CDM

Memorandum

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Subject: *Logan Air Quality Monitoring Study – Final Second Quarter Monitoring Report*

This technical memorandum serves as the second of four quarterly monitoring data reports covering monitoring results for the baseline period at all monitoring locations as part of the Logan International Airport Air Quality Monitoring Study (Study). Camp Dresser & McKee Inc. (CDM) prepared this technical memorandum to provide:

- An overall status of the air quality monitoring program from December 1, 2007 through February 29, 2008.
- A status of meeting the data quality objectives presented in the *Massport, Logan International Air Quality Monitoring Study, Active and Passive Monitoring Quality Assurance Project Plans, September 2007* (QAPPs), and
- The raw air quality monitoring and meteorological data for review by Massport, Massachusetts Departments of Environmental Protection (MassDEP), and Public Health (MassDPH).

The following sections of this technical memorandum include an overview discussion of issues affecting the data quality and quantity during this portion of the monitoring program, along with data collection and quality control and quality assurance activities based on the objectives established in the QAPPs. A CD-ROM disk with the raw air quality monitoring and meteorological data is provided as **Appendix A**.

Overview

The monitoring network in this study is composed of 11 monitoring locations based upon the criteria established in the *Massport, Logan International Air Quality Monitoring Study, Final Air Quality Work Plan, September 2007*. Initial monitoring locations were recommended by the study project team and modified after consultation with the MassDEP and MassDPH. Of these 11 monitoring sites, three "primary" sites were established that use both "active" and "passive" air monitoring methods specifically selected for this study. In addition, seven "satellite" sites and one urban background site were added to expand the study area. These additional sites utilize a combination of passive sampling methods and active $PM_{2.5}$ samplers. The urban background site is located at the MassDEP Harrison Avenue monitoring site. An aerial map showing the 11 monitoring sites is shown in the study work plan referenced above. The Work Plan had identified 13 target pollutants that EPA and FAA classify as toxic air pollutants typically associated with airports. Fine PM (i.e., $PM_{2.5}$) and black carbon were added to this list to provide a more comprehensive record of pollutants that could originate from Logan. This technical memorandum focuses primarily on the data collection and quality assurance activities related to the monitoring for these target pollutants. However, samples were also analyzed for other potential pollutants. These secondary pollutant concentrations are reported in Appendix A.

In December 2007, the study team worked together with Massport to purchase 12 new MiniVol samplers from AirMetrics to improve the reliability of data collection. CDM began using the new MiniVols in January 2008, but the new units had faulty battery chargers, which were replaced by AirMetrics in February. CDM conducted additional $PM_{2.5}$ MiniVol sampling in February, in order to improve sample recovery. We expect to meet project goals in the next reporting period without extra sampling events.

Prior to start of the second quarter monitoring period, there was a change in laboratories for the analysis of organic compounds collected for the active monitoring program. Alpha Analytical provided analytical analyses for VOCs, carbonyls and PAHs, with the exception of one set of carbonyl samples in December 2007, which was analyzed by Desert Research Institute.

Data Collection Activities

The following sections present a summary of the percent data recovery and percent data reported below minimum detection limits (MDLs) for both continuous and real-time integrated monitoring data for the target pollutants.

Continuous Data

The pollutant concentrations were measured using continuous ambient air monitoring instruments and time-integrated ambient air sampling equipment. The continuous pollutant data include mass of black carbon (BC) measured using a seven-wavelength aethalometer (Magee Scientific Co.) and mass of particulate matter with an equivalent aerodynamic diameter of 2.5 micrometers ($PM_{2.5}$) measured using a beta attenuation monitor (BAM) (Met One Instruments, Inc.). In addition to the air pollution data, meteorological data was collected at the three primary sites. This included: wind speed, wind direction, ambient temperature, and relative humidity. Meteorological stations were operated by CDM at two of the primary sites and data was collected from a third party at the third primary site.

Percent Data Recovery for Continuous Data

CDM has developed a database spreadsheet to track the sampling program progress to achieve the percent data recovery goal established for the study. The data collection period of December 2007 through February 2008 included 2,184 hours in total. The goal for the study is to obtain at least 75 percent data recovery, i.e., at least 75 percent of scheduled data samples collected as valid samples. For continuous monitoring instruments, this value would represent 1,638 hours of valid data during the reporting period.

