DATA SUMMARY OF
INDOOR ENVIRONMENTAL QUALITY RESULTS
AND
POST-FIRE
INDOOR ENVIRONMENT ACCEPTANCE CRITERIA
FOR ONE BROADWAY
CAMBRIDGE, MASSACHUSETTS

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EH&E Report #14877
January 5, 2007

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LIST OF ABBREVIATIONS AND ACRONYMS

Building	One Broadway, Cambridge, Massachusetts
EH&E	Environmental Health & Engineering, Inc.
EPA	U.S. Environmental Protection Agency
GC/ECD	gas chromatography/electron capture detection
GC/MS	gas chromatography/mass spectrometry
HRGC/HRMS	high-resolution gas chromatography/high-resolution mass spectroscopy
ICP/AA	inductively coupled plasma/ atomic absorption
ICP/AES	inductively coupled plasma/atomic emission spectrometry
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
mg/kg	milligram per kilogram
mg/m^3	milligram per cubic meter
NAAQS	National Ambient Air Quality Standards
ng/m^2	nanograms per square meter
NIOSH	National Institute for Occupational Safety and Health
OSHA	U.S. Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PID	photoionization detector
PCB	polychlorinated biphenyl
ppb	parts per billion
ppm	parts per million
SVOC	semi-volatile organic compound
TEF	toxic equivalent factor
TEQ	toxic equivalent
TRC	TRC Environmental, Inc.
TSCA	Toxic Substances Control Act
TVOC	total volatile organic compound
VOC	volatile organic compound
WHO	World Health Organization
WTC	World Trade Center, New York City, New York
$\mu g/100\ cm^2$	micrograms per 100 square centimeters
$\mu g/ft^2$	micrograms per square foot
$\mu g/m^2$	micrograms per square meter
$\mu g/m^3$	micrograms per cubic meter

1.0 EXECUTIVE SUMMARY

On December 8, 2006, at approximately 11 a.m. a transformer caught fire and burned in the basement of the building located at One Broadway in Cambridge, Massachusetts (the Building). The Building is a 300,000 square foot, 17-story office tower that houses approximately 800 occupants. All tenants were evacuated from the Building.

Environmental Health & Engineering, Inc. (EH&E) was retained to characterize the soot on the interior of the Building, assess the potential occupant exposures to the soot and smoke, determine appropriate health-based acceptance criteria for the Building (surfaces and air), and confirm, through testing and inspections, that the criteria have been achieved. EH&E's risk characterization is on-going and will be provided along with the associated data as soon as it is complete.

This report summarizes the environmental data obtained to date and explains the post-fire indoor environmental re-occupancy criteria taken from the health-based acceptance criteria developed for the Building.

Beginning the weekend of December 9, 2006, EH&E conducted a series of inspections and testing work to characterize the soot deposited by the fire. EH&E's visual observations indicated that the soot deposits were largely confined to the fire area (vault, switchgear room), the stairwell ventilation ductwork that is located between the basement and first floor, and the lower portions of stairwell two with particular emphasis on the first floor ventilation grill. Visible soot was less apparent on upper floors of the two stairwells. No visible soot or discernible fire-related odors were noted in the tenant spaces.

EH&E conducted an environmental sampling program to assess the soot and its constituents on the surfaces within the Building prior to cleaning. The purpose of this effort was to:

- Delineate the nature and extent of the residual soot.
- Determine post-fire indoor environment acceptance criteria for re-occupancy.

- Collect data for use in a retrospective risk characterization for those potentially exposed to the soot or smoke during the evacuation from the Building.

At the end of this program and following cleaning activities, EH&E conducted further wipe and air samples to confirm the successful completion of cleaning and determined that health-based re-occupancy criteria have been met in the Building.

This report addresses the first two elements of EH&E's effort.

EH&E tested for the following constituents in the Building:

- Volatile organic compounds
- Polycyclic aromatic hydrocarbons
- Polychlorinated biphenyls
- Dioxin and furans
- Trace metals
- Particles

The data that EH&E has obtained at the Building show that levels of the compounds of concern were almost all below appropriate health-based acceptance criteria in the occupiable spaces for high and low contact surfaces of the Building *before* these spaces were cleaned. There were only two areas where pre-cleaning samples tested above the health-based acceptance criteria, and neither of these areas is occupied by tenants. This finding is consistent with EH&E's observation that the most heavily soot-impacted areas are confined to the source of the fire and its immediate vicinity (vault, switchgear room, stairwell ventilation duct). As a conservative measure, the post-fire indoor environment inspection and sampling program targeted soot-impacted areas with a particular emphasis on the vault, switchgear, and stairwell spaces, where concentrations of the soot constituents were likely to be elevated. Sampling in other parts of the Building was also conducted and confirmed that almost all of the pre- and post-cleaning levels of the compounds of concern in these spaces were below the health-based re-occupancy criteria.

Based on our analysis of the testing results, inspection program, and resulting data, from post-cleaning indoor air and wipe samples, the Building environment is safe for re-occupancy for the Building's tenants.

2.0 PROJECT BACKGROUND

2.1 SITE DESCRIPTION

The Building is a 300,000 square foot, 17-story office tower located at One Broadway in Cambridge, Massachusetts. There are reportedly 800 occupants of the Building. The Building is principally a multi-tenant office environment with retail stores on the ground floor level.

2.2 FIRE BACKGROUND

On December 8, 2006, at approximately 11 a.m. a transformer caught fire and burned in the basement of the Building. According to reports from the Cambridge Fire Department, the fire burned for approximately fifteen minutes. According to eyewitness accounts, smoke and soot generated in the basement vault entered the switchgear room and the emergency exit stairwells. All tenants in the Building were evacuated.

2.3 EH&E INVOLVEMENT

The Massachusetts Institute of Technology and NSTAR's post-fire response included a clean-up and recovery program to clean and repair fire- and smoke-related damage to the Building prior to its re-occupancy. EH&E was retained to characterize the residual soot deposition on the Building's interior, to help address possible health concerns of the occupants regarding potential exposures to the soot and smoke, and to recommend health-based clean up levels for the soot constituents on or in various media inside the Building, including indoor air. Our health risk characterization is currently being prepared, and will be provided, along with the supporting data, once it is complete. This report summarizes the environmental data analyzed to date and establishes post-fire indoor environment criteria for the residual soot constituents inside the Building.

3.0 METHODS

EH&E and TRC Environmental, Inc., (TRC) NSTAR's environmental consultant, collected samples of the soot from the fire from various locations and surfaces where soot deposition was evident; and collected samples (including air samples) in several tenant common spaces (e.g., elevator lobbies) where there were no signs of soot deposition. Approximately 148 samples have been collected to date, including the fire-damaged vault and switchgear rooms, elevator lobby areas, the two emergency stairwells, stairwell ventilation components (blower and ductwork runs from the basement to the first floor, with corresponding exhaust components on the seventeenth floor), and air handlers located in the basement (serving the basement and the first floor lobby). The samples were evaluated for the following compounds based on the source of the fire (electrical transformer), EH&E's and TRC's experience evaluating similar fire- and smoke-related effects in other buildings, and published data in the scientific literature:

- Volatile organic compounds (VOCs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs Aroclor analysis)
- Dioxin and furans
- Trace metals
- Particles

3.1 DIRECT-READ METHODS

EH&E's response following the weekend of December 9, 2006, provided an immediate quantitative assessment of the indoor environmental quality conditions in the Building. EH&E surveyed various locations throughout the Building using direct-reading devices for toxic gases and particulate matter to determine if an acutely hazardous environment existed within the indoor air.

A Multi-RAE four-gas meter and ppbRAE total volatile organic compounds (TVOC) monitor (Rae Systems, San Jose, California) were used to measure concentrations of TVOCs in indoor air. These devices use a photoionization detector (PID) with nominal

detection limits of 1.0 parts per million (ppm) and 0.1 ppm, respectively. These portable, hand-held instruments are especially sensitive to molecules with a carbon-carbon double bond and provide readout of the TVOC load in a Building environment, normalized to a standard (e.g., isobutylene). The PID instrument was carried from location to location throughout the Building and, at each measurement location, the probe was held at a height designed to approximate the breathing zone of occupants.

Concentrations of total suspended airborne particulate matter were obtained with a Dust Trak (TSI Incorporated, St. Paul, Minnesota) or a Casella MicroDust Pro (Casella USA, Amherst, New Hampshire). The real-time measurements were compared to published U.S. Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) for particles.

3.2 SURFACE DUST METHODS

Between December 10 and December 29, 2006, EH&E obtained surface wipe and residual soot samples in numerous locations, focusing on the soot-impacted areas prior to, during, and after substantial cleaning of the surfaces. The samples were analyzed for a suite of trace metals, PAHs, PCBs, dioxins, and furans that were selected based on potential hazards from electrical fires. All of the laboratories were accredited for the analyses that they performed. Soot was present on surfaces in the fire area and immediately adjacent locations (transformer vault, switchgear room) and in certain ducts and grills associated with the stairwell ventilation system.

Generally, soot consists of elemental carbon, organic carbon, metals, and ash. These constituents manifest as particles that are microns to millimeters in size, composed of agglomerations of hundreds to thousands of primary particles that are 2 to 35 nanometers in size. The chemical composition of soot depends on the fuel and the combustion conditions. Metals present in soot may reflect the metals present in the fuel source, particularly if temperatures during a fire exceed the boiling point of the metals in the fuel source.

The organic carbon fraction of soot can include PAHs, a family of complex organic compounds associated with charred organic material, such as wood. PCBs, a family of

aromatic organo-chlorine compounds, may be released when PCB-containing materials are burned. Dioxins and furans are a family of compounds related to PCBs that may be produced when PCBs or organic material are burned in the presence of chlorine within the proper temperature range and oxygen content.

Locations for surface sampling of metals, PAHs, PCBs, dioxins, and furans were chosen to represent the areas where visible soot was noted, conservatively biasing the results toward finding soot constituents. The transformer vault (fire area) was sampled and considered to be representative of higher possible levels of the compounds of concern.

Wipe samples were collected from numerous locations to assess the PAH, metal, PCB, dioxin, and furan content of the soot that had deposited on surfaces as a result of the fire. Samples were collected both in the fire and soot-impacted areas, as well as several tenant spaces not impacted by the fire or soot residues. Each wipe sample was obtained by wiping a prescribed, controlled surface area (e.g., one square foot). Duplicate samples, method blanks, and field blanks were collected for quality control purposes. Metal wipes were collected using sterile Ghost Wipes™ soaked in de-ionized water. PAH, PCBs, and dioxin and furan wipes were collected using sterile gauze wipes soaked in hexane. Wipe samples were sent to Liberty Mutual Analytical Laboratories (Hopkinton, Massachusetts) for metals analyses by inductively coupled plasma/atomic absorption (ICP/AA) following U.S. Occupational Safety and Health Administration (OSHA) Method ID-121. Analyses for PAHs and PCBs were conducted by Groundwater Analytical, Inc. using gas chromatography/mass spectrometry (GC/MS) following EPA Method 8270C or gas chromatography/electron capture detection (GC/ECD) following EPA Method 8082, respectively. Dioxin and furan analyses were conducted by Columbia Analytical Services, Inc. (Houston, Texas) by high-resolution gas chromatography and high-resolution mass spectroscopy (HRGC/HRMS) following EPA Method 8290.

3.3 AIR SAMPLES

Air samples were collected in select locations for the compounds of concern to assess the effectiveness of the cleaning, and to evaluate and document the pre-occupancy indoor air quality within the building environment. Samples were collected in both the soot-impacted areas as well as tenant spaces not affected by the fire or soot residues for

comparison purposes. Samples were collected for laboratory analyses for metals, PCBs, and for real-time monitoring of airborne particles. PAHs were not sampled as the surface wipe data indicated that these compounds were confined to just the heavily soot-impacted areas in the basement and on the stairwell two ventilation grill on the first floor. No PAHs were detected in the wipe samples collected from outside these two areas. Dioxin was measured indirectly by applying a very conservative and health-protective weighting factor to the airborne particulate measurements in Building. The highest dioxin concentration measured in the soot (in the fire area) was applied, as a fraction of the measured dust, to the airborne particulate readings. This assessment assumes that all the airborne particles are made up of soot from the fire with the highest levels of dioxin found in all the samples. This assumption will significantly overestimate the actual dioxin concentrations, providing a large margin of safety. If these estimated airborne particle levels are below the dioxin re-occupancy criteria, then the actual levels of dioxin would be significantly below the health-based acceptance criteria.

Air samples for metals were analyzed using National Institute for Occupational Safety and Health (NIOSH) Method 7300 at Liberty Mutual Analytical Laboratories using inductively coupled plasma/atomic emission spectrometry (ICP/AES). Air samples for PCBs were analyzed in accordance with NIOSH Method 5503 by Galson Laboratories (Syracuse, New York) using GC/ECD. Airborne particles were sampled using real-time air sampling instruments as described in section 3.1 of this report.

4.0 RESULTS AND DISCUSSION

4.1 VOLATILE ORGANIC COMPOUNDS

The chemical (or organic carbon) fraction of soot can include VOCs. VOCs would have been formed as a byproduct of incomplete combustion. VOCs generally have low boiling points, and evaporate quickly at room temperature. Because of the short duration of the fire at One Broadway (approximately 15 minutes according to Cambridge Fire Department), and the rapid dissipation rate of VOCs, EH&E only conducted real-time monitoring to screen for the presence of VOCs in the Building during our initial response. In general, VOC levels as then measured in the Building were typical for office environments without sources of VOCs.

4.2 POLYCYCLIC AROMATIC HYDROCARBONS

PAHs are a class of semi-volatile organic compounds (SVOCs) that generally have much higher boiling points, and consequently do not readily evaporate. Many SVOCs will readily condense to a solid phase at room temperature. As a result, SVOCs were more likely than VOCs to be associated with soot present in the One Broadway building. The pre-cleaning soot sample that was collected from the vault on December 9, 2006, by TRC was analyzed for SVOCs. Results indicated the presence of a number of PAHs in the soot. However, concentrations of the identified PAHs were at or below the corresponding Massachusetts Department of Environmental Protection (MADEP) S-1 standards in the Massachusetts Contingency Plan (MCP), which were used for comparative purposes because they are the most health protective standards in the MCP for soil borne contamination.

EH&E collected nine pre-cleaning wipe samples from various locations throughout the Building on December 10 and one sample on December 11, which were analyzed for PAHs to further characterize the extent of the presence of these compounds. EH&E's sample results are summarized in Table 4.1.

Table 4.1 Summary of Pre-Cleaning Surface Dust Concentrations for Polycyclic Aromatic Hydrocarbon Concentrations Collected from One Broadway, Cambridge, Massachusetts, December 10 and 11, 2006

Target Analyte	Samples Collected from Stairwell and Occupiable Areas	Number of Samples with Detectable PAHs	Fresh Air Duct for Vault (μg/ft^2)	Stairwell Two Ventilation Grill (μg/ft^2)	Switchgear Room (μg/ft^2)
Naphthalene	7	0	BRL <5	BRL <102.9	BRL <48
2-Methylnaphthalene	7	0	BRL <5	BRL <102.9	BRL <48
Acenaphthylene	7	0	BRL <5	205.7	BRL <48
Acenaphthene	7	0	BRL <5	BRL <102.9	BRL <48
Fluorene	7	0	BRL <5	226.3	BRL <48
Phenanthrene	7	0	6	2,880	BRL <48
Anthracene	7	0	BRL <5	699.4	BRL <48
Fluoranthene	7	0	BRL <5	1,769.1	57.6
Pyrene	7	0	BRL <5	1,625.1	67.2
Benzo(a)anthracene	7	0	BRL <5	411.4	BRL <48
Chrysene	7	0	BRL <5	349.7	BRL <48
Benzo(b)fluoranthene	7	0	BRL <5	390.9	BRL <48
Benzo(k)fluoranthene	7	0	BRL <5	BRL <102.9	BRL <48
Benzo(a)pyrene	7	0	BRL <5	288	BRL <48
Indeno(1,2,3-cd)pyrene	7	0	BRL <5	185.1	BRL <48
Dibenzo(a,h)anthracene	7	0	BRL <5	BRL <102.9	BRL <48
Benzo(g,h,i)perylene	7	0	BRL <5	164.6	BRL <48

PAH polycyclic aromatic hydrocarbon
μg/ft^2 micrograms per square foot
BRL below reporting limit

* Calculated detection limit ranged from 5 to 8 μg/ft^2 based on analyte and wipe surface area.

Samples analyzed by Groundwater Analytical, Inc., Buzzards Bay, Massachusetts, using U.S. Environmental Protection Agency 8270C.

