COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

HOPEWELL AIR TOXICS SAMPLING PROJECT

REVISED WORK PLAN

OFFICE OF AIR QUALITY PLANNING & MONITORING

February 14, 2006

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I. PROJECT TITLE:

Hopewell Air Toxics Sampling Project

II. CATEGORY:

Community Scale Monitoring

III. APPLICANT INFORMATION:

Organization: Commonwealth of Virginia
Department of Environmental Quality

Contact person: James D. Dinh
Office of Air Quality Monitoring
4949-C Cox Road
Glen Allen, VA 23060
(804) 527-5190 (phone)
(804) 527-5160 (fax)
jddinh@deq.virginia.gov

Charles B. King
Office of Air Quality Monitoring
4949-C Cox Road
Glen Allen, VA 23060
(804) 527-5186 (phone)
(804) 527-5160 (fax)
cbking@deq.virginia.gov

IV. FUNDING REQUESTED:

This project will require substantial involvement on the part of EPA such as:

- Provide necessary funding to establish and operate the network in a form of a special grant award.
- Advise on technical and quality assurance issues.
- Monitor the project's progress and performance to verify the results.
- Approving qualifications of key personnel.
- Review and comment on project reports prepared under the cooperative agreement.

DEQ requests a funding of $400,000.00 for the proposed Hopewell Air Toxics Monitoring project. This funding includes a tentative grant to either one of the two local universities: Virginia State University and Richard Bland College for providing manpower to maintain sampling activities. The followings are summary of the requested funding:

• Site Setup		$12,000.00
• Instrumentation		$61,000.00
• Supplies		$13,115.00
• Sample analysis costs		$210.105.00
• QA Audit samples		$7,300.00
• Personnel		$96,480.00
	Total:	**$400,000.00**

V. VADEQ SUPPORT:

Besides funding from EPA identified above, DEQ provides additional air monitoring support from its existing manpower and resources. The estimated expenditures do not include cost for the existing monitoring stations, the mobile trailers, sampling equipment and the Upper Meteorological station.

VADEQ plans to use existing sampling stations in the area, if possible. Also, two monitoring trailers and their associated monitoring equipment from the Winchester Sampling Project can be utilized. The Office of Air Quality Monitoring provides air quality monitoring network management and guidance, oversight and technical support services for the National Ambient Air Quality Standards (NAAQS) and other comprehensive air monitoring activities; and collects, reviews and quality assures ambient air data to conform to requirements of 40 CFR Part 58, prior to submittal to the EPA Air Quality System (AQS) database.

VI. PROJECT PERIOD::

VADEQ anticipates to prepare for the proposed project after termination date of the Winchester Sampling project. This will allow VADEQ to have adequate planning and support to the project. The tentative start date for the project is in between July 1, 2006 and October 1, 2006.

VADEQ anticipates to organize a stake holder committee including representatives from the area industries, local government, health department, etc. This committee will provide input to enhance the project objectives. The starting date for the project could be changed due to possible delay in site selection process and equipment procurement. However, the starting date will not be later than October 1, 2006.

Based on the high cost of sample analysis, the length of the project is tentatively planned for only 18 months. However, if DEQ could attain lower cost of sample analysis, the length of the project could be extended up to 24 months. Sampling frequency for the project is one 24-hour sample for each type of pollutant every sixth day. The ending date for the proposed project is in between December 31, 2007 and June 30, 2008.

VII. WORK PLAN:

A. Objectives:

The Hopewell/Colonial Heights area of Virginia (Hopewell) is a highly industrialized region where numerous sources such as: Honeywell Nylon, Honeywell Hercules, Stone Container, Waste Water Treatment Plan, Hopewell Cogeneration, etc. emit multiple volatile organic compounds. Several of the emitted pollutants are on the list of 33 priority hazardous air pollutants (HAPs). The population of this area has grown over the past several years with the addition of new housing developments and growing communities, subsequently has increased potential exposure to HAPs for the civilian populace.

The proposed sampling project would enable the Virginia Department of Environmental Quality (VADEQ) to accomplish the following objectives:

- To establish a baseline for ambient air exposure of hazardous volatile organics in these communities and help to identify the potential existence of "hot spots". With this information, not only will the communities be more aware of the contents of the air they breathe, but this would establish a basis for future work by the citizens, including local governments, to address any areas of concern.

- The information obtained will assist in the development of the residual risk standards since most of the sources involved are covered by at least one MACT standard.

- To characterize main pollutants by determining spatial concentration patterns and the major source of the pollutants in the Hopewell/Colonial Heights area that could be used to evaluate future emission control programs.

- To assess the validity of the National Air Toxics Assessment (NATA) findings. The comparison would enable DEQ to validate the model to monitor relationship for the Hopewell/Colonial Heights area. This area was identified by the 1996 NATA as a moderately high cancer risk area for all carcinogens. Also a preliminary 1999 NATA reports the same finding.

- To possibly evaluate the effect of some volatile ozone precursors in the list of target pollutants to the formation of ozone in high ozone days for the affected area.