The percent data recovery for the continuous data collected during the reporting period is presented in **Table 1**. The results for BC reflect instrument problems encountered with the aethalometers immediately following data download during February at the Annavoy Street and Bremen Street sites. The instrument enters an external computer mode where the instrument stops writing data to the compact flash disk. This problem is avoided by shutting down the instrument during data download and turning the instrument back on after the flash disk is replaced in the instrument. Data loss due to shutting down the instrument is insignificant compared to the data loss resulting from the instrument entering an external computer mode.

BAM data recoveries were low for the beginning of the second quarter because of tape errors and flow errors. The tape error occurs when the filter tape tension is low or when the tape has run out. This error will be minimized by frequent checking of the instrument status when visiting the sites during the third and fourth quarters. The flow error was eliminated by creating a vent in the muffler of the pump. The data recovery for meteorological parameters measured at each of the two primary sites operated by Massport was greater than 75 percent.

Table 1 Data Recovery for Continuous Monitoring				
Black Carbon	Dec	Jan	Feb	Q2
Annavoy	99%	100%	93%	97%
Bremen	100%	92%	85%	92%
Court	100%	100%	100%	100%
$PM_{2.5}$ BAM	Dec	Jan	Feb	Q2
Annavoy	92%	100%	100%	97%
Bremen	100%	82%	100%	94%
Court	71%	100%	100%	90%
Meteorology	Dec	Jan	Feb	Q2
Annavoy	94%	94%	94%	94%
Bremen	100%	100%	100%	100%
Court	96%	96%	96%	96%
Logan	99%	99%	98%	98%

Percent Data Reported Below Minimum Detection Limit for Continuous Data

One of the parameters reported in air monitoring data reports are minimum detection limits (MDLs) of monitoring equipment and/or laboratory analysis. Most air pollutant concentrations tend to be log normally distributed in the ambient air, resulting in a significant proportion of measured values being found at relatively low concentrations and a much lower proportion being found at higher concentrations. Due to analytical limitations, some of the lower concentrations cannot be quantified and must be considered to be below the minimum detection limit of the analytical method. The aethalometer MDL for BC reported by Magee Scientific is 50 nanograms per cubic meter (ng/m^3) for one-hour average measurements and the BAM MDL for $PM_{2.5}$ reported by Met One Instruments is 5 micrograms per cubic meter (ug/m^3) for one-hour average measurements. **Table 2** presents the percent of continuous data reported below MDL. For the continuous BC one-hour average measurements, less than one percent of the measurements were below the MDL at all three monitoring sites during this period. Similarly, the MDL percentages reported in the first quarterly monitoring report were less than 1 percent. For the continuous $PM_{2.5}$ one-hour average measurements, 6 to 14 percent of the measurements were below the MDL at all three primary monitoring sites during this period. This was an improvement over the first quarter monitoring period during which approximately 25 percent of the measurements were below the MDL.

Table 2
Percent of Continuous Data Reported Below MDL

	Annavoy	Bremen	Court
Black Carbon	0.64%	0.23%	0.73%
$PM_{2.5}$ (BAM)	14%	6%	6%

Aethalometer MDL = 50 ng/m³ based on 1-hour average
BAM MDL = 5 µg/m³ based on 1-hour average

Time-Integrated Data

The time-integrated samples (samples collected over a measured period of time) were collected for speciated volatile organic compounds (VOC), speciated carbonyl compounds, speciated polynuclear aromatic hydrocarbons (PAH), and $PM_{2.5}$ mass using active and passive sampling techniques.

Active samples of $PM_{2.5}$ were collected at the Annavoy Street site once every six days using a federal reference method (FRM) Anderson RAAS $PM_{2.5}$ sampler. Active samples of $PM_{2.5}$ were also collected at each of the three primary sites, the seven satellite sites, and one urban background site once every twelve days using an Air Metrics MiniVol™ sampler. Active air samples were collected once every twelve days in passivated fused-silica lined (FSL) canisters for analysis of speciated VOCs at each of the three primary sites. Active samples were also collected once every twelve days on dinitrophenyl-hydrazine medium for analysis of speciated carbonyl compounds. In addition, active samples were collected one day per month on XAD resin with a pre-filter for analysis of speciated PAHs. The active time-integrated samples were collected over designated periods of 24 consecutive hours from midnight to midnight. When possible, sample collection occurred at the same time as federal reference sampling being done by MassDEP.