EH&E's wipe results confirmed the presence of PAHs on surfaces that were heavily impacted by soot from the fire; however, PAHs were non-detect on surfaces outside of the immediate vicinity of the fire area and the stairwell two ventilation grill.

4.3 TRACE METALS

The pre-cleaning soot sample from the fire area that was collected on December 9, 2006, by TRC was analyzed for trace metals. Results indicated the presence of a number of metals in the soot. Based on EH&E's experience with other fire-related indoor

environmental assessments, some metals correlate with visible soot. In other words, more visibly soot-impacted surfaces tend to have higher concentrations of specific metals than less visibly impacted surfaces. In the case of the One Broadway fire, antimony and lead concentrations appear to correlate with soot impact. Higher concentrations of antimony and lead were present in samples collected from areas with more visible soot. In areas with little or no visible soot, antimony and lead concentrations were generally much lower. Elevated levels of these compounds may be used as a marker for soot from the fire. EH&E's sample results are summarized in Table 4.2.

Table 4.2 Trace Metal Wipe Sample Summary Results for Antimony and Lead from One Broadway, Cambridge, Massachusetts, December 10 through December 19, 2006

Sample Description	Sample Numbers	Antimony (μg/ft^2)	Samples Greater than 530* μg/ft^2	Lead (μg/ft^2)	Samples Greater than 40* μg/ft^2
Pre-Cleaning Investigation Phase (December 10 – 13)					
Stair ventilation duct (exhaust side, seventeenth floor)	2	7.4, 23	0	19.8, 37.4	0
Stairwell	5	BRL <0.5 to 11.4	0	BRL <0.6 to 4.2	0
Stair ventilation duct (supply side, first floor)	1	7,200	1	2,262	1
Fire impact area (Switchgear room)	1	1,056	1	624	1
Air intake for vault	1	380	0	170	1
Basement HVAC components	2	53.8, 78.8	0	21.9, 175.5	1
Fire area	5	4 to 2,250	2	12.8 to 2,250	3
Main lobby	1	7.2	0	8.1	0
Tenant spaces	2	BRL <1.2	0	BRL <1.3, 1.7	0

Table 4.2 Continued

Sample Description	Sample Numbers	Antimony (μg/ft²)	Samples Greater than 530* μg/ft²	Lead (μg/ft²)	Samples Greater than 40* μg/ft²
Cleaning and Post-Cleaning Phase (December 17 – 19)					
Basement air intake duct	5	BRL <0.8 to 22.9	0	3.1 to 109.8	3
Air intake to vault	1	64.8	0	153	1
Stairwells	5	BRL <0.6 to 3	0	0.9 to 5.3	0
Stair ventilation duct (exhaust side, seventeenth floor)	4	1.8 to 14.9	0	2.6 to 225	2
Stairwells	5	BRL <0.5 to BRL <1	0	BRL <0.6 to BRL <1	0
Stair ventilation duct (first floor supply side)	2	2.8, 10.5	0	14.8, 165.8	1
Basement HVAC components	1	15.2	0	13.2	0
Fire area	2	2.3, 65.5	0	3.0, 99.8	1

μg/ft² micrograms per square feet
BRL below reporting limit
HVAC heating, ventilating, and air-conditioning

* Post-fire health-based acceptance criteria for antimony and lead for occupiable spaces.

Samples analyzed by Liberty Mutual Industrial Hygiene Laboratory, Hopkinton, Massachusetts, using U.S. Occupational Safety and Health Administration ID-121.

None of the post-cleaning sample results exceed the post-fire health-based acceptance criteria in occupiable spaces.

The following table summarizes pre-cleaning air data for select trace metals that were collected by TRC on December 13, 2006, in the first floor lobby, vault, and switchgear rooms. In addition, the second column of the table shows personnel monitoring data collected from a Clean Harbors worker conducting cleaning operations in the vault and switchgear rooms. The third column shows airborne occupational guidelines for each respective metal analyte, none of which were exceeded.

Table 4.3 Airborne Concentrations of Trace Metals from One Broadway During Clean Up of the Vault and Switchgear Rooms and Their Associated Occupational Limits, Collected by TRC Environmental, Inc., December 13, 2006

Target Analyte	One Broadway ($\mu g/m^3$)	Personal Monitoring of Clean Harbors Worker ($\mu g/m^3$)	Occupational TWA* ($\mu g/m^3$)
Aluminum	ND <16 to ND <17	ND <18	2,000
Antimony	ND <5.4 to ND <6.2	ND <0.62	500
Arsenic	ND <0.3 to ND <0.4	0.4	10
Beryllium	ND <0.02	ND <0.02	2
Cadmium	ND <0.041 to 0.18	0.61	5
Chromium	ND <0.82 to ND <0.87	ND <0.9	500
Cobalt	ND <0.08 to ND <0.09	ND <0.09	20
Copper	ND <0.82 to 8.9	38	200
Iron	ND <2.2 to 19	18	5,000
Lead	ND <0.8 to ND <0.9	1.6	50
Manganese	ND <0.08 to 0.3	0.53	200
Molybdenum	ND <1.6 to ND <1.7	ND <1.8	500
Nickel	ND <0.8 to ND <0.9	ND <0.9	100
Vanadium	ND <1.6 to ND <1.7	ND <1.8	50
Zinc	ND <0.8 to 4	14	5,000

$\mu g/m^3$ micrograms per cubic meter
TWA time-weighted average
ND non-detect

* Based on the lower of published National Institute of Occupational Safety and Health (NIOSH) or U.S. Occupational Safety and Health Administration (OSHA) guidelines.

Both the surface wipe samples and the air samples indicate that levels of marker metals (antimony and lead) were below the established health-based risk criteria outside of the fire-impacted areas during soot cleaning activities. Suggesting that levels of these compounds would be below the established health-based acceptance criteria outside of the fire-impacted areas after cleaning activities were completed.

Because mercury may be found in some electrical components, sampling and analysis were conducted to determine whether it was present in soot after the fire. The soot sample from the vault (fire area) contained a concentration of 0.157 ppm of mercury in the sample. This concentration is well below the MCP S-1 standard for mercury in soil of 20 ppm, which is the most health protective standard set by the MADEP in the MCP. Based on this very low result for mercury in soot from the fire area, additional testing for mercury was not performed.

4.4 POLYCHLORINATED BIPHENYLS

Historically, PCB-containing oil generally was used as a dielectric fluid in some older transformers. EH&E therefore collected a sample of the oil from the main transformer tank that was damaged during the One Broadway fire to determine if the fluid contained PCBs. The oil contained residual levels of PCBs (27 ppm) that would be classified as a non-PCB oil under the EPA's PCB environmental regulations (Toxic Substance Control Act [TSCA]). TRC also collected a sample of the same oil and confirmed EH&E's test results. Additional testing of an oil/water mixture from the floor of the vault (believed to be from the fire suppression effort) indicated the presence of PCBs at 18 ppm, according to data reported by TRC. EH&E and TRC each collected a sample from an undamaged sealed side tank that was on the damaged transformer. The EH&E sample result from this sealed tank tested at 490 ppm for PCBs. EH&E understands that this small side tank was a non-contact cooling unit for the damaged transformer, and that the tank was not damaged by the fire.

EH&E collected wipe samples for PCBs from surfaces in the Building. Prior to cleaning, only one sample tested above the EPA TSCA acceptance criterion of 10 micrograms per 100 square centimeters (10 $\mu g/100\ cm^2$; or 92.9 micrograms per square foot [$\mu g/ft^2$]) of total PCBs for unrestricted use. This sample (35.2 $\mu g/100\ cm^2$ or 329 $\mu g/ft^2$) was collected from the stairwell two ventilation grill located on the first floor. However, a sample collected from a wall surface adjacent to the grill was below the detection limit (<0.1 $\mu g/100\ cm^2$). The next highest sample result was collected from soot-impacted surface in the switchgear room (8.5 $\mu g/100\ cm^2$). Based on the post-fire health-based acceptance criterion of 26 $\mu g/ft^2$, only the pre-cleaning sample from the stairwell two ventilation grill and from the fire area tested above the criterion.

Table 4.4 Polychlorinated Biphenyls Wipe Sample Summary Results from One Broadway, Cambridge, Massachusetts

Sample Description	Sample Numbers	Surface PCB Concentration (μg/ft^2)	Samples Greater than 26 μg/ft^2
Pre-Cleaning Investigation Phase (December 10 – 13)			
Stair ventilation duct (exhaust side, seventeenth floor)	2	1.9, 1.9	0
Stairwell/occupied space	5	BRL <0.9 to BRL <1.9	0
Stair ventilation duct (supply side, seventeenth floor)	1	329	1
Fire area	1	23	0
Air intake for vault	1	2.8	0
Fire area and immediate vicinity	3	BRL <1.9 to 79	1
Basement hallway area	1	BRL <1.9	0
Main lobby	1	4.6	0
Initial Cleaning and Post-Cleaning Phase (December 20)			
Stair Ventilation duct (supply side)	2	BRL <1.9 to BRL <3.7	0

μg/ft^2 micrograms per square foot
BRL below reporting limit

Polychlorinated biphenyl concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency Method 8082 (GC/ECD).

The following table summarizes the air data for PCBs that were collected by TRC in the first floor lobby, vault, and switchgear rooms during cleaning operations. In addition, the second column of the table shows personnel monitoring data collected from a Clean Harbors worker conducting cleaning operations in the vault and switchgear rooms.

Table 4.5 Air Sample Results for Polychlorinated Biphenyls from One Broadway and Published Occupational Exposure Limit, Collected by TRC Environmental, Inc. on December 13, 2006, During Soot Cleaning

Target Analyte	One Broadway Fire Areas and Main Lobby (μg/m^3)	Personal Monitoring of Clean Harbors Worker (μg/m^3)	Occupational REL* (μg/m^3)
PCBs	ND <0.76 to ND <1.3	ND <0.76	1.0

μg/m^3 micrograms per cubic meter
ND non-detect
REL Recommended Exposure Limit

* Based on the lower of published National Institute of Occupational Safety and Health (NIOSH) or U.S. Occupational Safety and Health Administration (OSHA) guidelines.

The air samples were non-detect for PCBs during soot cleaning operations.

4.5 DIOXINS AND FURANS

Dioxins may be formed as a result of combustion processes and from burning fuels (like wood, coal or oil) in the presence of chlorine. Because of the nature of the transformer fire and the fuel sources involved (mineral oil and plastic components), both TRC and EH&E collected samples for dioxin analysis. The pre-cleaning soot sample that was collected from the vault on December 9, 2006, by TRC was analyzed for dioxins. Results indicated the presence of dioxins in the soot of 67.8 parts per billion (ppb) adjusted for the World Health Organization's (WHO) toxic equivalent factors (TEFs), which take into account the relative toxicity of the different compounds of dioxins and furans (referred to in this report collectively as dioxins).

Table 4.6 Dioxin Toxic Equivalents Pre-cleaning and Cleaning Wipe Sample Results from One Broadway, Cambridge, Massachusetts, December 14 and 19, 2006

Sample Description	Number of Samples	Dioxin TEQ Concentration Range (ng/m^2)	Samples* Greater Than 4.8 ng/m^2
Pre-Cleaning Samples (December 14)			
Stair Ventilation Duct (exhaust)	1	4.93	1
Stairwells	3	0.89 to 8.74	2
Elevator lobby	2	0.03, 0.38	0
Stair two ventilation grill	1	4,119	1
Fire area (vault)	1	124	1
Basement HVAC component	1	5.56	1
Cleaning Samples (December 19)			
Stair two ventilation grill	1	4.94	1
Basement, ventilation duct	1	25.07	1

TEQ toxic equivalent
ng/m^2 nanogram per square meter
HVAC heating, ventilating, and air-conditioning

* Health-based acceptance criterion for high contact surfaces in occupiable spaces. The health-based acceptance criterion for low contact surfaces in occupiable spaces is 9.5 ng/m^2.

Samples analyzed by Columbia Analytical Services, Inc. (Houston, Texas) using U.S. Environmental Protection Agency Method 8290

Results indicate that levels of dioxins on surfaces were almost all below the appropriate health-based acceptance criterion with the exception of the samples from the vault room and the stairwell ventilation grill even before cleaning.

4.6 PARTICLES

Particulates are formed as a result of combustion processes. In order to assess airborne concentrations of particulates after the fire, EH&E conducted real-time monitoring for particulates periodically during the investigation and cleaning phases of the project. Airborne concentrations in the fire area were generally higher (0.17 milligram per cubic meter to 0.3 [mg/m^3]) compared to non-fire areas (0.02 to 0.13 mg/m^3). However, the particulate concentrations in the fire areas were expected to be comparatively higher given the presence of visible soot and ongoing recovery and cleaning activities in the fire areas.

4.7 RESULTS DISCUSSION

Data collected by EH&E and TRC shortly after the fire showed that the fire-damaged transformer contained non-PCB dielectric fluid. This finding suggested that potential exposures to PCBs and dioxins would be limited. This result was supported by EH&E's data. Any potential exposures to PCBs and dioxins resulting from the fire have been further minimized by the extensive cleaning and verification sampling that has occurred in the Building. All post-cleaning PCB wipe and air samples have been well-blow established health-based acceptance criteria for PCBs.

The data that EH&E has obtained at the Building show that levels of the compounds of concern were almost all below health-based acceptance criteria in the occupiable spaces *before* these spaces were cleaned. There were only two areas where pre-cleaning samples tested above the health-based acceptance criteria, and neither of these areas is occupied by tenants. This finding is consistent with EH&E's observation that the most heavily soot-impacted areas are confined to the source and immediate vicinity of the fire (vault, switchgear room, stairwell ventilation duct). Therefore, as a conservative measure, the post-fire indoor environment inspection and sampling program targeted the soot-impacted areas, with a particular emphasis on the vault, switchgear, and stairwell spaces where concentrations of the soot constituents were

likely to be elevated. Sampling in other parts of the Building was also conducted to confirm that pre- and post-cleaning levels of the compounds of concern in these spaces remained below the health-based re-occupancy criteria.

Our detailed risk characterization concerning these data and the potential exposures of Building occupants to smoke and soot is currently being performed. The results of the more in-depth retrospective risk characterization will be provided under a separate cover when completed.

The health-based criteria noted above were adapted from a peer-reviewed framework developed and implemented by the EPA related to the World Trade Center (WTC) clean-up and recovery operations in New York City (EPA 2003). This comprehensive risk assessment was developed 20 months after the collapse of the WTC buildings, and an expert panel comprised of specialists from various federal and state agencies provided feedback concerning the document. The EPA framework was designed to protect the most sensitive sub-populations (e.g., children) in a residential setting from exposures to contaminants generated by the collapse of the WTC towers. The screening criteria for the Building were adjusted to account for an adult population in an occupational environment. This analysis is presented with more detail in the next section of the report.

5.0 INDOOR ENVIRONMENT CRITERIA FRAMEWORK

5.1 EPA WORLD TRADE CENTER INDOOR ENVIRONMENT FRAMEWORK

In preparing the health-based acceptance criteria for the Building, EH&E adapted the decision framework presented in EPA's peer-reviewed WTC document to identify what compounds would comprise the post-fire indoor environment acceptance criteria and to establish health-based criteria for these compounds.

The EPA framework established four steps that were used to identify compounds included in the post-clean up sampling and testing program for *residences* that had been impacted by dust and debris from the collapse of the WTC. The selection process eliminated from consideration compounds that met one or more of the following criteria:

- Volatile compounds, as they would dissipate within hours to days.
- Compounds detected infrequently (e.g., less than 5% of the time for sample sets greater than 20 samples).
- Compounds where the maximum measured concentration was less than health-based screening levels.
- Compounds judged unlikely to exceed health-based screening levels, compounds not likely to be related to the contamination event, or compounds near or at levels considered to represent background.

5.2 POST FIRE INDOOR ENVIRONMENT ACCEPTANCE CRITERIA

Adapting this framework to the One Broadway building, the following compounds were included as part of the post-fire sampling and assessment program:

- Antimony
- Lead
- PCBs
- Dioxin

Health-based indoor environment criteria from the WTC Document were adjusted to account for occupational (versus residential) and population (adult versus children) differences between the One Broadway environment and residences affected by the WTC dust and debris. Please refer to Appendix D of this report and to the World Trade Center document for a more detailed review of the input parameters and assumptions governing the health-based acceptance criteria.

The following summarizes the health-based risk criteria used to evaluate the compounds of concern in the surface dust in occupiable spaces in the Building.

