EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 3-04

☐ Other ☐ Amendment Number:

Contract Number: EP-D-14-031

Contract Period: 10/01/2014 To 09/30/2018

Base Option Period Number: 3

Title of Work Assignment/SF Site Name: AEROALLERGENS AND WILDFIRES

Contractor: INDUSTRIAL ECONOMICS, INCORPORATED

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 10/01/2017 To 09/30/2018

Comments:

THE PURPOSE OF THIS ACTION IS TO INITIATE WA 3-04 "IMPROVE ABILITY OF BENMAP-CE TOOL TO QUANTIFY THE IMPACTS TO HUMAN HEALTH OF AEROALLERGENS AND WILDFIRES" FOR AN INITIAL LOE OF 200 HOURS FOR START UP WORK. ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED. THIS WORK DOES NOT DUPLICATE ANY WORK PREVIOUSLY PERFORMED

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 10/01/2014 To 09/30/2018 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee — LOE:

Cumulative Approved: — Cost/Fee — LOE:

Work Assignment Manager Name: Neal Fann
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Project Officer Name: Lorraine Reddick
(Signature) (Date)
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Other Agency Official Name:
(Signature) (Date)
Branch/Mail Code:
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Contracting Official Name: Andrew Flynn
(Signature) 9-28-17 (Date)
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I. TITLE: Further Improving the Ability of the BenMAP-CE Tool to Quantify the Impacts to Human Health of Aeroallergens and Wildfires

II. WORK ASSIGNMENT MANAGER (WAM):

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III. LEVEL OF EFFORT:

Hours :
Duration: 12 months (October 1 2017—September 30, 2018)

IV. BACKGROUND:

In 2003 the U.S. EPA contracted with a developer to create version 1.0 of the environmental Benefits Mapping and Analysis Program (BenMAP). That tool systematized a number of the steps of a health impact and benefits analysis that had previously been performed using the Criteria Air Pollutant Modeling System (CAPMS). Subsequent versions of BenMAP incorporated a number of new features, including a database that could be modified by end-users, more spatially resolved baseline health data and a broader array of health impact functions.

Beginning in 2011, the U.S. EPA began redeveloping the tool from the ground-up to meet two goals: (1) create an open-source software platform so that anyone could see the software code and improve the program; (2) improve the performance, accessibility, capabilities and usability of the software. In the Fall of 2013, after iterating through dozens of beta versions, the U.S. EPA released version 1.0 of the environmental Benefits Mapping and Analysis Program—Community Edition (BenMAP-CE). In the winter of 2015, the Agency released version 1.1 of the software, which addressed a number of bugs identified in version 1.0 and incorporated several new features designed to make it easier for non-U.S. analysts to apply the program.

Under the last work assignment (EP-D-14-031, Work Assignment 2-11), the Contractor explored approaches for expanding the scope of an aeroallergen analysis

and developed a plan for characterizing the future incidence of wildland fires. This work assignment advances this work to completion.

V. STATEMENT OF WORK (SOW):

The Contractor shall conduct the following tasks in accomplishing the objective of this Work Assignment.

Task 1: Develop a work plan and project plan

The Contractor shall develop a new work plan and update the system design document as described below.

Task 1.a: Develop work plan and administer project

Within 20 calendar days of the effective date of this WA, the Contractor shall submit a work plan to the Work Assignment Manager (WAM). The Contractor shall arrange and conduct an initial phone conference with the WAM within one week of the WAM approving the WA. Subsequent to this initial teleconference, the Contractor shall lead regular phone conferences on at least a weekly basis to discuss work progress and any issues associated with the work tasks. The Contractor shall prepare an agenda for such weekly meetings, record meeting minutes, and distribute such meeting minutes to all participants.

Task 1.b: Update the system design document

To the extent that any of the tasks below require the Contractor to modify the BenMAP-CE software, then the Contractor, consulting with the WAM, shall develop a comprehensive and detailed project plan for each task in this WA, specifying clearly the technical and functional basis for the new software version:

- The minimum design characteristics of the new software
- A workflow describing the expected inputs and outputs of each new program algorithm, including example use cases.
- Desired behavior of the graphic user interface, including sketches of windows, location of hover text, etc.
- Protocol for quality assuring each new feature.
- Sequence in which the Contractor will address the tasks below.

The Contractor shall not modify the source code until the WAM approves this project plan. The Contractor shall develop the system design document for each new BenMAP-CE feature on a rolling basis and in consultation with the Work Assignment Manager.