All passive samples were collected one time per month over a consecutive fourteen-day period. Passive samples were collected using activated charcoal medium for analysis of speciated VOCs. Passive samples were also collected on dansylhydrazine medium for analysis of speciated carbonyl compounds. In addition, passive samples were collected using gas chromatography column medium for analysis of speciated PAHs.

Percent Data Recovery for Time-Integrated Data

During the data collection period from December 2007 through February 2008, 15 total samples of $PM_{2.5}$ were scheduled to be collected using the federal reference method at one of the primary sites, seven active samples for $PM_{2.5}$ analysis at each of

the 11 sites, seven active samples for VOC and carbonyl analyses at each of the primary sites, three active samples for PAH analysis at two of the primary sites and the one urban background site, and three passive samples each for VOC, carbonyl, and PAH analyses at each of the 11 sites. To meet the 75 percent data recovery goal for time-integrated samples, it was necessary to capture 12 of the 15 scheduled $PM_{2.5}$ samples via the federal reference method, 6 of the samples scheduled for 7 total samples, and all of the samples scheduled for 3 total samples.

The percent data recovery for the time-integrated data collected during the reporting period is presented in **Table 3**. If a sample was determined to be invalid, a new sample was taken at that site on the following FRM schedule day (not included in Table 3). This was done for the two VOC samples at the Bremen Street site with programming errors and MiniVols that malfunctioned. As discussed in the Overview section, newly acquired MiniVols were installed at the beginning of January. In February, almost all MiniVol samplers failed to collect valid samples due to faulty battery chargers. The chargers were replaced by AirMetrics and sampling was repeated at all 11 sites on FRM schedule days. Only one out of two carbonyl samples taken at Court Road in February was valid as the sampling train was full of water at the time of sample collection. This sample was not repeated as the percent data recovery for the quarter was above 75%.

The $PM_{2.5}$ FRM sampler experienced software problems during the month of December. An identical unit, provided by DRI, was installed at the Annavoy Street site on December 21, 2007 to replace the original unit. In January 2008, the FRM sampler repeatedly lost power due to insufficient sealing of the outlet from the rain and snow. Three extra $PM_{2.5}$ FRM samples were collected in place of the invalid samples. The power loss also resulted in an invalid PAH sample at the Annavoy Street site in January. This location was sampled for PAH compounds 12 days after the scheduled sample date. The FRM and PAH samplers have not experienced any problems since the outlet was sealed at the end of January.

Percent Data Reported Below Minimum Detection Limit for Time Integrated Data

Tables 4 and **5** present the percent of time-integrated data reported below MDL for both the active and passive sampling program. For the active monitoring program, PAHs measurements were above the MDLs for 100 percent of the time for all target compounds at all three monitoring sites. Toluene detected in VOC samples collected at the Bremen Street site was above the MDL. None of the samples collected during this quarter had concentrations of 1,3-butadiene and styrene above MDL. In addition, ethylbenzene and o-xylene were below MDL in all samples taken at the Annavoy

Street and Court Road sites. The carbonyl measurements were above the MDLs for formaldehyde and acetaldehyde at all three primary sites and acrolein measurement was above the MDL at the Bremen Street and Court Road sites.

All active VOC, PAH, and carbonyl samples in the second quarter, except for carbonyl samples taken on December 8, 2007, were analyzed by Alpha Analytical. This laboratory quantifies acrolein detected in VOC samples instead of carbonyl samples as done previously by the Desert Research Institute.

For the passive monitoring program, the target VOCs were above the MDLs for 100 percent of the time, with the exception of benzene and styrene. PAH sampling results were below the MDLs 100 percent of the time except for 2-methylnapthalene. The personnel at Emory University, who are responsible for this portion of the Study, have improved the MDLs (Table 5) to 1 to 2 orders of magnitude lower than originally anticipated (see Work Plan and QAPP).

Tables 4 and 5 show that many samples resulted in target compound concentrations below the MDLs. This is considered acceptable because the detection limits are very low. The results presented in these tables represent a subset of the total number of compounds that were collected and analyzed from the sampling media. The concentration results for the additional compounds are presented in Appendix A.