Table 5.1 Health-based Post-fire Indoor Environment Surface Dust Acceptance Criteria for Tenant Occupiable Spaces, One Broadway, Cambridge, Massachusetts

Compound	RfD (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	Screening Value Adult Worker ($\mu g/m^2$)	Toxicity Value Source
Antimony	0.0004	NA	5,506	IRIS
Lead	NA	NA	416	HUD standard
Dioxin		1.0 E+6	0.0048	EPA 2000 Dioxin Reassessment
PCBs—non-cancer	0.00002	NA	275	IRIS
PCBs—cancer	NA	2	2,409	IRIS

RfD	Reference dose
mg/kg-day	milligrams per kilograms per day
CSF	cancer slope factor
$\mu g/m^2$	micrograms per square meter
NA	not applicable
IRIS	Integrated Risk Information System (EPA)
HUD	Housing and Urban Development
EPA	U.S. Environmental Protection Agency
PCB	polychlorinated biphenyl

Table 5.2 represents the health-based airborne indoor environment acceptance criteria for the compounds of concern at the Building.

Table 5.2 Health-based Post-fire Indoor Environment Airborne Acceptance Criteria for Tenant Occupiable Spaces, One Broadway, Cambridge, Massachusetts

Compound	RfC (mg/m^3)	IUR (mg/m^{3-1})	Screening Value Adult Worker (mg/m^3)	Toxicity Value Source
Antimony	0.0004	NA	0.0016	NCEA
Lead	NA	NA	0.0015	NAAQS
Dioxin		290,000	4.7E-09	EPA 2000 Dioxin Reassessment
PCBs—non-cancer[1]	0.00007	NA	0.00027	IRIS
PCBs—cancer[2]	NA	0.29	0.0047	IRIS

RfC Reference concentration
mg/m^3 milligrams per cubic meter
IUR inhalation unit risk
mg/m^{3-1} milligrams per cubic meter minus one factor
NA not applicable
NCEA National Center for Environmental Assessment
NAAQS National Ambient Air Quality Standards (EPA)
EPA US Environmental Protection Agency
PCBs Polychlorinated Biphenyls
IRIS Integrated Risk Information System (EPA)

1 IRIS does not list a RfC for PCBs. RfC converted from the reference dose (0.00002 milligram per kilogram per day) using the same assumptions that EPA used for converting the cancer slope factor (CSF) to an IUR (inhalation rate of 20 m^3/day; bodyweight of 70 kg)

2 IUR based on CSF for high risk and persistence scenario (2 per milligram per kilogram per day)

6.0 POST FIRE INSPECTION AND TESTING PROGRAM

6.1 VISUAL INSPECTION

EH&E relied on visual inspections as a primary metric to verify the completion and acceptance of the post-fire response and clean-up work. EH&E employed a “no visible soot” standard as the acceptance criterion for visual inspections. EH&E inspected cleaned surfaces by both visual inspection and by wiping the surfaces with a moistened white cloth or gauze to determine if any soot deposits remained on the surface (e.g., black residue). All cleaned surfaces were inspected to determine acceptability. If visible soot deposits were found, the area or component was re-cleaned and re-inspected to verify that the surface was free of visible soot.

6.2 SURFACE WIPE SAMPLING

In addition to visual inspections, EH&E collected surface wipe samples to verify the visual inspections. EH&E recommended sampling of systems that has been cleaned and restored. The following details a list of inspected and sampled systems.

- Basement air handling unit
- Basement air intake ductwork
- Stairwell ventilation ductwork
- Stairwell surfaces
- Tenant premises and common areas (offices, lobbies, hallways, work surfaces)

Based on sample results from the post-fire investigation, EH&E sent collected wipe samples to an analytical laboratory to determine levels of antimony, lead, PCBs, and dioxin. Other trace metals were analyzed as part of the verification sampling in order to obtain a more comprehensive assessment of cleaning efficacy. As noted previously, EH&E observed that antimony concentrations appear to correlate well with visible soot. In the fire area and its immediate vicinity (the transformer vault and the switchgear room) the concentration of antimony seen in EH&E samples was comparatively higher than the concentration of antimony seen in areas with little to no visible soot indicating that antimony made a good marker for soot deposition.

6.3 AIR SAMPLING

Prior to re-occupancy, EH&E conducted air sampling of the Building to determine airborne concentrations of trace metals and PCBs. The air samples collected in the cleaned building were below established occupational and public health guidelines for both metals and PCBs and were well below the health-based acceptance criteria listed in Table 5.2.

Air sample results for PCBs are presented in the following Table 6.1.

Table 6.1 Air Sample Results Following Cleaning Activities from One Broadway, Cambridge, Massachusetts, December 29, 2006

Sample ID	Location, Description	Air Volume (liters)	Measured PCBs (μg)	Concentration (μg/m^3)
81869/70	Outdoor air sample	Pump fault	BRL <0.06	NA
81873/74	First floor lobby	286	BRL <0.06	BRL <0.2
81877/78	First floor lobby	293	BRL <0.06	BRL <0.2
81881/82	Basement corridor by bathrooms	Pump fault	BRL <0.06	NA
81883/84	Seventh floor elevator lobby	298	BRL <0.06	BRL <0.2
81885/86	Fifth floor stairwell two	302	BRL <0.06	BRL <0.2
81913	Field blank	NA	BRL <0.06	BRL <0.06 μg

PCB polychlorinated biphenyl
μg micrograms
μg/m^3 micrograms per cubic meter
BRL below reporting limit
NA not applicable

National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) for total PCBs is 1 μg/m^3.

Samples analyzed by Galson Laboratories (East Syracuse, New York) following NIOSH 5503.

All samples were below the detection limit, although the sample pumps faulted in two locations so that concentrations for those two areas were unavailable.

Air sample results for metals are summarized in the following table.

Table 6.2 Airborne Concentrations of Trace Metals from One Broadway and Their Associated Occupational Limits, December 29, 2006

Target Analyte	One Broadway ($\mu g/m^3$)*	Occupational TWA** ($\mu g/m^3$)
Antimony	BRL <0.21 to BRL <0.22	500
Beryllium	BRL <0.01	2
Cadmium	BRL <0.02	5
Chromium	BRL <0.53 to BRL <0.54	500
Cobalt	BRL <0.22 to BRL <0.23	20
Copper	BRL <0.24	200
Iron	BRL <0.87 to BRL <0.89	5,000
Lead	BRL <0.22 to BRL <0.23	50
Manganese	BRL <0.05	200
Molybdenum	BRL <0.25 to BRL <0.26	500
Nickel	BRL <0.09 to BRL <0.1	100
Vanadium	BRL <0.25 to BRL <0.26	50
Zinc	BRL <0.47 to BRL <0.49	5,000

$\mu g/m^3$ micrograms per cubic meter
BRL below reporting limit
TWA time-weighted average

* Pump for sample 81887 faulted, as a result calculated concentrations are unavailable.
** Based on the lower of published National Institute of Occupational Safety and Health (NIOSH) or U.S. Occupational Safety and Health Administration guidelines

Samples analyzed by Liberty Mutual Industrial Hygiene Laboratory (Hopkinton, Massachusetts) following NIOSH Method 7300.

All air sample results collected were well-below established occupational guidelines and the health-based re-occupancy criteria for airborne metal concentrations.

6.4 COMPOUND SPECIFIC WIPE SAMPLE EVALUATIONS

6.4.1 Antimony

The health-based re-occupancy criterion for antimony is based upon antimony acceptance levels established by the EPA for residential dust surfaces that were affected by the World Trade Center collapse. EPA used an acceptance criterion of 627 micrograms per square meter ($\mu g/m^2$) or 58.3 $\mu g/ft^2$ for these residential surfaces. This health acceptance criterion was established to protect small children who would be in continuous direct contact with floor and horizontal surfaces in a residential setting. After adjusting for occupational exposures to an adult population, the antimony surface

concentration for the Building is 5,506 μg/m^2 or 512 μg/ft^2 for occupiable and non-occupiable spaces.

Results from the eight wipe samples collected on December 29, 2006, were mostly below the reporting limit for antimony. Two samples were above the detection limit, one sample collected on a table surface on the third floor was at 2.3 μg/ft^2 and one sample from the cleaned first floor ventilation duct in stairwell two was at 5.6 μg/ft^2. These two samples were still well-below the health-based acceptance criterion for antimony.

6.4.2 Lead

EH&E employed the EPA's lead paint standard of 40 μg/ft^2 for floor surfaces that was established to protect children in a residential setting. This criterion is conservative as applied to a commercial office setting such as the Building because the 40 μg/ft^2 standard accounts for both dermal and ingestion exposure pathways in small children for lead. EPA has also established a slightly higher clean-up criterion for interior window sills that also is geared to protect small children, which addresses inaccessible areas. For ductwork surfaces in the Building that are inaccessible contact surfaces, EH&E used the slightly higher concentration of 250 μg/ft^2 that is still health protective, but factors in the inaccessible nature of these surfaces. Air sample results for lead were below the reporting limit and well below the established health-based acceptance criterion for airborne lead, suggesting that residual lead that may be found in the ductwork did not impact the air sample results.

Results from the eight wipe samples collected on December 29, 2006, were all below the appropriate health acceptance criteria for lead. The highest concentration of lead found in the eight samples was from the cleaned first floor ventilation duct in stairwell two. This sample was at 48 μg/ft^2, well below the 250 μg/ft^2 criterion established for ductwork. The next highest surface wipe concentration was 8.7 μg/ft^2 from a sample collected inside the air intake duct in the basement. Lead surface concentrations from the five samples taken in the occupiable spaces ranged from below the reporting limit <0.6 to 2.4 μg/ft^2, all well below the 40 μg/ft^2 criterion.

6.4.3 Polychlorinated Biphenyls

The EPA has established a PCB wipe sample criterion of 10 μg/100 cm^2 as an acceptance criterion for the unrestricted use of non-porous surfaces. In EH&E samples taken **prior** to any cleaning, only one sample was above this 10 μg/100 cm^2 criterion. This sample was collected from the first floor ventilation grill for stairwell two. EH&E also collected a sample from a wall surface adjacent to the grill that was non-detect for PCBs.

EH&E based its criteria for PCBs measured in wipe samples from surfaces in the Building upon the acceptance levels established by the EPA for residential dust surfaces that were affected by the World Trade Center collapse. These criteria are lower than the established EPA acceptance criterion of 10 μg/100 cm^2 or 100 μg/m^2. The World Trade Center health acceptance criterion was established to protect small children who would be in continuous direct contact with floor and horizontal surfaces in a residential setting. After adjusting for occupational exposures to an adult population, the health-based acceptance criterion for PCBs surface concentration for occupiable spaces is 2.75 μg/100 cm^2 or 275 μg/m^2. The standard for non-occupiable spaces is the EPA's standard of 10 μg/100 cm^2 for unrestricted use.

6.4.4 Dioxin

Currently, there are no established numerical standards for surface concentrations of dioxin. However, there are proposed concentrations that have been published in peer-reviewed scientific literature and proposed concentrations used by the EPA for the World Trade Center clean-up that EH&E used as a basis for determining an acceptable surface re-occupancy criterion for the Building. In Michaud et al., the authors proposed a surface re-entry criterion for building occupants of PCB-containing transformer fires of 125 nanograms per square meter (ng/m^2) for dioxins on a toxic equivalent (TEQ)-adjusted basis. More recently, the EPA proposed establishing an acceptance criterion of 2 ng/m^2 on a TEQ-adjusted basis for residential dust. As described in more detail in section 4.2, EH&E adjusted the methodology proposed by the EPA to address building occupant exposure parameters specific to the Building.

Based on the adjusted calculations, EH&E used a criterion of 4.75 ng/m^2 of TEQ-adjusted dioxins for wipe samples from high contact occupiable spaces collected from the Building. For low contact surfaces such as stairwells, EH&E employed a slightly higher acceptance standard of 9.5 ng/m^2 based on the high contact surface criterion multiplied by two to adjust for lesser frequent surface contact inside the stairwells. For non-occupiable surfaces such as ductwork, EH&E employed a slightly higher acceptance standard of 23.75 ng/m^2 based on the occupiable acceptance criterion multiplied by five to adjust for less frequent surface contact within the ductwork. In samples collected **prior** to any cleaning, most samples were close to the 4.75 ng/m^2 criterion.

EH&E collected post-cleaning samples on December 29, 2006. These results are expected on January 9, 2007, and will be provided under a separate cover.

6.4.5 Particles

Particle concentrations in the tenant spaces of the One Broadway building were confirmed to be similar to concentrations found in typical commercial office buildings based on EH&E's experience. Typical particle concentrations in EH&E's experience range from 10 micrograms per cubic meter ($\mu g/m^3$) to 30 $\mu g/m^3$. EH&E confirmed these measurements were typical for commercial office buildings using real-time instruments. Particle concentrations collected on January 3, 2007, on tenant occupied floors were very low (5 to 12 $\mu g/m^3$). The particle concentration in the switchgear room of the basement was also low (21 $\mu g/m^3$). All of the January 3 measurements of particles are comparable to typical office buildings.

6.5 CONCLUSIONS

The post-fire indoor environment inspection and sampling program targeted the soot impacted areas, with a particular emphasis on the vault, switchgear, and stairwell spaces. Sampling in other parts of the Building was conducted to confirm that levels of the compounds of concern in these spaces were below the health-based re-occupancy criteria.

Based on the results of samples that EH&E collected and data we have reviewed from TRC, both before and during cleaning, the tenant occupiable spaces are safe to re-occupy. Data has consistently shown that levels of the compounds of concern were almost all below health-based acceptance criteria in the occupiable spaces even *before* these spaces were cleaned. Further testing following cleaning has confirmed that concentrations of all compounds of concern are below acceptable health-based levels.

As noted throughout the report, only two areas where samples tested above the health-based acceptance criteria, and these areas are not occupied by the tenants. This finding is consistent with EH&E's observation that the most heavily soot-impacted areas are confined to the source of the fire and its immediate vicinity (vault, switch gear room, stairwell ventilation duct). Ongoing work in the basement with the installation of new power and switchgear equipment will keep portions of the basement space un-occupied

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7.0 REFERENCES

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APPENDIX A

LIMITATIONS

LIMITATIONS

1. Environmental Health & Engineering, Inc.'s (EH&E) assessment described in the attached report number 14877, *Data Summary of Indoor Environmental Quality Results and Post-fire Indoor Environment Acceptance Criteria for One Broadway, Cambridge, Massachusetts* (hereafter "the Report"), was performed in accordance with generally accepted practices employed by other consultants undertaking similar studies at the same time and in the same geographical area; and EH&E observed that degree of care and skill generally exercised by such other consultants under similar circumstances and conditions. The observations described in the Report were made under the conditions stated therein. The conclusions presented in the Report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services.

2. Observations were made of the site as indicated within the Report. Where access to portions of the site was unavailable or limited, EH&E renders no opinion as to the presence of chemical residues, or to the presence of indirect evidence relating to chemical residues in that portion of the site.

3. The observations and recommendations contained in the Report are based on limited environmental sampling and visual observation, and were arrived at in accordance with generally-accepted standards of industrial hygiene practice. The sampling and observations conducted at the site were limited in scope, and therefore cannot be considered representative of areas not sampled or observed.

4. When an outside laboratory conducted sample analyses, EH&E relied upon the data provided and did not conduct an independent evaluation of the reliability of these data.

5. The purpose of the Report was to assess the characteristics of the subject site as stated within the Report. No specific attempt was made to verify compliance by any party with all federal, state, or local laws and regulations.