Deliverables:

1.1. Work plan
1.2. System design document

Task 2: Complete remaining work to quantify direct aeroallergen impacts

Under work assignment 2-11, the Contractor proposed an approach for expanding the scope of the aeroallergen assessment by incorporating additional pollen data, expanding the geographic scope, and considering additional endpoints. Under this work assignment, the contractor shall continue this by completing the following two tasks:

Task 2.a: Modify the BenMAP-CE code as needed

The Contractor shall finish modifying the BenMAP-CE program so that users can quantify aeroallergen effects, without accounting for the modification of these effects by air pollutants. The Contractor shall modify BenMAP-CE so that:

- Users can plot changes in aeroallergen levels (both as a function of ambient concentration as well as duration of allergen season) across the United States in the GIS.
- Users can program aeroallergen health impact functions using the function editor.
- The program contains the demographic, baseline incidence, "pollutant" definition, and variable files needed to quantify effects
- The program reports clearly the health impact estimates in the report window and GIS, and that such results may be stratified by the same variables (e.g. age, race, sex) as the existing air pollution health impact functions.

As above, these changes may require the Contractor to modify the user interface and program logic. For these reasons, the Contractor shall reference closely the system design document and consult regularly with the WAM.

The Contractor shall not modify the source code until the WAM approves this project plan.

Deliverables:

2.1 Revised manuscript
2.2 Modified version of BenMAP-CE

Task 2.b: Quantify aeroallergen-related risk

In coordination with EPA staff, the Contractor shall develop a manuscript describing the new aeroallergen impacts modeling approach and results. The manuscript should carefully document the inputs, assumptions, and limitations of the approach. The Contractor shall submit the manuscript to a peer-reviewed journal, revise the manuscript accordingly based on reviewer comments, and be prepared to secure open-access publication.

Deliverables:

2.1 Modified version of BenMAP-CE

2.2 Manuscript for publication

Task 3: Quantify wildfire-attributable $PM_{2.5}$ mortality impacts

Under this work assignment, the Contractor shall continue to collaborate with the Harvard Atmospheric Chemistry Modeling group to developed predicted wildfire-attributable PM2.5 concentrations that reflect future expected changes in meteorology. In coordination with EPA staff, the Contractor shall develop a manuscript describing the wildfire PM analysis. The manuscript should carefully document the inputs, assumptions, and limitations of the approach. The Contractor shall submit the manuscript to a peer-reviewed journal, revise the manuscript accordingly based on reviewer comments, and be prepared to secure open-access publication.

3.1 Manuscript for publication

Task 4. Respond to production requests

Task 4.a. Respond to quick-turnaround requests

The Contractor, as directed by the COR, shall provide technical support on quick turnaround activities related to quantifying the human health impacts of aeroallergens, temperature and air pollutants including fine particles and ozone. This may entail preparing additional communication or background materials, such as brief memos, figures, or powerpoints, for conferences, presentations, or briefings. The Contractor shall complete approximately 2-4 of these quick turnaround requests with each requiring about 10 hours. The schedule of deliverables for these quick turnaround and technical support requests will be included in the technical direction given by the COR.

Task 4.b. Respond to risk analysis requests

The aeroallergens and wildfire work conducted in the previous work assignment were conducted as part of EPA's impacts and risk analysis (CIRA) project. The Contractor, as directed by the COR, shall provide technical support on quick turnaround activities related to completion of the CIRA report.

Task 4.c Analytical framework development

In addition, the contractor, as directed by the COR, shall provide technical support for EPA's efforts to estimate both the physical and monetary impacts for marine fisheries nationally or regionally, using a consistent analytic framework. To support this effort in this and future option periods, EPA anticipates contribution to modeled estimates of economic activity and assistance in the transfer of appropriate scenarios and data necessary for the effort. In coordination with EPA staff and other collaborators, the Contractor shall support the development of a manuscript describing the marine impacts modeling approach including economic results. The manuscript should carefully document the inputs, assumptions, and limitations of the approach.

VI. REPORTING REQUIREMENTS:

All reports shall be in accordance with contract specifications. The Contractor shall submit work products in electronic as well as hard copy form. In addition, the Contractor shall deliver to the WAM each draft and final report in electronic format that is readable by OAQPS's windows-based word-processing (Microsoft Word 2007), graphics (Microsoft PowerPoint 2007), spreadsheet (Excel 2007), and database (Access 2007) programs.

VI. QA Requirements:

The Contractor shall include a quality assurance section in the final report discussing the data used with respect to precision, accuracy, representativeness, comparability, completeness, sensitivity and appropriateness as it applies to this use and its source. The QA section will discuss how the Contractor ensured that the environmental data were of acceptable quality and that they were being used for the purpose for which they were collected.

VIII. DELIVERABLES:

The Contractor shall adhere to the following schedule:

Task	Deliverable	Delivery Schedule
1a	Cost estimate	20 days after effective date of WA

1b	System design document	Ongoing
2a	Modify BenMAP-CE as needed	1 month after the effective date of the WA
2b	Aeroallergen risk	3 months after the effective date of the WA
3	Wildfire risk	4 months after the effective date of the WA
4a	Quick turnaround	4 months after the effective date of the WA
4b-c	Risk analysis; Analytical development	5 months after the effective date of the WA