- To evaluate background diesel PM by using black Carbon data collected from an Aethalometer purchased for the project.

- After the project, VADEQ can utilize the purchased monitors and equipment for other air toxic characterization efforts at different locations in the Commonwealth.

B. Scope/Statement of Work

The Hopewell Air Toxics Sampling Network will tentatively consist of three (3) monitoring stations throughout the Hopewell/Colonial Heights area. Site locations will be depended on the

primary wind direction through the area and results of some model in order to predict level of concentration at the proposed locations. The network would include the following type of monitoring sites:

- One upwind / background site. This site will serve as a baseline for air toxics concentration, for the project.

- The second site should be located in the calculated area of highest concentration to measure potential industrial / commercial air toxics concentrations.

- One downwind site of the predominant primary wind direction. This site could serve as a measure of the transport of air toxics concentration for the project. The proposed location for this site could be the existing ozone station in Charles City County. It would enable VADEQ to utilize the collected ozone data and save in initial site setup cost and equipment purchase. VADEQ tentatively plans to collect data for the characterization of PM Diesel at this location by measuring black Carbon by an Aethalometer sampler.

C.Target Pollutants & Sampling Methods:

The followings are the minimum set of target pollutants for the project:

Benzene
Carbon Tetrachloride
Chloroform
1,3-butadiene
1,2-dichloropropane (Propylene dichloride)
Methylene chloride
Tetrachloroethylene (perchloroethylene, PCE)
Trichloroethylene (TCE)
Vinyl chloride
Acetaldehyde
Formaldehyde
Acrolein
Arsenic and compounds
Beryllium and compounds
Hexavalent chromiums
Lead and compounds
Nickel and compounds
Black Carbon

VADEQ plans to use the following laboratory methods; methods TO-15, IO-3, TO-11A and California method 39. The list of 41 target pollutants of method TO-15 would contain all of the above Volatile Organic Compounds (VOCs). The PM10 federal reference method will be used for metal sampling. VADEQ plans to use a modified R&P 2025 and California method 39 to

collect filter sample for Hexavalent Chromium sampling.

D.Laboratory analysis:

VADEQ selects the Division of Consolidated Laboratory Services (DCLS) to perform sample analysis using the approved methods IO-3, TO-15, TO-11A and California method 39. Prior to the tentative starting date, DCLS should provide document of their SOP that meets the project specifications for sample analysis. This SOP will be approved by VADEQ.

E. Work Product:

All validated data collected from the project will be submitted to the Air Quality System (AQS) database quarterly in January, April, July, and October for previous quarter, 90 days after analysis of the collected samples in the correspond quarter.

VADEQ will provide quarterly reports regarding the project progress via email to a designated EPA Project Officer. A final report outlining the results, including the validated data, limited data analyses and a limited risk assessment will be produced at the conclusion of this project. The Office of Air Permitting and the Office of Air Quality Monitoring will jointly provide the final report. The final report will be done within 120 days of the completion of all sample analysis.

F. Personnel:

1. An advisory panel will be established to assist the project staff in policy, personnel and technical issues.

- Jim Sydnor – Director, Office of Air Quality Planning & Monitoring
- Tamera Thompson – Director, Office of Air Permitting
- Charles Turner – Air Compliance Manager, PRO
- Alan Anthony, Ph D – Office of Air Permitting

VADEQ will reach out to include stakeholder groups such as local political entities, environmental groups and industry groups to assist in guiding and implementing the project.

2. The Data and Special Studies Group of the Office of Air Quality Planning & Monitoring (AQPM) manages the proposed project. The following are key personnel who are assigned to the project:

- James Dinh - Group Supervisor
- Brian King – Project Coordinator – Air Toxics Engineer Sr.
- Baxter Gilley – Air Toxic Engineer Sr.
- Shawn Coghill - QA Engineer Sr.
- Frank Burbank – Environmental Specialist II

3. The Piedmont Regional Office (PRO) provides man power to operate and maintain QA

activities for routine sample collection. Operator will be properly trained by AQPM. If award is made to a local university, PRO will coordinate with the contracted school to operate the sites.

4. The Office of Air Permitting will provide support for the project's final report. This office plans to assign qualified staff, to assist AQPM in risk assessment and/or data assessment.

VIII. DETAILED BUDGET:

The followings are details of the funding request for the proposed projects:

1. **Construction and Set Up Cost:**

• Site improvement (3 sites)	@ $1,500.00 each	$4,500.00
• Trailer Repair		$3,000.00
• Power installation (3 sites)	@ $1,500.00 each	$4,500.00
	Total:	**$12,000.00**

2. **Equipment:**

• 924-T1F1 Toxic Air sampler		$12,000.00
• Aethalometer	MAGEE SCIENTIFIC	$22,000.00
• R&P 2025 sampler		$13,500.00
• ATEC Carbonyl sampler		$13,500.00
	Total:	**$61,000.00**

3. **Supply:**

• Restek Silco canisters	(20)	@ $550.00 each	$11,000.00
• Initial Supplies			$2,115.00
		Total:	**$13,115.00**

4. **Sample analysis cost:**

The State Laboratory, Division of Consolidated Laboratory (DCLS), will analyze the collected sample and provide sampling media for the collection of metal and Carbonyl samples. The followings are estimated cost for sample analysis (based on 18 months sampling period, 1 sample each type every 6th day).