APPENDIX B

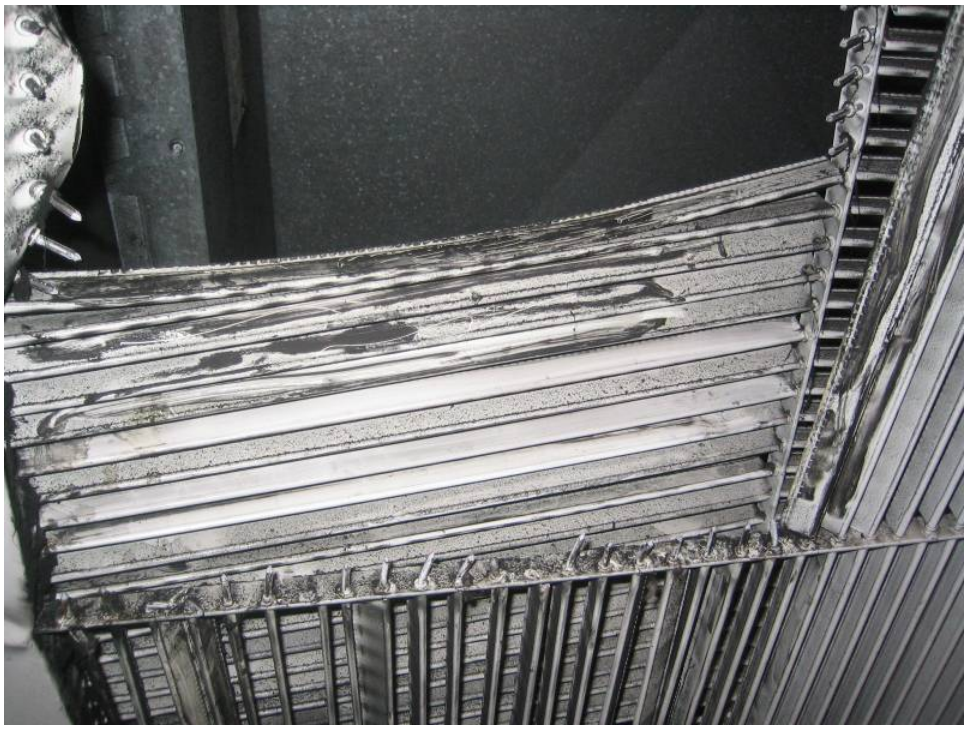
SITE PHOTOGRAPHS

SITE PHOTOGRAPHS

Photograph B.1 Fire-damaged Vault, December 10, 2006

Photograph B.2 Switchgear Room, December 10, 2006

Photograph B.3 First Floor Ventilation Grill in Stairwell Two, December 10, 2006



Photograph B.4 Close-up of Ventilation Grill Surface Following Removal, December 10, 2006

Photograph B.5 View of Stairwell Grill on Seventeenth Floor, December 10, 2006

APPENDIX C

LABORATORY DATA

Table C.1 Bulk Oil Sample Results from One Broadway, Cambridge, Massachusetts, December 10, 2006

Sample ID	Floor	Description	Aroclor 1242[1,2] (ppm_w)	Notes
81190	Basement, transformer vault	Transformer 850-INH4; oil from large tank	27	2C(25)
81191	Basement, transformer vault	Transformer 850-INH4; oil from small sealed side tank	490	1C(460)

ppm_w parts per million by weight

[1] Polychlorinated biphenyl concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency Method 8082 (GC/ECD).

[2] Aroclor 1016, 1221, 1232, 1248, 1254 and 1260 also tested. All results below reporting levels, unless noted.

1C: Confirmation concentration reported from first column quantification.
2C: Confirmation concentration reported from second column quantification.

Table C.2 Results of Analysis for Trace Metals in Wipe Samples Collected at One Broadway, Cambridge, Massachusetts, December 10, 2006

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81184	Floor 17, stair 2 east	Roof access hatch, vertical edge, wipe area of 0.7 sq. ft.	Antimony	23	0.78
			Beryllium	0.04	0.02
			Cadmium	1.1	0.07
			Chromium	8.2	1.9
			Cobalt	BRL	0.81
			Copper	60.5	0.86
			Iron	1,584	3.2
			Lead	37.4	0.81
			Manganese	18.7	0.19
			Molybdenum	1.7	0.92
			Nickel	1.2	0.35
			Vanadium	8.1	0.92
			Zinc	648	1.7
81187	Floor 17, stair 2 east	Vertical wall (above light switch), wipe area of 1 sq. ft.	Antimony	1	0.54
			Beryllium	BRL	0.01
			Cadmium	BRL	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.56
			Copper	7.6	0.6
			Iron	20	2.2
			Lead	BRL	0.56
			Manganese	0.38	0.13
			Molybdenum	BRL	0.64
			Nickel	BRL	0.24
			Vanadium	BRL	0.64
			Zinc	6.7	1.2
81193	Floor 17, stair 1 west	Roof access hatch, vertical edge, wipe area of 0.6 sq. ft.	Antimony	7.4	0.97
			Beryllium	BRL	0.02
			Cadmium	0.58	0.09
			Chromium	4.5	2.3
			Cobalt	BRL	1.0
			Copper	11	1.1
			Iron	1,782	3.96
			Lead	19.8	1.0
			Manganese	10.8	0.2
			Molybdenum	BRL	1.2
			Nickel	1.6	0.43
			Vanadium	4.5	1.2
			Zinc	540	2.2

Table C.2 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81196	Floor 17, stair 1 west	Vertical wall across from janitor's closet, wipe area of 1 sq. ft.	Antimony	BRL	0.54
			Beryllium	BRL	0.01
			Cadmium	BRL	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.56
			Copper	BRL	0.6
			Iron	3.2	2.2
			Lead	BRL	0.56
			Manganese	BRL	0.13
			Molybdenum	BRL	0.64
			Nickel	BRL	0.24
			Vanadium	BRL	0.64
			Zinc	2	1.2
81199	Floor 5, stair 2 east	Underside mid-floor landing, wipe area of 0.6 sq. ft.	Antimony	2.4	0.86
			Beryllium	BRL	0.02
			Cadmium	BRL	0.08
			Chromium	2.1	2.08
			Cobalt	24	0.90
			Copper	32	0.96
			Iron	36.8	3.5
			Lead	2.9	0.9
			Manganese	1.3	0.2
			Molybdenum	BRL	1.0
			Nickel	BRL	0.38
			Vanadium	BRL	1.0
			Zinc	41.6	1.9
81202	Floor 5 hallway by stair 2 east	Vertical wall across from janitor's closet, wipe area of 1 sq. ft.	Antimony	BRL	0.54
			Beryllium	BRL	0.01
			Cadmium	BRL	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.56
			Copper	1.4	0.6
			Iron	9.4	2.2
			Lead	BRL	0.56
			Manganese	BRL	0.13
			Molybdenum	BRL	0.64
			Nickel	BRL	0.24
			Vanadium	BRL	0.64
			Zinc	2.4	1.2

Table C.2 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81205	Floor 1, stair 2 east	Vertical wall adjacent to door, wipe area of 0.8 sq. ft.	Antimony	11.4	0.71
			Beryllium	BRL	0.02
			Cadmium	1.1	0.06
			Chromium	BRL	1.7
			Cobalt	BRL	0.73
			Copper	196.4	0.79
			Iron	51.1	2.9
			Lead	4.2	0.73
			Manganese	2.6	0.17
			Molybdenum	BRL	0.84
			Nickel	0.34	0.31
			Vanadium	BRL	0.84
			Zinc	98.2	1.6
81208	Floor 1, stair 2 east	Stairwell ventilation grill, wipe area of 0.05 sq. ft.	Antimony	7,200	11.1
			Beryllium	BRL	0.27
			Cadmium	802.2	0.99
			Chromium	88.5	26.7
			Cobalt	BRL	11.5
			Copper	11,314.3	12.3
			Iron	20,571.4	45.2
			Lead	2,262.9	11.5
			Manganese	617.1	2.7
			Molybdenum	BRL	13.1
			Nickel	12.3	4.9
			Vanadium	35	13.2
			Zinc	9,874.3	24.7
81211	Basement switch room	Panel above electrical box switchgear cabinet, wipe area of 0.1 sq. ft.	Antimony	1,056	5.2
			Beryllium	BRL	0.12
			Cadmium	547.2	0.46
			Chromium	12.5	12.5
			Cobalt	18.2	5.4
			Copper	4,608	5.8
			Iron	4,032	21.1
			Lead	624	5.4
			Manganese	172.8	1.3
			Molybdenum	BRL	6.1
			Nickel	7	2.3
			Vanadium	BRL	6.1
			Zinc	3,936	11.5

Table C.2 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81375	Field blank	Ghost wipe	Antimony	BRL	0.54 µg/sample
			Beryllium	BRL	0.013 µg/sample
			Cadmium	BRL	0.048 µg/sample
			Chromium	BRL	1.3 µg/sample
			Cobalt	BRL	0.56 µg/sample
			Copper	BRL	0.60 µg/sample
			Iron	BRL	2.2 µg/sample
			Lead	BRL	0.56 µg/sample
			Manganese	BRL	0.13 µg/sample
			Molybdenum	BRL	0.64 µg/sample
			Nickel	BRL	0.24 µg/sample
			Vanadium	BRL	0.64 µg/sample
			Zinc	1.7 µg/sample	1.2 µg/sample

µg/sq. ft. micrograms per square foot
sq. ft. square foot
BRL below reporting limit
µg/sample micrograms per sample

Samples analyzed by Groundwater Analytical, Inc, Buzzards Bay, Massachusetts, using U.S. Environmental Protection Agency (EPA) Method 6010B as referenced under Test Methods for Evaluating Solid Waste, EPA SW-846, Third Edition, Update III (1996).

Table C.3 Results of Surface Wipes for Polycyclic Aromatic Hydrocarbons from One Broadway, Cambridge, Massachusetts, December 10, 2006

Sample ID	**81185**	**81188**	**81194**	**81197**	**81200**
Location	Floor 17, stair 2 east	Floor 17, stair 2 east	Floor 17, stair 1 west	Floor 17, stair 1 west	Floor 5, stair 2 east
Sample Description	Roof access hatch, vertical edge, wipe area of 0.7 sq. ft.	Vertical wall above light switch, wipe area of 1 sq. ft.	Roof access hatch, vertical edge, wipe area of 0.6 sq. ft.	Vertical wall, below fire alarm, wipe area of 1 sq. ft.	Underside mid-floor landing, wipe area of 0.6 sq. ft.
Analyte	**Calculated Concentration (μg/sq. ft.)**				
Naphthalene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
2-Methylnaphthalene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Acenaphthylene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Acenaphthene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Fluorene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Phenanthrene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Anthracene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Fluoranthene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Pyrene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Benzo(a)anthracene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Chrysene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Benzo(b)fluoranthene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Benzo(k)fluoranthene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Benzo(a)pyrene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Indeno(1,2,3-cd)pyrene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Dibenzo(a,h)anthracene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8
Benzo(g,h,i)perylene	BRL <7.2	BRL <5	BRL <9	BRL <5	BRL <8

Table C.3 Continued

Sample ID	81203	81206	81209	81212	81376
Location	Floor 5, hallway by stair 2 east	Floor 1, stair 2 east	Floor 1, stair 2 east	Basement switch room	Field blank
Sample Description	Vertical wall across janitor's closet, wipe area of 1 sq. ft.	Vertical wall adjacent to door, wipe area of 0.8 sq. ft.	Smoke ventilation grill, wipe area of 0.05 sq. ft.	Panel switchgear cabinet, across from transformer feed, wipe area of 0.1 sq. ft.	Hexane wipe
Analyte	**Calculated Concentration (μg/sq. ft.)**				
Naphthalene	BRL <5	BRL <6.5	BRL <102.9	BRL <48	BRL <5 μg/wipe
2-Methylnaphthalene	BRL <5	BRL <6.5	BRL <102.9	BRL <48	BRL <5 μg/wipe
Acenaphthylene	BRL <5	BRL <6.5	205.7	BRL <48	BRL <5 μg/wipe
Acenaphthene	BRL <5	BRL <6.5	BRL <102.9	BRL <48	BRL <5 μg/wipe
Fluorene	BRL <5	BRL <6.5	226.3	BRL <48	BRL <5 μg/wipe
Phenanthrene	BRL <5	BRL <6.5	2,880	BRL <48	BRL <5 μg/wipe
Anthracene	BRL <5	BRL <6.5	699.4	BRL <48	BRL <5 μg/wipe
Fluoranthene	BRL <5	BRL <6.5	1,769.1	57.6	BRL <5 μg/wipe
Pyrene	BRL <5	BRL <6.5	1,625.1	67.2	BRL <5 μg/wipe
Benzo(a)anthracene	BRL <5	BRL <6.5	411.4	BRL <48	BRL <5 μg/wipe
Chrysene	BRL <5	BRL <6.5	349.7	BRL <48	BRL <5 μg/wipe
Benzo(b)fluoranthene	BRL <5	BRL <6.5	390.9	BRL <48	BRL <5 μg/wipe
Benzo(k)fluoranthene	BRL <5	BRL <6.5	BRL <102.9	BRL <48	BRL <5 μg/wipe
Benzo(a)pyrene	BRL <5	BRL <6.5	288	BRL <48	BRL <5 μg/wipe
Indeno(1,2,3-cd)pyrene	BRL <5	BRL <6.5	185.1	BRL <48	BRL <5 μg/wipe
Dibenzo(a,h)anthracene	BRL <5	BRL <6.5	BRL <102.9	BRL <48	BRL <5 μg/wipe
Benzo(g,h,i)perylene	BRL <5	BRL <6.5	164.6	BRL <48	BRL <5 μg/wipe

sq. ft. square foot
μg/sq. ft. micrograms per square foot
BRL below reporting limit
μg/wipe micrograms per wipe

Concentration calculated based on wipe surface area.

Samples were analyzed by Groundwater Analytical, Inc. (Buzzards Bay, Massachusetts) using U.S. Environmental Protection Agency Method 8270C. The laboratory reporting limit was 5 μg per wipe per analyte. Individual detection limits may vary based on surface area of wipe sample.

Table C.4 Results of Wipe Samples for Polychlorinated Biphenyls from One Broadway, Cambridge, Massachusetts, December 10, 2006

Sample ID	Floor	Stairwell	Description	Calculated Aroclor 1254[1,2] (μg/100 cm^2)	Notes
81186	17	East	Roof access hatch, vertical edge, wipe area of 0.7 sq. ft.	0.2	2C(0.2)
81189	17	East	Vertical wall, above light switch, wipe area of 1 sq. ft.	BRL <0.1	NA
81195	17	West	Roof access hatch, vertical edge, wipe area of 0.6 sq. ft.	0.2	2C(0.2)
81198	17	West	Vertical wall, below fire alarm, wipe area of 1 sq. ft.	BRL <0.1	NA
81201	5	East	Underside mid-floor landing, wipe area of 0.6 sq. ft.	BRL <0.2	NA
81204	5		Vertical wall across from janitor's closet, wipe area of 1 sq. ft.	BRL <0.1	NA
81207	1	East	Vertical wall adjacent to door, wipe area of 0.8 sq. ft.	BRL <0.1	NA
81210	1	East	Stairwell ventilation grill, wipe area of 0.05 sq. ft.	35.4*	2C(28.8)
81373	Basement	NA	Panel switchgear cabinet, across from transformer feed, wipe area of 0.1 sq. ft.	2.5*	2C(2.2)
81377	NA	NA	Field blank	BRL <1 μg/wipe	NA

μg/100 cm^2 micrograms per 100 square centimeters
sq. ft. square foot
BRL below reporting limit
NA not applicable
μg/wipe micrograms per wipe

1 Polychlorinated biphenyl concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency Method 8082 (GC/ECD).
2 Aroclor 1016, 1221, 1232, 1242, 1248, and 1260 also tested. All results below reporting levels, unless noted.
* Aroclor 1260

2C: Confirmation concentration reported from second column quantification.

Table C.5 Results of Analysis for Trace Metals in Wipe Samples Collected at One Broadway, Cambridge, Massachusetts, December 11, 2006

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81380	Basement	Fresh air supply duct for vault, duct bottom, wipe of 1 sq. ft.	Antimony	380	1.1
			Beryllium	0.05	0.03
			Cadmium	31	0.1
			Chromium	9.9	2.6
			Cobalt	0.6	1.1
			Copper	560	1.8
			Iron	5,200	4.4
			Lead	170	1.1
			Manganese	50	0.3
			Molybdenum	1.3	1.3
			Nickel	0.5	0.5
			Vanadium	9.4	1.3
			Zinc	290	2.4
81383	Not applicable	Field blank	Antimony	BRL	0.54 μg/sample
			Beryllium	BRL	0.013 μg/sample
			Cadmium	BRL	0.048 μg/sample
			Chromium	BRL	1.3 μg/sample
			Cobalt	BRL	0.56 μg/sample
			Copper	0.89	0.60 μg/sample
			Iron	9.7	2.2 μg/sample
			Lead	BRL	0.56 μg/sample
			Manganese	BRL	0.13 μg/sample
			Molybdenum	BRL	0.64 μg/sample
			Nickel	BRL	0.24 μg/sample
			Vanadium	BRL	0.64 μg/sample
			Zinc	5.3	1.2 μg/sample

μg/sq. ft. micrograms per square foot
BRL below reporting limit
μg/sample micrograms per sample

Samples analyzed by Groundwater Analytical, Inc, Buzzards Bay, Massachusetts, using U.S. Environmental Protection Agency (EPA) Method 6010B as referenced under Test Methods for Evaluating Solid Waste, EPA SW-846, Third Edition, Update III (1996).