Table 3
Data Recovery for Time Integrated Monitoring

Active Samples				
VOC[1]	Dec	Jan	Feb	Q2
Annavoy	100%	100%	100%	100%
Bremen	50%	67%	100%	71%
Court	100%	100%	100%	100%
Carbonyl	Dec	Jan	Feb	Q2
Annavoy	100%	100%	100%	100%
Bremen	100%	100%	100%	100%
Court	100%	100%	50%	86%
PAH[2]	Dec	Jan	Feb	Q2
Annavoy	100%	0%	100%	67%
Court	100%	100%	100%	100%
Harrison	100%	100%	100%	100%
$PM_{2.5}$	Dec	Jan	Feb	Q2
FRM[3]	20%	67%	100%	60%
MiniVol[4]				
Annavoy	100%	67%	50%	71%
Bremen	100%	67%	50%	71%
Court	50%	67%	50%	57%
Harrison	100%	100%	50%	86%
Cottage	50%	33%	50%	43%
Constitution	50%	67%	50%	57%
Jeffries	50%	100%	50%	71%
S.Bos	100%	100%	50%	86%
Logan	100%	67%	50%	71%
Coughlin	100%	100%	50%	86%
Bayswater	0%	67%	50%	43%

[1] *The two VOC samples at the Bremen Street site with programming errors were re-sampled on the following FRM sampling date.*
[2] *January PAH sample at Annavoy was repeated 12 days after the scheduled date.*
[3] *Three extra $PM_{2.5}$ FRM samples were collected in place of the invalid samples due to power outage and sampler malfunction.*
[4] *Data recovery for $PM_{2.5}$ MiniVol was low due to sampler malfunction. Locations with recovery less than 100% were re-sampled on the following FRM sampling date. In addition, all 11 sites were sampled on 2/12 and 2/24 to improve data collection.*
[5] *The passive carbonyl sample at Logan was missing in February.*

Passive Samples				
VOC	Dec	Jan	Feb	Q2
Annavoy	100%	100%	100%	100%
Bremen	100%	100%	100%	100%
Court	100%	100%	100%	100%
Harrison	100%	100%	100%	100%
Cottage	100%	100%	100%	100%
Constitution	100%	100%	100%	100%
Jeffries	100%	100%	100%	100%
S.Bos	100%	100%	100%	100%
Logan	100%	100%	100%	100%
Coughlin	100%	100%	100%	100%
Bayswater	100%	100%	100%	100%
Carbonyl[5]	Dec	Jan	Feb	Q2
Annavoy	100%	100%	100%	100%
Bremen	100%	100%	100%	100%
Court	100%	100%	100%	100%
Harrison	100%	100%	100%	100%
Cottage	100%	100%	100%	100%
Constitution	100%	100%	100%	100%
Jeffries	100%	100%	100%	100%
S.Bos	100%	100%	100%	100%
Logan	100%	100%	0%	67%
Coughlin	100%	100%	100%	100%
Bayswater	100%	100%	100%	100%
PAH	Dec	Jan	Feb	Q2
Annavoy	100%	100%	100%	100%
Bremen	100%	100%	100%	100%
Court	100%	100%	100%	100%
Harrison	100%	100%	100%	100%
Cottage	100%	100%	100%	100%
Constitution	100%	100%	100%	100%
Jeffries	100%	100%	100%	100%
S.Bos	100%	100%	100%	100%
Logan	100%	100%	100%	100%
Coughlin	100%	100%	100%	100%
Bayswater	100%	100%	100%	100%

Table 4
Active Sample Target Pollutants
Percent of Time Integrated Data Reported Below MDL*

VOC	Annavoy	Bremen	Court	MDLs (ppbv)
1,3-Butadiene	100%	100%	100%	0.2
Benzene	14%	14%	29%	0.2
Toluene	14%	0%	29%	0.2
Ethylbenzene	100%	86%	100%	0.2
m&p-Xylene	57%	14%	57%	0.2
o-Xylene	100%	86%	100%	0.2
Styrene	100%	100%	100%	0.2
Acrolein	57%	71%	57%	0.5
Carbonyl	**Annavoy**	**Bremen**	**Court**	
Formaldehyde	0%	0%	0%	0.017-0.502
Acetaldehyde	0%	0%	0%	0.019-0.219
Acrolein	100%	0%	0%	0.006-0.020
Propionaldehyde	43%	14%	29%	0.005-0.029
PAH	**Annavoy**	**Court**	**Harrison**	
Naphthalene	0%	0%	0%	5.86×10^{-4}
2-Methylnaphthalene	0%	0%	0%	5.29×10^{-4}
1-Methylnaphthalene	0%	0%	0%	5.29×10^{-4}

** The results presented in this table represent a small number of the total compounds collected on the sample media. The concentration results for these additional compounds are presented in Appendix A. The MDLs presented in the table represent a range of values over all samples analyzed for the reporting period; values are in units of parts per billion by volume (ppbv).*