- Canister analysis:

- 275 regular samples	@ $309.00 each	$84,975.00
- 30 QA samples	@ $309.00 each	$9,270.00
including duplicate samples and clean check		
- 40 collocated samples	@ $309.00 each	$12,360.00

- Sep-Pak analysis:

- 275 primary samples	@ $48.00 each	$13,200.00
- 275 backup samples	@ $48.00 each	$13,200.00
- 825 QA samples	@ $48.00 each	$39,600.00
including collocates, field blank, trip blank, spike, and clean check		

- Metal analysis

- 275 primary samples	@ $60.00 each	$16,500.00
- 50 QA samples	@ $60.00 each	$ 3,000.00
including field blank and trip blank		
- 50 collocated samples	@ $60.00 each	$3,000.00

- Hexavalent Chrome analysis

- 275 primary samples	@ $40.00 each	$11,000.00
- 50 QA samples	@ $40.00 each	$ 2,000.00
including field blank and trip blank		
- 50 collocated samples	@ $40.00 each	$2,000.00
	Total	**$210,105.00**

5. Laboratory Performance Evaluation Samples

In addition to the QA samples normally ran during sampling project, VADEQ feels it would be beneficial for VA DCLS to participate in the Air Toxics Performance Evaluation program (PE program). In this program an EPA contracted lab will send QA samples to DCLS for identification and quantification. The EPA contracted lab has proposed the following schedule and cost for the PE samples:

Performance Evaluation samples:

• VOC	4 per year (quarterly)	@$700.00 each	$2,800.00
• Carbonyl	2 per year	@$650.00 each	$1,300.00

• Metals	4 per year (quarterly)	@$800.00 each	$3,200.00
		Total	**$7,300.00**

The first PE samples will be run during first 90 days of the start date of the Hopewell project, and repeat approximately every 90 days for VOCs and Metals. The second sample for Carbonyls will be run during the 4th quarter of the project. The proposed schedule is subject to change upon mutual agreement between DCLS and the contracted laboratory.

6. **Manpower for Operation and Data Analysis:**

The funding is required for the hiring of a full time employee or two part-time employees for 18 months to working as the project operator & data maintenance. This funding could be used as a special grant to a local university (Virginia State University or Richard Bland College) for using its faculty and student to operate the project sampling stations.

• Base Salary		$60,000.00
• Indirect cost		$17,100.00
• Fringe Benefit		$19,380.00
	Total	**$96,480.00**

IX. QUALITY ASSURANCE:

A Quality Management Plan (QMP) and a Quality Assurance Project Plan (QAPP) for the project will be developed and submitted to the cognizant EPA Regional Office (EPA Region III) prior to the first day of sample collection. The QAPP is mainly based on an existing DEQ Air Toxics QAPP and the draft Technical Assistant Document (TAD) for the National Air Toxics Trend Site (NATTS). The QAPP template EA-454/R-01-007 will be used.

This QAPP should include the approved laboratory methods; methods TO-15, IO-3, TO-11A and California method 39.

For Data Quality Objectives (DQOs), VADEQ plans to employ available protocols for sampling, sample handling and analysis that have as their goal for each HAP included within the proposal a quantification level which equals or exceeds an excess cancer risk of one in a million ($1x10^{-6}$).

Output/Outcomes statement:

- To establish a baseline for ambient air exposure of hazardous volatile organics in the communities and help to identify the potential existence of "hot spots". With the obtained information, not only will the communities be more aware of the contents of the air they breathe, but this would establish a basis for future work by the citizens, including local governments, to address any areas of concern.

- To assist in the development of the residual risk standards by using the collected data.

- To characterize main pollutants by determining spatial concentration patterns and the major source of the pollutants in the Hopewell/Colonial Heights area that could be used to evaluate future emission control programs

Personnel:

We decide to use the allocated funding for DEQ personnel in administration of the grant, sampling operation and support.

Initial Supplies:

Stainless Steel Tubing	1100.00	
Stainless Steel Swagelock Fittings	200.00	
Grounding		100.00
Concrete, Strapping, cinderblock	115.00	
Stainless Steel inline filters		300.00
Power Cable and extensions		200.00
Lumber for platforms		100.00
Total:		2115.00

Site improvement:
-Chain link fence installation
-Chain link fence repair
-Bushogging
-Brush removal
-Gravel
-Landscaping if requested by landlord.
-etc

Trailer Repair
-Tires
-Florescent tubes
-Inspections
-High and low voltage wiring
-Corrosion prevention
-Shelves installation
-Storm damages repair (if any)
-etc

Power Installation
- Power Company setting power pole, meter and connect/disconnect.
- Installation and connection of Power grounding Rod
- Providing 50 Amp power feed to power inlet.
- etc