Table C.6 Results of Surface Wipes for Polycyclic Aromatic Hydrocarbons from One Broadway, Cambridge, Massachusetts, December 11, 2006

Sample ID	**81379**	**81382**
Location	Basement, mechanical room	Not applicable
Sample Description	Fresh air supply duct for vault, duct bottom, 1 sq. ft.	Field blank
Analyte	**Calculated Concentration (μg/sq. ft.)**	
Naphthalene	BRL <5	BRL <5 μg
2-Methylnaphthalene	BRL <5	BRL <5 μg
Acenaphthylene	BRL <5	BRL <5 μg
Acenaphthene	BRL <5	BRL <5 μg
Fluorene	BRL <5	BRL <5 μg
Phenanthrene	6	BRL <5 μg
Anthracene	BRL <5	BRL <5 μg
Fluoranthene	BRL <5	BRL <5 μg
Pyrene	BRL <5	BRL <5 μg
Benzo(a)anthracene	BRL <5	BRL <5 μg
Chrysene	BRL <5	BRL <5 μg
Benzo(b)fluoranthene	BRL <5	BRL <5 μg
Benzo(k)fluoranthene	BRL <5	BRL <5 μg
Benzo(a)pyrene	BRL <5	BRL <5 μg
Indeno(1,2,3-cd)pyrene	BRL <5	BRL <5 μg
Dibenzo(a,h)anthracene	BRL <5	BRL <5 μg
Benzo(g,h,i)perylene	BRL <5	BRL <5 μg

sq. ft. square foot
μg/sq. ft. micrograms per square foot
BRL below reporting limit
μg micrograms

Concentration calculated based on wipe surface area.

Samples were analyzed by Groundwater Analytical, Inc. (Buzzards Bay, Massachusetts) using U.S. Environmental Protection Agency Method 8270C. The laboratory reporting limit was 5 μg per wipe per analyte. Individual detection limits may vary based on surface area of wipe sample.

Table C.7 Wipe Sample Results for Polychlorinated Biphenyls from One Broadway, Cambridge, Massachusetts, December 11, 2006

Sample ID	Floor	Description	Calculated Aroclor 1260[1,2] (μg/100 cm^2)	Notes
81378	Basement	Fresh air supply duct for vault, duct bottom, wipe of 1 sq. ft.	0.3	2C(0.2)
81381	Basement	Field blank	BRL<1.0 μg	NA

μg/100 cm^2 micrograms per 100 square centimeters
sq. ft. square foot
BRL below reporting limit
NA not applicable

[1] Polychlorinated biphenyls concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency Method 8082 (GC/ECD).
[2] Aroclor 1016, 1221, 1232, 1242, 1248, and 1254 also tested. All results below reporting levels, unless noted.

2C: Confirmation concentration reported from second column quantification.

Table C.8 Pre-Cleaning Results of Analysis for Trace Metals in Wipe Samples Collected at One Broadway, Cambridge, Massachusetts, December 13, 2006

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81546	Basement, AHU 5/6	Filter box (upstream), wipe area of 0.5 sq. ft.	Antimony	53.8	1.1
			Beryllium	0.12	0.03
			Cadmium	9.6	0.10
			Chromium	18.1	2.6
			Cobalt	BRL	1.1
			Copper	172.5	1.8
			Iron	14,150.9	4.4
			Lead	21.9	1.1
			Manganese	97.7	0.3
			Molybdenum	3.8	1.3
			Nickel	0.58	0.48
			Vanadium	14.7	1.3
			Zinc	1,534.7	2.4
81548	Basement, transformer vault	Cleaned concrete wall, wipe area of 0.5 sq. ft.	Antimony	12.2	1.1
			Beryllium	BRL	0.03
			Cadmium	2.4	0.10
			Chromium	3.4	2.6
			Cobalt	BRL	1.1
			Copper	617.9	1.8
			Iron	418.5	4.4
			Lead	12.8	1.1
			Manganese	6	0.3
			Molybdenum	BRL	1.3
			Nickel	BRL	0.48
			Vanadium	BRL	1.3
			Zinc	147.5	2.4
81550	Basement, switchgear room	Switchgear room cleaned panel, wipe area of 0.5 sq. ft.	Antimony	4	1.1
			Beryllium	BRL	0.03
			Cadmium	4	0.10
			Chromium	BRL	2.6
			Cobalt	BRL	1.1
			Copper	99.7	1.8
			Iron	49.8	4.4
			Lead	41.9	1.1
			Manganese	1.1	0.3
			Molybdenum	BRL	1.3
			Nickel	BRL	0.48
			Vanadium	BRL	1.3
			Zinc	59.8	2.4

Table C.8 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81552	Basement, switchgear room	Horizontal switchgear panel uncleaned surface (feed to fifth floor), wipe area of 0.4 sq. ft.	Antimony	1,350	1.2
			Beryllium	0.36	0.03
			Cadmium	877.5	0.11
			Chromium	18.5	2.9
			Cobalt	3.15	1.3
			Copper	1,440	1.5
			Iron	922.5	5.0
			Lead	1,260	1.3
			Manganese	382.5	0.3
			Molybdenum	BRL	1.4
			Nickel	20.7	0.54
			Vanadium	65.25	1.4
			Zinc	13,275	2.7
81554	Basement, between switch/ telecom room	Floor by door of switchgear room, wipe area of 1 sq. ft.	Antimony	72	0.54
			Beryllium	0.02	0.01
			Cadmium	6.9	0.05
			Chromium	4.3	1.3
			Cobalt	1.1	0.56
			Copper	380	0.6
			Iron	2,900	2.2
			Lead	21	0.56
			Manganese	40	0.13
			Molybdenum	0.66	0.64
			Nickel	1.8	0.24
			Vanadium	2.6	0.64
			Zinc	370	1.2
81556	Basement, air intake overhead access hatch	Access hatch, wipe area of 0.4 sq. ft.	Antimony	78.8	1.2
			Beryllium	0.32	0.03
			Cadmium	24.8	0.11
			Chromium	18.5	2.9
			Cobalt	2.5	1.3
			Copper	47.3	1.5
			Iron	96,750	5.0
			Lead	175.5	1.3
			Manganese	292.5	0.3
			Molybdenum	4.7	1.4
			Nickel	3.8	0.54
			Vanadium	42.8	1.4
			Zinc	1,642.5	2.7

Table C.8 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81557	Basement, vault room	Uncleaned vault room, wipe area of 0.4 sq. ft.	Antimony	2,250	1.2
			Beryllium	0.09	0.03
			Cadmium	222.8	0.11
			Chromium	21.8	2.9
			Cobalt	1.7	1.3
			Copper	945	1.5
			Iron	7,425	5.0
			Lead	2,250	1.3
			Manganese	225	0.3
			Molybdenum	BRL	1.4
			Nickel	11	0.54
			Vanadium	15	1.4
			Zinc	4,950	2.7
81560	First floor, hallway from stairs to lobby	Floor area, wipe area of 0.4 sq. ft.	Antimony	7.2	1.2
			Beryllium	BRL	0.03
			Cadmium	2.5	0.11
			Chromium	BRL	2.9
			Cobalt	BRL	1.3
			Copper	130.5	1.5
			Iron	222.8	5.0
			Lead	8.1	1.3
			Manganese	4.5	0.3
			Molybdenum	BRL	1.4
			Nickel	0.63	0.54
			Vanadium	BRL	1.4
			Zinc	81	2.7
81562	Sixteenth floor, elevator lobby	Elevator down button, south wall, wipe area of 0.4 sq. ft.	Antimony	BRL	1.2
			Beryllium	BRL	0.03
			Cadmium	BRL	0.11
			Chromium	BRL	2.9
			Cobalt	BRL	1.3
			Copper	13.7	1.5
			Iron	27	5.0
			Lead	1.7	1.3
			Manganese	20	0.3
			Molybdenum	BRL	1.4
			Nickel	1.9	0.54
			Vanadium	BRL	1.4
			Zinc	13.5	2.7

Table C.8 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81564	Sixteenth floor, elevator lobby	Duplicate 81562, wipe area of 0.4 sq. ft.	Antimony	BRL	1.2
			Beryllium	BRL	0.03
			Cadmium	BRL	0.11
			Chromium	BRL	2.9
			Cobalt	BRL	1.3
			Copper	3.4	1.5
			Iron	19.4	5.0
			Lead	BRL	1.3
			Manganese	0.34	0.3
			Molybdenum	BRL	1.4
			Nickel	BRL	0.54
			Vanadium	BRL	1.4
			Zinc	5.9	2.7
81566	Not applicable	Field blank	Antimony	BRL	0.54 μg/sample
			Beryllium	BRL	0.013 μg/sample
			Cadmium	BRL	0.048 μg/sample
			Chromium	BRL	1.3 μg/sample
			Cobalt	BRL	0.56 μg/sample
			Copper	BRL	0.60 μg/sample
			Iron	BRL	2.2 μg/sample
			Lead	BRL	0.56 μg/sample
			Manganese	BRL	0.13 μg/sample
			Molybdenum	BRL	0.64 μg/sample
			Nickel	BRL	0.24 μg/sample
			Vanadium	BRL	0.64 μg/sample
			Zinc	4.3 μg/sample	1.2 μg/sample

μg/sq. ft. micrograms per square foot
AHU air handling unit
BRL below reporting limit
μg/sample micrograms per sample

Samples analyzed by Liberty Mutual Industrial Hygiene Laboratory, Hopkinton, Massachusetts, using U.S. Occupational Safety and Health Administration ID-121.

Table C.9 Wipe Sample Results for Polychlorinated Biphenyls from One Broadway, Cambridge, Massachusetts, December 13, 2006

Sample ID	Floor	Location	Description	Calculated Aroclor 1260[1,2] (μg/100 cm^2)	Notes
81547	Basement	Transformer vault	Cleaned concrete wall, wipe area 0.5 sq. ft.	BRL <0.21	
81549	Basement	Switchgear room	Cleaned panel, wipe area 0.5 sq. ft.	BRL <0.21	
81551	Basement	Switchgear room	Uncleaned surface, horizontal switchgear panel (feed to fifth floor), wipe area 0.4 sq. ft.	8.5	2C(7.5)
81553	Basement	Hallway between switchgear and telecom rooms	Floor by door to switchgear room, wipe area 1 sq. ft.	BRL <0.11	
81559	One	Hallway from stairs to lobby	Floor area, wipe area 0.4 sq. ft.	0.46	2C(0.41)
81565	NA	NA	Field blank	BRL <1.0 μg/wipe	

μg/100 cm^2 micrograms per 100 square centimeters
sq. ft. square foot
BRL below reporting limit
NA not applicable
μg/wipe micrograms per wipe

[1] Polychlorinated biphenyls concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency Method 8082 (GC/ECD).
[2] Aroclor 1016, 1221, 1232, 1242, 1248, and 1254 also tested. All results below reporting levels, unless noted.

2C: Confirmation concentration reported from second column quantification.

Table C.10 Results of Surface Wipes for Dioxins from One Broadway, Cambridge, Massachusetts, December 13 and 14, 2006

Sample ID	**81385**	**81386**	**81387**	**81388**	**81389**
Location	Stairwell 2, east, seventeenth floor	Stairwell 2, east, thirteenth floor	Stairwell 2, east, fifth floor	Stairwell 2, east, third floor	Stairwell 2, east, first floor
Sample Description	Surface of metal frame on ceiling under exhaust grill, 0.8 sq. ft.	Sprinkler riser pipe, top of valve, 0.3 sq. ft.	Exterior bottom lip of stairs, above landing, 0.2 sq. ft.	Sprinkler riser pipe, top of valve, 0.3 sq. ft.	Grill surface, stairwell ventilation system, 0.05 sq. ft.
Dioxin Homologs	**Calculated Concentration (ng/m^2)**				
TCDD	1.771	0.073	4.046	2.549	4,046.589
PeCDD	5.127	0.540	7.195	4.918	5,850.193
HxCDD	8.467	2.200	11.307	8.758	7,782.851
HpCDD	26.887	8.036	13.267	15.087	5,882.149
Total Dioxins	*42.252*	*10.849*	*35.815*	*31.312*	*23,561.781*
Furans Homologs					
TCDF	25.841	8.144	68.813	35.796	39,359.653
PeCDF	36.401	6.363	60.492	39.404	17,599.685
HxCDF	29.866	5.285	46.997	29.961	19,855.779
HpCDF	16.043	3.584	22.235	15.489	11,910.926
Total Furans	*108.150*	*23.376*	*198.538*	*120.650*	*88,726.043*
WHO TEQs					
2,3,7,8- TCDD	0.049	BRL	0.102	0.062	48.272
1,2,3,7,8-PeCDD	0.234	0.086	0.391	0.249	239.143
1,2,3,4,7,8-HxCDD	0.024	BRL	0.035	0.025	27.679
1,2,3,6,7,8-HxCDD	0.063	0.023	0.074	0.061	38.750
1,2,3,7,8,9-HxCDD	0.050	0.013	0.069	0.099	76.393
1,2,3,4,6,7,8-HpCDD	0.137	0.039	0.059	0.071	25.243
OCDD	0.008	0.001	0.001	0.002	0.288
2,3,7,8- TCDF	0.660	0.157	1.545	0.833	806.002
1,2,3,7,8-PeCDF	0.103	0.015	0.208	0.087	69.086
2,3,4,7,8-PeCDF	2.041	0.316	3.761	2.507	1,740.432
1,2,3,4,7,8-HxCDF	0.824	0.126	1.364	0.787	600.073
1,2,3,6,7,8-HxCDF	0.265	0.041	0.431	0.257	161.200
2,3,4,6,7,8-HxCDF	0.022	BRL	0.029	0.019	4.340
1,2,3,7,8,9-HxCDF	0.346	0.053	0.522	0.367	200.172
1,2,3,4,6,7,8-HpCDF	0.088	0.018	0.126	0.085	67.314
1,2,3,4,7,8,9-HpCDF	0.016	0.003	0.026	0.020	14.769
OCDF	0.001	BRL	0.001	0.001	0.489
Total WHO TEQs	*4.929*	*0.892*	*8.744*	*5.532*	*4,119.645*

Table C.10 Continued

Sample ID	**81390**	**81545**	**81557**	**81561**	**81563**
Location	Not applicable	Basement AHU 5/6	Basement vault	Sixteenth floor elevator lobby	Sixteenth floor elevator lobby
Sample Description	Field blank (ng)	Wipe of uncleaned filter box, 0.5 sq. ft.	Uncleaned wall surface, 0.4 sq. ft.	Elevator south wall, button up, 0.4 sq. ft.	Duplicate 81561, 0.4 sq. ft.
Dioxin Homologs	**Calculated Concentration (ng/m^2)**				
TCDD	BRL <0.000	1.933	62.392	0.033	BRL
PeCDD	BRL <0.001	3.311	101.201	0.112	0.128
HxCDD	BRL <0.001	10.551	101.040	0.486	0.684
HpCDD	BRL <0.001	19.609	77.992	1.994	0.089
Total Dioxins		*35.403*	*342.626*	*2.624*	*0.901*
Furans Homologs					
TCDF	BRL <0.002	12.215	1,366.033	2.442	0.124
PeCDF	BRL <0.001	41.776	831.039	2.175	0.110
HxCDF	BRL <0.001	21.073	497.527	1.222	0.064
HpCDF	BRL <0.001	11.596	159.294	0.754	BRL
Total Furans		*86.660*	*2,853.893*	*6.594*	*0.298*
WHO TEQs					
2,3,7,8- TCDD	BRL <0.000	0.176	1.087	BRL	BRL
1,2,3,7,8-PeCDD	BRL <0.001	0.538	4.020	0.042	BRL
1,2,3,4,7,8-HxCDD	BRL <0.001	BRL	0.320	BRL	BRL
1,2,3,6,7,8-HxCDD	BRL <0.001	0.102	0.564	0.008	BRL
1,2,3,7,8,9-HxCDD	BRL <0.001	0.104	1.242	0.007	BRL
1,2,3,4,6,7,8-HpCDD	BRL <0.001	0.091	0.344	0.009	0.004
OCDD	BRL <0.001	0.003	0.004	BRL	BRL
2,3,7,8- TCDF	BRL <0.002	0.839	28.578	0.079	0.009
1,2,3,7,8-PeCDF	BRL <0.001	0.081	1.887	0.005	BRL
2,3,4,7,8-PeCDF	BRL <0.001	2.424	62.242	0.169	0.016
1,2,3,4,7,8-HxCDF	BRL <0.001	0.605	11.988	0.028	0.002
1,2,3,6,7,8-HxCDF	BRL <0.001	0.205	3.875	0.010	BRL
2,3,4,6,7,8-HxCDF	BRL <0.001	BRL	0.404	BRL	BRL
1,2,3,7,8,9-HxCDF	BRL <0.001	0.322	6.321	0.017	0.002
1,2,3,4,6,7,8-HpCDF	BRL <0.001	0.061	0.913	0.003	0.001
1,2,3,4,7,8,9-HpCDF	BRL <0.001	0.013	0.219	0.001	BRL
OCDF	BRL <0.001	0.001	0.007	BRL	BRL
Total WHO TEQs		*5.567*	*124.017*	*0.378*	*0.033*

Table C.10 Continued

sq. ft.	square foot
ng/m^2	nanograms per square meter
TCDD	tetrachlorodibenzo-p-dioxin
PeCDD	pentachlorodibenzo-p-dioxin
HxCDD	hexachlorodibenzo-p-dioxin
HpCDD	heptachlorodibenzo-p-dioxin
TCDF	tetrachlorodibenzofuran
PeCDF	pentachlorodibenzofuran
HxCDF	hexachlorodibenzofuran
HpCDF	heptachlorodibenzofuran
WHO	World Health Organization
TEQ	toxic equivalent
BRL	below reporting limit
OCDD	octadibenzodioxin
OCDF	octadibenzofuran

Samples analyzed by Columbia Analytical Services (Houston, Texas) using U.S. Environmental Protection Agency Method 8290.