Table 5
Passive Samples Target Pollutants
Percent of Time Integrated Data Reported Below MDL*

VOC	Benzene	Toluene	Ethyl Benzene	m,p-Xylene	o-Xylene	Styrene
Annavoy	67%	0%	0%	0%	0%	100%
Bremen	33%	0%	0%	0%	0%	100%
Court	67%	0%	0%	0%	0%	100%
Harrison	33%	0%	0%	0%	0%	100%
Cottage	100%	0%	0%	0%	0%	100%
Constitution	33%	0%	0%	0%	0%	100%
Jeffries	100%	0%	0%	0%	0%	100%
S Boston	100%	0%	0%	0%	0%	100%
Logan	67%	0%	0%	0%	0%	100%
Coughlin	67%	0%	0%	0%	0%	100%
Bayswater	67%	0%	0%	0%	0%	100%
Detection Limit	**0.141 – 1.669**	**0.011 – 0.108**	**0.016**	**0.017**	**0.016**	**0.014**

Carbonyl	Formaldehyde	Acrolein	Acetaldehyde	Propionaldehyde
All 11 sites	100%	100%	100%	100%
Detection Limit	**0.004**	**0.038**	**0.004**	**0.005**

PAH	Naphthalene	1-methylnaphthalene	2-methylnaphthalene
Annavoy	67%	33%	67%
Bremen	33%	33%	33%
Court	33%	33%	33%
Harrison	33%	33%	33%
Cottage	33%	33%	33%
Constitution	33%	33%	33%
Jeffries	33%	0%	0%
S Boston	33%	33%	33%
Logan	33%	0%	33%
Coughlin	33%	33%	33%
Bayswater	33%	33%	33%
Detection Limit	**0.024**	**0.016**	**0.004**

** The results presented in this table represent a small number of the total compounds collected on the sample media. The concentration results for these additional compounds are presented in Appendix A. The detection limits presented in the table represent an average over all samples analyzed for the reporting period; values are in units of parts per billion by volume (ppbv) for VOCs, carbonyl compounds, and PAH compounds.*

Comparison of Active and Passive Monitoring Data

This section provides a brief summary comparing active and passive monitoring results for the second quarter.

PAH

For active sampling, PAH concentrations were uniformly low. The vast majority of the higher molecular weight PAHs were below the minimum detection limit and the lighter molecular weight compounds--the naphthalenes--were found in all samples. However, even for the measured compounds, the concentrations were less than 0.01 ppbv. For the passive samples, the results were similar; the majority of measurements were below the detection limit in December but not in January or February. In general, there was agreement between the active and passive sampling methods; values were low and measurable quantities were likely caused by a specific incident, e.g., a truck parked nearby.

VOC

For active sampling, BTEX VOCs (benzene, toluene, ethylbenzene, and xylenes) were measurable at most sites. Styrene was less than the MDLs for all measurements while ethylbenzene was detected at only one location during one time period. For those compounds detected frequently, average concentrations were in the 0.1 – 0.2 ppb range. For passive sampling, benzene and styrene and the compounds were not detectable for any sample. Toluene, ethylbenzene, and the xylenes were uniformly measurable. The measured concentrations ranged from 0.05 – 1.0 ppb for these compounds. For both the active and passive sampling methods for VOCs many values were below the MDL and the compounds above MDL tended to be the BTEX compounds.

Carbonyl

For active sampling, formaldehyde and acetaldehyde were detectable during this monitoring period. Propionaldehyde concentration was below the MDL in February. For passive carbonyl sampling, all target compounds were below their MDLs.

Quality Control and Assurance Activities

Quality control and quality assurance (QA/QC) activities include those routine and non-routine field and laboratory activities that are intended to improve or assure the quality of measured data. These activities include:

- Conduct and analyze field blanks;
- Conduct replicate and duplicate sampling analyses, and
- Conduct an independent performance audit of the monitoring instruments and sampling equipment.

The passive and active QAPPs provide more in-depth discussion of the active and passive monitoring QA/QC procedures.

The following discussion briefly addresses these activities conducted during this monitoring period. Table 6 summarizes the field and laboratory blank and duplicate samples that were analyzed during this monitoring period.

