models can be obtained at the following link: https://mecklenburgcounty.hosted-by-files.com/OpenMapping/Floodplain%20Models/.

53. Are there any records or measurements of soil moisture collected by the County? *(Page 5, Section IV)*

The County does not collect or maintain our own records of soil moisture.

54. What criteria must be met (or how will success be measured) post-event between forecasted and observed stage hydrographs? What is the desired accuracy or suitability of a confidence interval range? *(Page 4, Section III)*

Please see the response to question 15. The County understands that expected accuracy will be determined by data inputs. A successful forecast would fall within an associated confidence interval that allows the user to understand the forecast reliability.

55. Would a SOC2 compliant AWS environment satisfy the requirement or is something additional required? *(Page 11, Section VIII.D) RFP: Providing SOC2 or equivalent third-party assessment.*

Please see response to question 29. The SOC2 report (or equivalent) will be required from AWS and the vendor.

END OF DOCUMENT

Proposals will be received until **2:00PM**, **on January 29, 2024, via e-mail only** for the development of a Rapid Flood Forecast system. Submittals should be e-mailed to Mathew Hornack, PE, CFM (contact information below). Firms will receive an e-mail confirmation upon receipt and successful opening of their submittal indicating that submittal was received before the deadline.

Contact information:
2145 Suttle Avenue
Charlotte, NC 28208
Telephone: 980-314-3236
Mathew.Hornack@mecklenburgcountync.gov

Mecklenburg County reserves the right to reject any or all proposals and to waive informalities or technicalities, as it may deem to be in its best interest.

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