Table C.11 Results of Analysis for Trace Metals in Wipe Samples Collected at One Broadway, Cambridge, Massachusetts, December 17, 2006

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81590	Intake into vault, floor of duct	Wipe area 0.6 sq. ft.	Antimony	64.8	1.0
			Beryllium	BRL	0.02
			Cadmium	15.3	0.1
			Chromium	4.9	2.3
			Cobalt	BRL	1.0
			Copper	774	1.1
			Iron	11,700	4.0
			Lead	153	1.0
			Manganese	41.4	0.2
			Molybdenum	BRL	1.2
			Nickel	0.5	0.4
			Vanadium	5	1.2
			Zinc	1,620	2.2
81592	Main trunk (air intake)	Overhead access panel near planter, wipe area 0.4 sq. ft.	Antimony	22.9	1.4
			Beryllium	0.1	0.0
			Cadmium	0.3	0.1
			Chromium	15.7	3.3
			Cobalt	BRL	1.4
			Copper	BRL	1.5
			Iron	25,714.3	5.7
			Lead	3.1	1.4
			Manganese	133.7	0.3
			Molybdenum	2.8	1.6
			Nickel	BRL	0.6
			Vanadium	20.1	1.6
			Zinc	21,85.7	3.1
81593	Main trunk (air intake)	Vertical surface of duct, wipe area 0.7 sq. ft.	Antimony	BRL	0.8
			Beryllium	BRL	0.02
			Cadmium	0.7	0.1
			Chromium	BRL	1.9
			Cobalt	BRL	0.8
			Copper	BRL	0.9
			Iron	532.8	3.2
			Lead	72	0.8
			Manganese	7.2	0.2
			Molybdenum	BRL	0.9
			Nickel	BRL	0.3
			Vanadium	2.2	0.9
			Zinc	691.2	1.7

Table C.11 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81594	Main trunk (air intake)	Damper for HV-1, wipe area 0.8 sq. ft.	Antimony	3	0.6
			Beryllium	BRL	0.02
			Cadmium	0.8	0.1
			Chromium	BRL	1.5
			Cobalt	BRL	0.7
			Copper	9.6	0.7
			Iron	547.4	2.6
			Lead	14.3	0.7
			Manganese	7.5	0.2
			Molybdenum	BRL	0.8
			Nickel	BRL	0.3
			Vanadium	1.4	0.8
			Zinc	606.9	1.4
81595	Main trunk (air intake)	Damper for AHU 5/6, wipe area 0.7 sq. ft.	Antimony	12	0.8
			Beryllium	0.02	0.02
			Cadmium	4.5	0.1
			Chromium	2.6	1.9
			Cobalt	BRL	0.8
			Copper	201.6	0.9
			Iron	1,584	3.2
			Lead	47.5	0.8
			Manganese	13.8	0.2
			Molybdenum	BRL	0.9
			Nickel	0.7	0.3
			Vanadium	5	0.9
			Zinc	619.2	1.7
81596	Main trunk (air intake)	Vertical surface between intakes for HV-1 and AHU 5/6, wipe area 0.6 sq. ft.	Antimony	1.7	1.0
			Beryllium	BRL	0.02
			Cadmium	1.3	0.1
			Chromium	2.5	2.3
			Cobalt	BRL	1.0
			Copper	1.1	1.1
			Iron	774	4.0
			Lead	109.8	1.0
			Manganese	11.5	0.2
			Molybdenum	BRL	1.2
			Nickel	BRL	0.4
			Vanadium	5.4	1.2
			Zinc	1,116	2.2

Table C.11 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81597	Stairwell one (sixth floor)	Cleaned wall by fire valve, wipe area 0.8 sq. ft.	Antimony	BRL	0.6
			Beryllium	BRL	0.02
			Cadmium	BRL	0.1
			Chromium	BRL	1.6
			Cobalt	BRL	0.7
			Copper	4.4	0.7
			Iron	46.8	2.6
			Lead	0.9	0.7
			Manganese	1.9	0.2
			Molybdenum	BRL	0.8
			Nickel	BRL	0.3
			Vanadium	BRL	0.8
			Zinc	33.6	1.4
81598	Stairwell one (fourth floor)	Cleaned wall above phone jack, wipe area 0.8 sq. ft.	Antimony	BRL	0.7
			Beryllium	0.02	0.02
			Cadmium	0.2	0.1
			Chromium	BRL	1.7
			Cobalt	BRL	0.7
			Copper	12.2	0.8
			Iron	28.8	2.9
			Lead	1.4	0.7
			Manganese	1.6	0.2
			Molybdenum	BRL	0.8
			Nickel	BRL	0.3
			Vanadium	BRL	0.8
			Zinc	20.9	1.6
81599	Stairwell one (second floor)	Cleaned wall above phone jack, wipe area 0.2 sq. ft.	Antimony	BRL	2.9
			Beryllium	BRL	0.07
			Cadmium	1.3	0.3
			Chromium	BRL	6.9
			Cobalt	BRL	3.0
			Copper	48.5	3.2
			Iron	85.3	11.7
			Lead	5.3	3.0
			Manganese	15.5	0.7
			Molybdenum	BRL	3.4
			Nickel	BRL	1.3
			Vanadium	BRL	3.4
			Zinc	106.7	6.4

Table C.11 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81600	Stairwell two (third floor)	Wipe of cleaned above phone jack and door, wipe area 0.9 sq. ft.	Antimony	3	0.6
			Beryllium	BRL	0.0
			Cadmium	0.8	0.1
			Chromium	BRL	1.5
			Cobalt	BRL	0.6
			Copper	74.3	0.7
			Iron	44.6	2.5
			Lead	3.1	0.6
			Manganese	1.5	0.1
			Molybdenum	BRL	0.7
			Nickel	BRL	0.3
			Vanadium	BRL	0.7
			Zinc	42.3	1.4
81601	Stairwell two (third floor)	Duplicate 81600, wipe area 0.9 sq. ft.	Antimony	1.2	0.6
			Beryllium	BRL	0.01
			Cadmium	0.2	0.1
			Chromium	BRL	1.4
			Cobalt	BRL	0.6
			Copper	33.1	0.6
			Iron	32	2.3
			Lead	1	0.6
			Manganese	1.5	0.1
			Molybdenum	BRL	0.7
			Nickel	BRL	0.3
			Vanadium	BRL	0.7
			Zinc	30.9	1.3
81602		Field blank	Antimony	<0.54 μg/wipe	0.54 μg/wipe
			Beryllium	<0.01 μg/wipe	0.013 μg/wipe
			Cadmium	<0.05 μg/wipe	0.048 μg/wipe
			Chromium	<1.30 μg/wipe	1.3 μg/wipe
			Cobalt	<0.56 μg/wipe	0.56 μg/wipe
			Copper	<0.60 μg/wipe	0.60 μg/wipe
			Iron	3.00 μg/wipe	2.2 μg/wipe
			Lead	<0.56 μg/wipe	0.56 μg/wipe
			Manganese	<0.13 μg/wipe	0.13 μg/wipe
			Molybdenum	<0.64 μg/wipe	0.64 μg/wipe
			Nickel	<0.24 μg/wipe	0.24 μg/wipe
			Vanadium	<0.64 μg/wipe	0.64 μg/wipe
			Zinc	2.10 μg/wipe	1.2 μg/wipe

Table C.11 Continued

μg/sq. ft.	micrograms per square foot
BRL	below reporting limit
AHU	air handling unit
μg/wipe	micrograms per wipe

Samples analyzed by Liberty Mutual Industrial Hygiene Laboratory, Hopkinton, Massachusetts, using U.S. Occupational Safety and Health Administration ID-121.

Table C.12 Results of Surface Wipes for Dioxins from One Broadway, Cambridge, Massachusetts, December 19, 2006

Sample ID	**80354**	**80359**
Location	First floor, stair 2 ventilation vents, 0.8 sq. ft.	Stair ventilation duct in basement, 0.3 sq. ft.
Sample Description	Top of exterior	New access hatch above fan box
Dioxin Homologs	**Calculated Concentration (ng/m^2)**	
TCDD	3.276	21.87
PeCDD	6.921	35.688
HxCDD	9.010	44.306
HpCDD	7.182	40.958
Total Dioxins	*26.389*	*142.826*
Furans Homologs		
TCDF	40.385	272.021
PeCDF	43.408	224.111
HxCDF	26.785	133.987
HpCDF	13.343	65.265
Total Furans	*123.921*	*695.385*
WHO TEQs		
2,3,7,8- TCDD	0.000	0.424
1,2,3,7,8-PeCDD	0.148	0.736
1,2,3,4,7,8-HxCDD	0.027	0.137
1,2,3,6,7,8-HxCDD	0.048	0.255
1,2,3,7,8,9-HxCDD	0.102	0.405
1,2,3,4,6,7,8-HpCDD	0.032	0.170
OCDD	0.004	0.037
2,3,7,8- TCDF	0.926	5.296
1,2,3,7,8-PeCDF	0.096	0.478
2,3,4,7,8-PeCDF	2.153	10.247
1,2,3,4,7,8-HxCDF	0.746	3.668
1,2,3,6,7,8-HxCDF	0.258	1.287
2,3,4,6,7,8-HxCDF	0.310	1.455
1,2,3,7,8,9-HxCDF	0.000	0.000
1,2,3,4,6,7,8-HpCDF	0.083	0.403
1,2,3,4,7,8,9-HpCDF	0.014	0.056
OCDF	0.004	0.022
Total WHO TEQs	*4.949*	*25.078*

sq. ft. square foot
ng/m^2 nanograms per square meter
TCDD tetrachlorodibenzo-p-dioxin
PeCDD pentachlorodibenzo-p-dioxin
HxCDD hexachlorodibenzo-p-dioxin
HpCDD heptachlorodibenzo-p-dioxin
TCDF tetrachlorodibenzofuran
PeCDF pentachlorodibenzofuran
HxCDF hexachlorodibenzofuran
HpCDF heptachlorodibenzofuran
WHO World Health Organization
TEQ toxic equivalent quotient
BRL below recording limit
OCDD octadibenzodioxin
OCDF octadibenzofuran

Samples analyzed by Columbia Analytical Services (Houston, Texas) using U.S. Environmental Protection Agency Method 8290.

Table C.13 Post-Cleaning Results of Analysis for Trace Metals in Wipe Samples Collected at One Broadway, Cambridge, Massachusetts, December 19, 2006

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
80343	Roof ventilation exhaust system	Left duct at roof, wipe area 0.3 sq. ft.	Antimony	17.6	1.9
			Beryllium	BRL	0.02
			Cadmium	4	0.2
			Chromium	BRL	4.7
			Cobalt	BRL	2.0
			Copper	61.2	2.2
			Iron	396	7.9
			Lead	61.2	2.0
			Manganese	9.7	0.5
			Molybdenum	BRL	2.3
			Nickel	BRL	0.9
			Vanadium	BRL	2.3
			Zinc	828	4.3
80344	Roof ventilation exhaust system	Exhaust fan interior, wipe area 0.2 sq. ft.	Antimony	12	3.2
			Beryllium	BRL	0.1
			Cadmium	6.6	0.3
			Chromium	BRL	7.8
			Cobalt	BRL	3.4
			Copper	258	3.6
			Iron	54.6	13.2
			Lead	13.2	3.4
			Manganese	2.1	0.8
			Molybdenum	BRL	3.8
			Nickel	BRL	1.4
			Vanadium	BRL	3.8
			Zinc	108	7.2
80345	Stair one exhaust	Penthouse access panel, wipe area 0.2 sq. ft.	Antimony	14.9	2.4
			Beryllium	BRL	0.1
			Cadmium	4.4	0.2
			Chromium	17.6	5.9
			Cobalt	BRL	2.5
			Copper	193.5	2.7
			Iron	945	9.9
			Lead	225	2.5
			Manganese	12.2	0.6
			Molybdenum	BRL	2.9
			Nickel	1.3	1.1
			Vanadium	BRL	2.9
			Zinc	1,215	5.4

Table C.13 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
80346	Stair two roof access panel, seventeenth floor	Vent at top, wipe area 0.5 sq. ft.	Antimony	1.8	1.2
			Beryllium	BRL	0.02
			Cadmium	0.6	0.1
			Chromium	BRL	2.8
			Cobalt	BRL	1.2
			Copper	30.5	1.3
			Iron	65.5	4.8
			Lead	2.6	1.2
			Manganese	1.1	0.3
			Molybdenum	BRL	1.4
			Nickel	BRL	0.5
			Vanadium	BRL	1.4
			Zinc	19.6	2.6
80347	Stair two vertical wall, seventeenth floor	Wall above light switch, wipe area 1.0 sq. ft.	Antimony	BRL	0.5
			Beryllium	BRL	0.01
			Cadmium	BRL	0.0
			Chromium	BRL	1.3
			Cobalt	BRL	0.6
			Copper	1.3	0.6
			Iron	7.4	2.2
			Lead	BRL	0.6
			Manganese	0.2	0.1
			Molybdenum	BRL	0.6
			Nickel	BRL	0.2
			Vanadium	BRL	0.6
			Zinc	2.9	1.2
80348	Stair one, seventeenth floor	Above fire alarm vertical wall, wipe area 1.0 sq. ft.	Antimony	BRL	0.5
			Beryllium	BRL	0.01
			Cadmium	BRL	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.6
			Copper	4.5	0.6
			Iron	40	2.2
			Lead	BRL	0.6
			Manganese	0.5	0.1
			Molybdenum	BRL	0.6
			Nickel	BRL	0.2
			Vanadium	BRL	0.6
			Zinc	9.4	1.2

Table C.13 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
80349	Stair one, seventeenth floor	Vent at top of roof access, wipe area 0.6 sq. ft.	Antimony	BRL	1
			Beryllium	BRL	0.02
			Cadmium	3.6	0.1
			Chromium	BRL	2.3
			Cobalt	BRL	1.0
			Copper	3.4	1.1
			Iron	19.8	4.0
			Lead	BRL	1
			Manganese	0.3	0.2
			Molybdenum	BRL	1.2
			Nickel	BRL	0.4
			Vanadium	BRL	1.2
			Zinc	25.2	2.2
80350	Stair two, fifth floor	Underside of landing, wipe area 0.6 sq. ft.	Antimony	BRL	1
			Beryllium	BRL	0.02
			Cadmium	BRL	0.1
			Chromium	BRL	2.3
			Cobalt	39.6	1
			Copper	BRL	1.1
			Iron	5.8	4
			Lead	BRL	1
			Manganese	2	0.2
			Molybdenum	BRL	1.2
			Nickel	BRL	0.4
			Vanadium	BRL	1.2
			Zinc	16.2	2.2
80351	Stair two vertical wall, fifth floor	Across from janitor's closet, wipe area 1.0 sq. ft.	Antimony	BRL	0.5
			Beryllium	BRL	0.01
			Cadmium	BRL	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.6
			Copper	0.9	0.6
			Iron	7.3	2.2
			Lead	BRL	0.6
			Manganese	BRL	0.1
			Molybdenum	BRL	0.6
			Nickel	BRL	0.2
			Vanadium	BRL	0.6
			Zinc	3.6	1.2

