


BN

 <p align="center">WORK ASSIGNMENT</p> <p align="center">ENVIRONMENTAL PROTECTION AGENCY RESEARCH TRIANGLE PARK, NC 27711</p>		CONTRACT NO: EP-D-05-004	
		CONTRACTOR: Sonoma Technology, Inc.	
		ASSIGNMENT NO: WA3-18	
		ASSIGNMENT CHANGE NO:	
TITLE: Wildland Fires EI for 2003-2006		DATE: 6/4/2007	
<p>DESCRIPTION: SEE ATTACHMENT</p> <p>Work Assignment Manager (WAM): Tom Pace, Emissions Inventory and Analysis Group, AQAD (Mail Stop C339-02), Research Triangle Park, NC 27711. The WAM is authorized to provide technical direction in accordance with the "Technical Direction" clause.</p> <p>To the best of my knowledge, this work does not duplicate any previously performed or currently being performed by this office.</p> <p>Statement of Work Area: 1.9</p>			
<p align="center">NOTICE TO CONTRACTOR</p> <p align="center">Please sign, date, and provide estimates in the spaces indicated below, and return one copy to the Contracting Officer.</p>			
ESTIMATE OF:	GOVERNMENT ESTIMATE:		
LABOR HOURS	350		
DURATION OF WORK	~3.5 months		
COMPLETION DATE	September 30, 2007		
WORK ASSIGNMENT MANAGER: Thompson G Pace	ORG CODE: OAQPS/AQAD/EIAG	TELEPHONE: 541-5634	DATE: 6/5/2007
APPROVALS:			DATE:
GROUP LEADER	Douglas Solomon		6/5/07
PROJECT OFFICER	John E. White		6/11/07
CONTRACTING OFFICER	Rodney Dancy		6/22/07
CONTRACTOR'S REPRESENTATIVE ACKNOWLEDGMENT			
SIGNATURE:	TITLE:	DATE:	

WORK ASSIGNMENT
ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

- I. **TITLE:** Preparation of Wildland and Agricultural Fire Emissions Inventory for 2003, 2004, 2005 & 2006

II. **PROJECT BACKGROUND**

The U.S. Environmental Protection Agency's (US EPA) Emissions Inventory and Analysis Group (EIA) compiles the National Emissions Inventory and disseminates inventory data, summaries, model-ready files and analyses based on the NEI. To support this program and analyses conducted by a variety of users, it is necessary to develop an emissions inventory for 2003 - 2006. The EPA is currently compiling an inventory for 2005 by manually integrating USFS 209 fire reports with satellite-derived data (MODIS on Aqua & Terra platforms). The National Aeronautics and Space Administration (NASA) funded Sonoma Technology and the USDA Forest Service to develop a method to automate the integration of the satellite data with the 209 reports and estimate emissions (SMARTFire system, currently in beta testing). [See "Enhancements to the BlueSky RAINS Emissions Assessment and Air Quality Prediction System" - NASA cooperative agreement number NN506AB52A]. This Work Assignment will utilize both the US EPA and NASA-funded work.

III. **STATEMENT OF WORK**

The objective of this Work Assignment is to develop wildland fire emission inventories for the 2003, 2004 & 2006. To ensure consistency between the 2002 and 2005 NEI with this effort, the Contractor will benchmark SMARTFire's wildland fire emissions estimates for 2002 and 2005 to the NEI. Note that the 2002 wildfire NEI was developed by Air Sciences for the RPO's and is documented at: http://www.wrapair.org/forums/feif/documents/task7/Inter-RPO_2002_WF_EI_Report_rev_20070327.pdf. Also, the 2005 NEI is based on consistent methodology.

Task 1: Cost Estimate for Work Assignment

The contractor will prepare a cost estimate in accordance with the terms of the contract.

Task 2 Estimate 2002 and 2005 Wildland Fire Emissions for Selected Months using SMARTFire

The purpose of Task 2 is to prepare benchmarks for comparison and reconciliation of methodological differences between the SMARTFire tool and the NEI. Benchmark inventories will be prepared for daily 2005 wildland fire emissions for September 2002 and calendar year 2005 (using SMARTFire) for the following pollutants: PM_{2.5}, VOC, CO, CO₂, NO_x, Methane, SO₂ and 29 HAPS for the purpose of benchmarking any differences in estimation methodologies.