Table 6
Summary of Samples Collected During the 2nd Quarter with Blanks and Duplicates

Samples/Blanks/ Duplicates	Active					Passive		
	VOC	Carbonyl	PAH	PM (FRM)	PM (MV)	VOC	Carbonyl	PAH
Field Samples	21	21	10	12	86	33	32	33
Field Blanks	N/A	1	1	1	1	6	6	N/A
Field Duplicates	0	0	N/A	N/A	0	15	26	15
Lab Blanks	7	6	5	0	3	N/A	N/A	9
Lab Duplicates	7	6	N/A	N/A	N/A	N/A	N/A	N/A

NC = not completed at the time of this report

N/A = not applicable to method

Field Blanks

The practice of conducting and analyzing field blanks is to provide information about contamination that may be introduced during sample collection, storage, and transport. Field blanks are to be collected on or near the scheduled federal reference method sample day and shipped back to the laboratory for analysis.

For the active sampling portion of the Study during the reporting period, there was one field blank analyzed for speciated carbonyls, speciated PAHs, $PM_{2.5}$ FRM, and $PM_{2.5}$ via the MiniVol ; no field blanks are specified for speciated VOCs in the QAPP. Lab and field blanks did not have quantifiable concentration (i.e., concentration above the MDL) of carbonyls. The PAH field blank did not have any detectable concentration of target compounds. It should be noted that the active sample results were corrected for media blanks prior to reporting, but were not corrected for results

of the field blanks. Details of the field blank results can be found in the data tables in Appendix A.

For the passive portion of the Study during the reporting period, field blanks were analyzed for speciated VOCs and for speciated carbonyl compounds; there were no field blanks analyzed for speciated PAHs. Three carbonyl blanks and five VOC blanks were taken per month at different sites. Nine laboratory blanks were analyzed for PAHs. These blanks did not have any detectable concentrations of target compounds.

Data Precision (Replicate and Duplicate Sampling)

Data precision is of one of the measures used to assess the quality of the monitoring data. Data precision is the degree of mutual agreement among individual measurements under identical or substantially similar conditions measured as either the range or as the standard deviation. This can be done by either using the same analytical instrument to make repeated analyses of the same (replicate) sample, or it can be done by collecting, processing and analyzing collocated (duplicate) samples.

For integrated samples with subsequent laboratory analysis, precision was determined by periodic laboratory replicate analyses. Laboratory replication involves splitting a single sample in the laboratory and performing replicate tests. For continuous measurements, it is determined by periodic presentation of transfer standards to the measurement system.

For the active portion of the Study during the reporting period, there were no collocated (duplicate) samples collected in the field. Duplicate field sampling will begin in April 2008 on a monthly basis. Replicate analysis of one carbonyl sample was performed in the laboratory for every sampling event which provides a measure of the precision, or reproducibility, of the sample data. The difference in the results of the replicate analyses for the three target carbonyl compounds were less than 10 percent, with one exception. One of the replicate analyses for propionaldehyde was found to be 16 percent above the reported sample concentration; due to the low concentration of the reported sample (0.32 ug per cartridge for the sample collected at the Annavoy Street site on December 20, 2007), the level of precision is considered acceptable.

It should be noted that there are collocated active measurements of $PM_{2.5}$ being made at the three primary sites. The Annavoy Street site includes sample collection for $PM_{2.5}$ via a federal reference method as well as via a MiniVol, and continuous measurement of $PM_{2.5}$ via the BAM. Both the Bremen Street site and the Court Road

site include both a MiniVol and a BAM. However, since the collocated methods at each of these sites represent different methodologies, a direct comparison of the collocated results is not a true measure of precision for $PM_{2.5}$.

For the passive portion of the Study during the reporting period, collocated (duplicate) samples were collected at varying rates, depending on the sampling method, the month, and the site. Duplicate VOC samples were collected at five sites, duplicate carbonyl samples were collected at nine to eleven sites, and duplicate PAH samples were collected at five sites. The locations of the duplicates were rotated to avoid collecting duplicates at the same site each month. Because the measured concentrations for all pollutants collected using the passive methods have been found to be low—often near or less than the MDL—precision results on a percentage basis were generally greater than 10 percent.

Next Report

The next reporting period will be for March through May 2008. The monitoring report will present the monitoring results and will include a discussion of any changes made to improve the monitoring program. The third quarter report will be available at the beginning of July 2008.

If you have any questions, or would like to discuss further these results, please do not hesitate to contact Asami Tanimoto at (617) 452-6367 or George Siple at (919) 787-5620.

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Appendix A
CD-ROM Disk
Air Quality Monitoring and Meteorological Data