Table C.13 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
80352	Stair two ventilation duct, first floor	Left side of exterior of duct, wipe area 0.3 sq. ft.	Antimony	10.5	1.6
			Beryllium	BRL	0.04
			Cadmium	4.7	0.1
			Chromium	7.3	3.8
			Cobalt	BRL	1.6
			Copper	241.5	1.7
			Iron	61.1	6.4
			Lead	165.8	1.6
			Manganese	1.6	0.4
			Molybdenum	BRL	1.9
			Nickel	BRL	0.7
			Vanadium	BRL	1.9
			Zinc	552.7	3.5
80355	Basement hallway	Vault door, wipe area 0.9 sq. ft.	Antimony	2.3	0.6
			Beryllium	BRL	0.01
			Cadmium	0.8	0.1
			Chromium	BRL	1.5
			Cobalt	BRL	0.6
			Copper	148.6	0.7
			Iron	46.9	2.5
			Lead	3	0.6
			Manganese	1.1	0.1
			Molybdenum	BRL	0.7
			Nickel	BRL	0.3
			Vanadium	BRL	0.7
			Zinc	20.6	1.4
80356	Basement switch room	Top of meters, wipe area 0.6 sq. ft.	Antimony	65.5	0.9
			Beryllium	BRL	0.02
			Cadmium	29.5	0.1
			Chromium	44.2	2.1
			Cobalt	BRL	0.9
			Copper	670.9	1
			Iron	1,210.9	3.6
			Lead	99.8	0.9
			Manganese	16.4	0.2
			Molybdenum	BRL	1
			Nickel	1.8	0.4
			Vanadium	2.5	1
			Zinc	425.5	2.0

Table C.13 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
80357	Basement, stairwell ventilation duct	Above square new access panel, wipe area 0.3 sq. ft.	Antimony	2.8	2.2
			Beryllium	BRL	0.1
			Cadmium	1.7	0.2
			Chromium	BRL	5.2
			Cobalt	BRL	2.2
			Copper	72	2.4
			Iron	32.4	8.8
			Lead	14.8	2.2
			Manganese	0.7	0.5
			Molybdenum	BRL	2.6
			Nickel	BRL	1
			Vanadium	BRL	2.6
			Zinc	800	4.8
80360	Basement fresh air intake duct	Adjacent to damper to AHU 5/6, wipe area 0.5 sq. ft.	Antimony	15.2	1.1
			Beryllium	BRL	0.02
			Cadmium	3.8	0.1
			Chromium	BRL	2.6
			Cobalt	BRL	1.1
			Copper	66	1.2
			Iron	114	4.4
			Lead	13.2	1.1
			Manganese	2.6	0.3
			Molybdenum	BRL	1.3
			Nickel	BRL	0.5
			Vanadium	BRL	1.3
			Zinc	460	2.4
80361	Not applicable	Field blank	Antimony	<0.54 μg/wipe	0.54 μg/wipe
			Beryllium	<0.01 μg/wipe	0.013 μg/wipe
			Cadmium	<0.05 μg/wipe	0.048 μg/wipe
			Chromium	<1.30 μg/wipe	1.3 μg/wipe
			Cobalt	<0.56 μg/wipe	0.56 μg/wipe
			Copper	<0.60 μg/wipe	0.60 μg/wipe
			Iron	8.00 μg/wipe	2.2 μg/wipe
			Lead	<0.56 μg/wipe	0.56 μg/wipe
			Manganese	<0.13 μg/wipe	0.13 μg/wipe
			Molybdenum	<0.64 μg/wipe	0.64 μg/wipe
			Nickel	<0.24 μg/wipe	0.24 μg/wipe
			Vanadium	<0.64 μg/wipe	0.64 μg/wipe
			Zinc	4.00 μg/wipe	1.2 μg/wipe

Table C.13 Continued

µg/sq. ft.	micrograms per square foot
BRL	below reporting limit
µg/wipe	micrograms per wipe

Samples analyzed by Liberty Mutual Industrial Hygiene Laboratory, Hopkinton, Massachusetts, using U.S. Occupational Safety and Health Administration ID-121.

Table C.14 Post Cleaning Wipe Sample Results for Polychlorinated Biphenyls from One Broadway, Cambridge, Massachusetts, December 19, 2006

Sample ID	Floor	Stairwell	Description	Calculated Aroclor 1254[1,2] (μg/100 cm^2)	Notes
80353	First	Two	Ventilation duct surface, wipe area 0.8 sq. ft.	BRL <0.13	NA
80358	Basement	NA	Ventilation duct access hatch, wipe area 0.3 sq. ft.	BRL <0.43	NA

μg/100 cm^2 micrograms per 100 square centimeters
sq. ft. square foot
BRL below reporting limit
NA not applicable

[1] Polychlorinated biphenyl concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency Method 8082 (GC/ECD).
[2] Aroclor 1016, 1221, 1232, 1242, 1248, and 1260 also tested. All results below reporting levels, unless noted.

Table C.15 Results of Analysis for Trace Metals in Wipe Samples Collected at One Broadway, Cambridge, Massachusetts, December 29, 2006

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81890	Louver for AHU 5/6	Wipe sample 1.7 sq. ft.	Antimony	BRL	0.3
			Beryllium	BRL	0.007
			Cadmium	0.3	0.03
			Chromium	BRL	0.8
			Cobalt	BRL	0.3
			Copper	10.3	0.4
			Iron	32.1	1.3
			Lead	1.7	0.3
			Manganese	0.8	0.1
			Molybdenum	BRL	0.4
			Nickel	BRL	0.1
			Vanadium	BRL	0.4
			Zinc	139.2	0.7
81893	Air intake duct, vertical surface	Wipe sample 1.1 sq. ft.	Antimony	BRL	0.5
			Beryllium	BRL	0.01
			Cadmium	0.3	0.04
			Chromium	BRL	1.1
			Cobalt	BRL	0.5
			Copper	4.5	0.5
			Iron	23.6	1.9
			Lead	8.7	0.5
			Manganese	0.5	0.1
			Molybdenum	BRL	0.6
			Nickel	BRL	0.2
			Vanadium	BRL	0.6
			Zinc	785.5	1.0
81896	Sixteenth floor, door for Liquid Bits	Wipe sample 1 sq. ft.	Antimony	BRL	0.5
			Beryllium	BRL	0.01
			Cadmium	BRL	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.6
			Copper	1.1	0.6
			Iron	BRL	2.2
			Lead	BRL	0.6
			Manganese	BRL	0.1
			Molybdenum	BRL	0.6
			Nickel	0.3	0.2
			Vanadium	BRL	0.6
			Zinc	2.6	1.2

Table C.15 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration µg/sq. ft.	Calculated Limit of Quantification µg/sq. ft.
81899	Eleventh floor, tell data at stair 1	Wipe sample 1 sq. ft.	Antimony	BRL	0.5
			Beryllium	BRL	0.01
			Cadmium	BRL	0.04
			Chromium	BRL	1.3
			Cobalt	BRL	0.6
			Copper	BRL	0.6
			Iron	31	2.2
			Lead	BRL	0.6
			Manganese	0.8	0.1
			Molybdenum	BRL	0.6
			Nickel	BRL	0.2
			Vanadium	BRL	0.6
			Zinc	1.9	1.2
81902	Eighth floor, MIT/OCW	Wipe sample 0.7 sq. ft.	Antimony	BRL	0.8
			Beryllium	BRL	0.02
			Cadmium	BRL	0.1
			Chromium	BRL	2.0
			Cobalt	BRL	0.8
			Copper	1.1	0.9
			Iron	BRL	3.3
			Lead	BRL	0.8
			Manganese	BRL	0.2
			Molybdenum	BRL	1.0
			Nickel	BRL	0.4
			Vanadium	BRL	1.0
			Zinc	BRL	1.8
81905	Fifth floor, Thing Magic counter	Wipe sample 1.6 sq. ft.	Antimony	BRL	0.3
			Beryllium	BRL	0.01
			Cadmium	0.1	0.03
			Chromium	BRL	0.8
			Cobalt	BRL	0.4
			Copper	5.3	0.4
			Iron	19.8	1.4
			Lead	0.5	0.4
			Manganese	0.5	0.1
			Molybdenum	BRL	0.4
			Nickel	0.3	0.2
			Vanadium	BRL	0.4
			Zinc	6.4	0.8

Table C.15 Continued

Sample ID	Location	Description	Analyte	Calculated Concentration μg/sq. ft.	Calculated Limit of Quantification μg/sq. ft.
81908	Third floor, Natural Std	Wipe sample 1 sq. ft.	Antimony	2.3	0.5
			Beryllium	BRL	0.013
			Cadmium	0.8	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.6
			Copper	35	0.6
			Iron	17	2.2
			Lead	2.4	0.6
			Manganese	0.6	0.1
			Molybdenum	BRL	0.6
			Nickel	0.3	0.2
			Vanadium	BRL	0.6
			Zinc	21	1.2
81911	First floor, stair 2 grill	Wipe sample 1 sq. ft.	Antimony	5.6	0.5
			Beryllium	BRL	0.01
			Cadmium	3.4	0.05
			Chromium	BRL	1.3
			Cobalt	BRL	0.6
			Copper	110	0.6
			Iron	64	2.2
			Lead	48	0.6
			Manganese	1.5	0.1
			Molybdenum	BRL	0.6
			Nickel	BRL	0.2
			Vanadium	BRL	0.6
			Zinc	340	1.2
81912	Not applicable	Field blank	Antimony	<0.54 μg/wipe	0.54 μg/wipe
			Beryllium	<0.01 μg/wipe	0.013 μg/wipe
			Cadmium	<0.05 μg/wipe	0.048 μg/wipe
			Chromium	<1.30 μg/wipe	1.3 μg/wipe
			Cobalt	<0.56 μg/wipe	0.56 μg/wipe
			Copper	<0.60 μg/wipe	0.60 μg/wipe
			Iron	10.00 μg/wipe	2.2 μg/wipe
			Lead	<0.56 μg/wipe	0.56 μg/wipe
			Manganese	<0.13 μg/wipe	0.13 μg/wipe
			Molybdenum	<0.64 μg/wipe	0.64 μg/wipe
			Nickel	<0.24 μg/wipe	0.24 μg/wipe
			Vanadium	<0.64 μg/wipe	0.64 μg/wipe
			Zinc	5.00 μg/wipe	1.2 μg/wipe

μg/sq. ft. micrograms per square foot
BRL below recording limit
μg/wipe micrograms per wipe

Samples analyzed by Liberty Mutual Industrial Hygiene Laboratory, Hopkinton, Massachusetts, using U.S. Occupational Safety and Health Administration ID-121.

Table C.16 Results from Air Sampling for Metals at One Broadway, Cambridge, Massachusetts, December 29, 2006

Sample ID	Sample Description	Air Volume (liters)	Compound	Calculated Concentration ($\mu g/m^3$)
81871	Outdoors	1,236	Antimony	BRL <0.22
			Beryllium	BRL <0.01
			Cadmium	BRL <0.02
			Chromium	BRL <0.54
			Cobalt	BRL <0.23
			Copper	BRL <0.24
			Iron	BRL <0.89
			Lead	BRL <0.23
			Manganese	BRL <0.05
			Molybdenum	BRL <0.26
			Nickel	BRL <0.10
			Vanadium	BRL <0.26
			Zinc	BRL <0.49
81875	Lobby	1,267	Antimony	BRL <0.21
			Beryllium	BRL <0.01
			Cadmium	BRL <0.02
			Chromium	BRL <0.53
			Cobalt	BRL <0.22
			Copper	BRL <0.24
			Iron	BRL <0.87
			Lead	BRL <0.22
			Manganese	BRL <0.05
			Molybdenum	BRL <0.25
			Nickel	BRL <0.09
			Vanadium	BRL <0.25
			Zinc	BRL <0.47
81876	Lobby (duplicate)	1,267	Antimony	BRL <0.21
			Beryllium	BRL <0.01
			Cadmium	BRL <0.02
			Chromium	BRL <0.53
			Cobalt	BRL <0.22
			Copper	BRL <0.24
			Iron	BRL <0.87
			Lead	BRL <0.22
			Manganese	BRL <0.05
			Molybdenum	BRL <0.25
			Nickel	BRL <0.09
			Vanadium	BRL <0.25
			Zinc	BRL <0.47

Table C.16 Continued

Sample ID	Sample Description	Air Volume (liters)	Compound	Calculated Concentration ($\mu g/m^3$)
81879	Basement hallway by bathrooms	1,299	Antimony	BRL <0.21
			Beryllium	BRL <0.01
			Cadmium	BRL <0.02
			Chromium	BRL <0.52
			Cobalt	BRL <0.22
			Copper	BRL <0.23
			Iron	BRL <0.85
			Lead	BRL <0.22
			Manganese	BRL <0.05
			Molybdenum	BRL <0.25
			Nickel	BRL <0.09
			Vanadium	BRL <0.25
			Zinc	BRL <0.46
81880	Seventh floor elevator lobby	1,302	Antimony	BRL <0.21
			Beryllium	BRL <0.01
			Cadmium	BRL <0.02
			Chromium	BRL <0.51
			Cobalt	BRL <0.22
			Copper	BRL <0.23
			Iron	BRL <0.84
			Lead	BRL <0.22
			Manganese	BRL <0.05
			Molybdenum	BRL <0.25
			Nickel	BRL <0.09
			Vanadium	BRL <0.25
			Zinc	BRL <0.46
81887	Fifth floor stairwell two lobby	Pump fault	Antimony	BRL <0.27 μg
			Beryllium	BRL <0.01 μg
			Cadmium	BRL <0.02 μg
			Chromium	BRL <0.67 μg
			Cobalt	BRL <0.28 μg
			Copper	1.10 μg
			Iron	BRL <1.10 μg
			Lead	BRL <0.28 μg
			Manganese	BRL <0.07 μg
			Molybdenum	BRL <0.32 μg
			Nickel	BRL <0.12 μg
			Vanadium	BRL<0.32 μg
			Zinc	BRL <0.60 μg

Table C.16 Continued

Sample ID	Sample Description	Air Volume (liters)	Compound	Calculated Concentration ($\mu g/m^3$)
81872	Field blank	NA	Antimony	BRL <0.27 μg
			Beryllium	BRL <0.01 μg
			Cadmium	BRL <0.02 μg
			Chromium	BRL <0.67 μg
			Cobalt	BRL <0.28 μg
			Copper	0.37 μg
			Iron	2.10 μg
			Lead	BRL <0.28 μg
			Manganese	BRL <0.07 μg
			Molybdenum	BRL <0.32 μg
			Nickel	BRL <0.12 μg
			Vanadium	BRL <0.32 μg
			Zinc	BRL <0.60 μg

$\mu g/m^3$ micrograms per cubic meter
BRL below reporting limit
NA not applicable

Samples were analyzed by Liberty Mutual Industrial Hygiene Laboratory, Hopkinton, Massachusetts using the NIOSH 7300 method.

Table C.17 Air Sample Results Following Cleaning Activities from One Broadway, Cambridge, Massachusetts, December 29, 2006

Sample ID	Location, Description	Air Volume (liters)	Measured PCBs (μg)	Concentration (μg/m^3)
81869/70	Outdoor air sample	Pump fault	BRL <0.06	NA
81873/74	First floor lobby	286	BRL <0.06	BRL <0.2
81877/78	First floor lobby	293	BRL <0.06	BRL <0.2
81881/82	Basement corridor by bathrooms	Pump fault	BRL <0.06	NA
81883/84	Seventh floor elevator lobby	298	BRL <0.06	BRL <0.2
81885/86	Fifth floor stairwell two	302	BRL <0.06	BRL <0.2
81913	Field blank	NA	BRL <0.06	BRL <0.06 μg

PCB polychlorinated biphenyl
μg micrograms
μg/m^3 micrograms per cubic meter
BRL below reporting limit
NA not applicable

National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) for total PCBs is 1 μg/m^3.

Samples analyzed by Galson Laboratories (East Syracuse, New York) following NIOSH 5503.