Using SMARTFire, the Contractor shall estimate emissions for the time periods and pollutants as discussed above and deliver the following to the WAM: daily pollutant emission

estimates for each fire and its centroid of location by latitude/longitude, fire name, fire ID, perimeter area, area burned, fuel type and amount consumed, type of fire (if available, e.g., wildfire, prescribed fire, agricultural fire, wildland fire).

The US EPA will provide the Contractor with the daily NEI for September 2002, February 2005 and September 2005 and an explanation of the methods used in its development. (See Attachment 1 for the emission factors used in the 2002 and 2005 NEI.) The Contractor shall prepare analyses comparing the SMARTFire and NEI emission estimates for each of these three time periods and will identify causes of any differences. The Contractor shall provide results of the comparison and analyses to the WAM in Microsoft Word. The supporting Tables and Figures shall also be provided in Excel. The daily 2005 emissions and other data shall be provided to the WAM in SMOKE ORL file format and also in Microsoft Access.

Task 3: Develop EI for Wildland Fires for 2003, 2004 & 2006

The purpose of Task 3 is to develop daily wildland fire emission estimates for 2003, 2004 and 2006. The Contractor will estimate fire emissions for each day in 2003, 2004 and 2006 for the following pollutants: PM2.5, VOC, CO, CO2, NOx, methane, SO2 and 29 HAPS (See Attachment 1). Based on Task 2 and in consultation with the Work Assignment Manager, the Contractor will make the fire emission estimation method as consistent as practical with the 2002 and 2005 NEI. This may involve making (temporary) modifications, if necessary to the SMARTFire methodology. The Contractor will provide the following data elements to the WAM: fire emissions, fire name, fire ID, centroid of the fire location on each day by latitude-longitude, perimeter area, area burned, fuel type and amount consumed, type of fire (if available, e.g., wildfire, prescribed fire, agricultural fire, wildland fire). The Contractor will provide the data elements in SMOKE ORL file format and also in Microsoft Access. The Contractor will also provide a report documenting the specific methods used and description of any changes to SMARTFire in Microsoft Word.

DELIVERABLES

TABLE 1. List of Deliverables and Due Dates

Task	Deliverables	Due Date
1	Cost Estimate	Per terms of the contract
2,3	Monthly Status Report for all Tasks	Each month
2	Draft Database, Tables and Graphics	July 16, 2007
2, 3	Report documenting the Task 2 analyses & final methodology Tasks 2 and 3 and the 2002 - 2006 databases	August 24, 2007 Draft due Sept 30, 2007 Final

REPORTING REQUIREMENTS

The reporting requirements shall be per the terms and conditions in the contract.

ATTACHMENT 1

Pollutant EF's ('02 / '99)	Pollutant Code	Emission Factor (lb/ton fuel consumed)
1,3-butadiene	106990	0.405
acetaldehyde	75070	0.40825
Acrolein	107028	0.424
anthracene	120127	0.005
benz(a)anthracene	56553	0.0062
benzene	71432	1.125
benzo(a)fluoranthene	203338	0.0026
benzo(a)pyrene	50328	0.00148
benzo(c)phenanthrene	195197	0.0039
benzo(e)pyrene	192972	0.00266
benzo(ghi)perylene	191242	0.00508
benzo(k)fluoranthene	207089	0.0026
	5683273	
benzofluoranthenes	6	0.00514
carbonyl sulfide	463581	0.000534
chrysene	218019	0.0062
fluoranthene	206440	0.00673
formaldehyde	50000	2.575
indeno(1,2,3-cd)pyrene	193395	0.00341
methyl chloride	74873	0.128325
	2691418	
methylanthracene	1	0.00823
methylbenzopyrenes	247	0.00296
methylchrysene	248	0.0079
methylpyrene, -fluoranthene	2381217	0.00905
n-hexane	110543	0.0164025
o,m,p-xylene	1330207	0.242
perylene	198550	0.000856
phenanthrene	85018	0.005
Pyrene	129000	0.00929
Toluene	108883	0.56825
Ammonia	NH3	See Air Sciences Report referenced below
Volatile Organic Compounds	VOC	See Air Sciences Report referenced below
Nitrogen Oxides	NOx	See Air Sciences Report referenced below
Sulfur Dioxide	SO2	See Air Sciences Report referenced below
Methane	CH4	See Air Sciences Report referenced below
Carbon Monoxide	CO	See Air Sciences Report referenced below
PM 2.5	PM2.5	See Air Sciences Report referenced below
Carbon Dioxide	CO2	See Air Sciences Report referenced below