Table C.18 Wipe Sample Results for Polychlorinated Biphenyls from One Broadway, Cambridge, Massachusetts, December 29, 2006

Sample ID	Floor	Location	Description	Calculated Aroclor 1248[1,2] (μg/100 cm^2)	Notes
81888	NA	Louver for AHU 5/6	Wipe area 0.5 sq. ft.	BRL <0.21	NA
81892	NA	Air intake duct, vertical surface	Wipe area 1 sq. ft.	BRL <0.11	NA
81894	Sixteenth	Door for Liquid Bits	Wipe area 1 sq. ft.	BRL <0.11	NA
81898	Eleventh	Tell data at stair one	Wipe area 1 sq. ft.	BRL <0.11	NA
81900	Eighth	MIT/OCW	Wipe area 1.3 sq. ft.	BRL <0.08	NA
81904	Fifth	Thing Magic counter	Wipe area 1.6 sq. ft.	BRL <0.6	NA
81906	Third	Natural Std	Wipe area 0.8 sq. ft.	BRL <0.13	NA
81910	First	Stair two grill	Wipe area 1 sq. ft.	BRL <0.11	NA
81914	NA	NA	Field blank	BRL <1.0 μg/wipe	NA

μg/100 cm^2 micrograms per 100 square centimeters
sq. ft. square foot
BRL below reporting limit
NA not applicable
μg/wipe micrograms per wipe

[1] Polychlorinated biphenyls concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency Method 8082 (GC/ECD).

[2] Aroclor 1016, 1221, 1232, 1242, 1254, 1260, 1262, and 1268 also tested. All results below reporting levels, unless noted.

APPENDIX D

HEALTH-BASED ACCEPTANCE CRITERIA CALCULATION DATA

HEALTH-BASED ACCEPTANCE CRITERIA CALCULATION DATA

EH&E derived health-based acceptance criteria for settled dust and air in the Building according to methodology outlined in the World Trade Center (WTC) Document,[1] using values specific for occupational rather than residential exposures.

Screening values for settled dust were calculated using the following equations, for cancer and noncancer endpoints:

Screening $Value_{noncancer}$ (mg/cm^2):

$= 1*RfD/\{[(ET_{hard}*FTSS_{hard})+(ET_{soft}*FTSS_{soft})]*[SA*FQ*SE/BW]*250/365\}$

Screening $Value_{cancer}$ (mg/cm^2):

$= \{1x10^{-4}/CSF\}/\{[(ET_{hard}*FTSS_{hard})+(ET_{soft}*FTSS_{soft})]*[SA*FQ*SE/BW]*(250*ED)/(365*70)\}$

Where:

RfD (mg/kg-day)	=	Reference Dose;
CSF ($mg/kg-day^{)-1}$	=	Cancer Slope Factor;
ET_{hard} (hours/day)	=	Exposure Time—hard surfaces;
ET_{soft} (hours/day)	=	Exposure Time—soft surfaces;
$FTSS_{hard}$ (unitless)	=	Fraction Transferred from Surface to Skin—soft surfaces;
$FTSS_{soft}$ (unitless)	=	Fraction Transferred from Surface to Skin—hard surfaces;
SA (cm^2/event)	=	Surface Area (for hand-mouth contact);
FQ (events/hr)	=	Frequency of hand to mouth events;
SE (unitless)	=	Saliva Extraction factor;
BW (kg)	=	Body Weight; and
ED (years)	=	Exposure Duration

EH&E used the same values that were used in the WTC Document for the RfD and CSF, FTSS (for both hard and soft surfaces), and the saliva extraction factor. For SA, FQ and BW, EH&E used the adult values provided in the WTC Document. EH&E used

[1] EPA. 2003. *World Trade Center Indoor Environment Assessment: Selecting Contaminants of Potential Concern and Setting Health-based Benchmarks.* Prepared by the Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Task Force Working Group. May 2003. (http://www.epa.gov/wtc/copc_study.htm)

exposure times of three and six hours/day, for hard and soft surfaces, respectively (versus four and eight hours/day used for adults in the WTC Document). EH&E used an exposure duration of 20 years[2] (versus 30 years used in the WTC Document).

Screening values for indoor air were calculated using the following equations, for cancer and noncancer endpoints:

Screening $Value_{noncancer}$ (mg/cm^2):
= 1*RfC/[(ET/24)*(EF/365)]

Screening $Value_{cancer}$ (mg/cm^2):
= [1x10-4/IUR]/[(ET/24)*(EF*ED)/(365*70)]

Where:

RfC (mg/m^3)	=	Reference Concentration;
IUR $(mg/m^3)^{-1}$	=	Inhalation Unit Risk;
ET (hours/day)	=	Exposure Duration;
EF (days/year)	=	Exposure Frequency; and
ED (years)	=	Exposure Duration

EH&E used the same values that were used in the WTC Document for the RfC and IUR. EH&E used an exposure time of nine hours (versus 24 hours, used implicitly in the WTC Document), and exposure frequency of 250 days/year (versus 365 days/year implicitly used in the WTC Document), and an exposure duration of 20 years (versus 30 years used in the WTC Document).

[2] An exposure duration of 20 years corresponds with the median tenure for men, ages 50-54, as provided in the U.S. Environmental Protection Agency *Exposure Factors Handbook* (1997, Table 15-158).

APPENDIX E

TRC ENVIRONMENTAL, INC.
LABORATORY DATA

con-test®
ANALYTICAL LABORATORY

39 Spruce Street ° East Longmeadow, MA 01028 ° FAX 413/525-6405 ° TEL. 413/525-2332

REPORT DATE 12/11/2006

TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852
ATTN: DOT MCGLINCY

CONTRACT NUMBER:
PURCHASE ORDER NUMBER:

PROJECT NUMBER: 42462-1111

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02346
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: ONE BROADWAY, CAMBRIDGE, MA

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
*S1	06B40488	SOLID	VAULT SOOT SAMPLE 1	6010 solid mcp
*S1	06B40488	SOLID	VAULT SOOT SAMPLE 1	8082 solid
*S1	06B40488	SOLID	VAULT SOOT SAMPLE 1	8270 solid
*S1	06B40488	SOLID	VAULT SOOT SAMPLE 1	cu (mg/kg) icp
*S2	06B40489	WIPE - OTHER	AIRDUCT - FLR / NE (WIPES)	pcb wipe 8082
*S3	06B40490	WIPE - OTHER	5TH FLOOR - STAIRWELL (WIPE)	pcb wipe 8082
S4	06B40491	WIPE - OTHER	5TH FLOOR - NORTHWALL (WIPE)	pcb wipe 8082
VAULT FLOOR	06B40492	OIL	OIL & WATER	pcb - oil

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CONTRACT NUMBER:
PURCHASE ORDER NUMBER:

PROJECT NUMBER: 42462-1111

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02346
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

Comments :

LIMS BATCH NO. : LIMT-02346

CASE NARRATIVE SUMMARY

IN METHOD 6010, THE LOW LEVEL CALIBRATION CHECK WAS OUTSIDE CONTROL LIMITS FOR ZN. RESULTS MAY BE BIAS ON THE HIGH SIDE.

IN METHOD 8270S FOR SAMPLE(S) 06B40488, THE REPORTED RESULTS FOR PYRENE, BUTYBENZYLPHTHALATE, BIS(2-ETHYLHEXYLPHTHALATE ARE ESTIMATED. EITHER THE INITIAL OR CONTINUING CALIBRATION DID NOT MEET REQUIRED
CRITERIA.

THERE ARE NO OTHER ANALYTICAL ISSUES AFFECTING THE USABILITY OF THE DATA

DETAILED CASE NARRATIVE

METHOD SW846-6010

RECOMMENDED SAMPLE HOLDING TIMES WERE NOT EXCEEDED FOR ALL SAMPLES ANALYZED BY METHOD 6010 UNLESS LISTED BELOW: NONE EXCEEDED

ALL SAMPLES FOR METHOD 6010 WERE RECEIVED PRESERVED PROPERLY IN THE PROPER CONTAINERS AS SPECIFIED ON THE CHAIN-OF-CUSTODY FORM UNLESS LISTED BELOW: ALL PROPERLY PRESERVED

INITIAL AND CONTINUING CALIBRATIONS MET ALL REQUIRED PERFORMANCE STANDARDS FOR METHOD 6010 EXCEPT AS LISTED BELOW: ALL STANDARDS MET EXCEPT THE LOW LEVEL CALIBRATION CHECK WAS OUTSIDE CONTROL LIMITS FOR ZN. RESULTS MAY BE BIAS ON THE HIGH SIDE.

INTERFERENCE CHECK STANDARDS (ICSA & ICSAB) VERIFIED INTER-ELEMENT SPECTRAL INTERFERENCE CORRECTIONS, WITH CONTROL LIMITS OF 80-120% FOR ALL ANALYTES, EXCEPT AS LISTED BELOW:
ALL STANDARDS MET

LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE RECOVERIES, AS WELL AS LCS RPD, FOR REQUIRED MCP DATA ENHANCEMENT 6010 ELEMENTS WERE ALL WITHIN REQUIRED CONTROL LIMITS EXCEPT AS LISTED BELOW: NONE OUTSIDE CONTROL LIMITS

THE 6010 METHOD BLANK WAS FOUND NOT TO BE CONTAMINATED WITH TARGET ANALYTES AT LEVELS ABOVE THE REPORTING LIMIT EXCEPT WHERE LISTED BELOW: NO CONTAMINATION NOTED

ALL 6010 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES, SAMPLE DUPLICATE RPDs AND MSDRPD, IF REQUESTED IN THIS BATCH WERE WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD UNLESS LISTED BELOW: NONE REQUESTED OR PERFORMED ON SAMPLES SPECIFIC TO THIS CHAIN-OF-CUSTODY.

ALL ANALYTE LIST COMPOUNDS WERE REPORTED FOR METHOD 6010 UNLESS NOTED BELOW:
ALL RESULTS AND CU WERE REPORTED

METHOD SW846 8082 - SOLID

RECOMMENDED SAMPLE HOLDING TIMES WERE NOT EXCEEDED FOR ALL SAMPLES ANALYZED BY METHOD 8082 UNLESS LISTED BELOW: NONE EXCEEDED

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ANALYTICAL LABORATORY

39 Spruce Street ° East Longmeadow, MA 01028 ° FAX 413/525-6405 ° TEL. 413/525-2332

REPORT DATE 12/11/2006

TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852
ATTN: DOT MCGLINCY

CONTRACT NUMBER:
PURCHASE ORDER NUMBER:

PROJECT NUMBER: 42462-1111

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02346
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

ALL SAMPLES FOR METHOD 8082 WERE RECEIVED PRESERVED PROPERLY IN THE PROPER CONTAINERS AS SPECIFIED ON THE CHAIN-OF-CUSTODY FORM UNLESS LISTED BELOW: ALL PROPERLY PRESERVED

SOLID SAMPLES, IF ANY, IN THE BATCH WERE EXTRACTED BY THE FOLLOWING METHOD:
MICROWAVE: SW846 3546

THE 8082 METHOD BLANK WAS NOT CONTAMINATED WITH TARGET ANALYTES AT LEVELS ABOVE THE REPORTING LIMIT EXCEPT WHERE LISTED BELOW: NO CONTAMINATION NOTED

INITIAL AND CONTINUING CALIBRATIONS MET ALL REQUIRED PERFORMANCE STANDARDS FOR METHOD 8082 EXCEPT AS LISTED BELOW: ALL STANDARDS MET

LABORATORY CONTROL SAMPLE RECOVERIES, LABORATORY CONTROL SAMPLE DUPLICATE RECOVERIES, AND DUPLICATE LABORATORY FORTIFIED BLANK RPDs FOR REQUIRED MCP DATA ENHANCEMENT 8082 ISOMERS WERE ALL WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD UNLESS LISTED BELOW:
NONE OUTSIDE OF CONTROL LIMITS

ALL 8082 SURROGATE STANDARD RECOVERIES WERE WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD UNLESS LISTED BELOW: NONE OUTSIDE OF CONTROL LIMITS

PCB QC SURROGATE RECOVERIES

BLANK-40488

TETRACHLORO-M-XYLENE:	121%
DECACHLOROBIPHENYL:	101 %

LFBLANK-57577	LFB	LFB DUPLICATE
TETRACHLORO-M-XYLENE:	102%	101%
DECACHLOROBIPHENYL:	104%	106%

ALL 8082 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES, SAMPLE DUPLICATE RPDs AND MSDRPDs, IF REQUESTED IN THIS BATCH WERE WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD UNLESS LISTED BELOW: NONE REQUESTED AND/OR NONE PERFORMED

ALL POSITIVE PCB RESULTS WERE CONFIRMED ON A SECOND DISSIMILAR COLUMN WITH AN RPD LESS THAN OR EQUAL TO 40% BETWEEN THE RESULTS UNLESS LISTED BELOW: ALL CONFIRMED

ALL 8082 SAMPLES WERE ANALYZED UNDILUTED UNLESS SPECIFIED BELOW:
SAMPLE WAS ANALYZED AT 50X DILUTION

METHOD SW846 8270 SOIL

RECOMMENDED SAMPLE HOLDING TIMES WERE NOT EXCEEDED FOR ALL SAMPLES ANALYZED BY METHOD 8270 UNLESS LISTED BELOW: NONE EXCEEDED

ALL SAMPLES FOR METHOD 8270 WERE RECEIVED PRESERVED PROPERLY IN THE PROPER CONTAINERS AS SPECIFIED ON THE CHAIN-OF-CUSTODY FORM UNLESS LISTED BELOW: ALL PROPERLY PRESERVED

SOLID SAMPLES, IF ANY, IN THE BATCH WERE EXTRACTED BY THE FOLLOWING METHOD:
MICROWAVE: SW846 3546

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REPORT DATE 12/11/2006

TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852
ATTN: DOT MCGLINCY

CONTRACT NUMBER:
PURCHASE ORDER NUMBER:

PROJECT NUMBER: 42462-1111

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02346
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

THE 8270 METHOD BLANK WAS NOT CONTAMINATED WITH TARGET ANALYTES AT LEVELS ABOVE THE REPORTING LIMIT EXCEPT WHERE LISTED BELOW: NO CONTAMINATION NOTED

ALL 8270 SAMPLES WERE ANALYZED UNDILUTED UNLESS SPECIFIED BELOW:

SAMPLE	DILUTION
06B40488	10X

TUNING, INITIAL AND CONTINUING CALIBRATIONS MET ALL REQUIRED PERFORMANCE STANDARDS FOR METHOD 8270 EXCEPT THAT THE RESPONSE FACTOR FOR BENZOIC ACID IS LESS THAN 0.05, AND/OR EXCEPT AS LISTED BELOW:

IN METHOD 8270S FOR SAMPLE(S) 06B40488, THE REPORTED RESULTS FOR PYRENE, BUTYBENZYLPHTHALATE, BIS(2-ETHYLHEXYLPHTHALATE ARE ESTIMATED. EITHER THE INITIAL OR CONTINUING CALIBRATION DID NOT MEET REQUIRED
CRITERIA.

LABORATORY CONTROL SAMPLE RECOVERIES FOR REQUIRED MCP DATA ENHANCEMENT 8270 COMPOUNDS WERE ALL WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD, 40-140% FOR BASE/NEUTRALS AND 30-130% FOR ACIDS EXCEPT FOR "DIFFICULT ANALYTES" LISTED BELOW AND/OR OTHERWISE LISTED BELOW:

DIFFICULT ANALYTES FOR SOIL LCS - LIMITS BETWEEN 10 AND180% DEPENDING ON THE COMPOUND (SEE QC SUMMARY FOR LIMITS): 3,3'-DICHLOROBENZIDINE, PYRIDINE, ANILINE, 4-CHLOROANILINE, 3-NITROANILINE, AND N-NITROSODIPHENYLAMINE

DIFFICULT ANALYTES FOR WATER LCS - LIMITS BETWEEN 5 AND 150% DEPENDING ON THE COMPOUND (SEE QC SUMMARY FOR LIMITS): ANILINE, BENZOIC ACID, DIMETHYLPHTHALATE, BIS(2-CHLOROISOPROPYL)ETHER, HEXACHLOROCYCLOPENTADIENE, N-NITROSODIPHENYLAMINE, PYRIDINE, 2,4-DINITROPHENOL, 4-NITROPHENOL, AND PHENOL

DUPLICATE LABORATORY FORTIFIED BLANK RPDs WERE ALL LESS THAN OR EQUAL TO 20% FOR WATER OR 30% FOR SOIL EXCEPT FOR "DIFFICULT ANALYTES" WHERE RPDs OF 50% ARE USED AND/OR OTHERWISE LISTED BELOW:

DIFFICULT ANALYTES FOR WATER RPDs: ANILINE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZOIC ACID, BENZO(A,H)ANTHRACENE, DIMETHYLPHTHALTE, HEXACHLOROCYCLOPENTADIENE, HEXACHLOROETHANE, INDENO(1,2,3-CD)PYRENE, 4,6-DINITRO-2-METHYLPHENOL, 2,4-DINITROPHENOL, 4-NITROPHENOL, 2,4,6-TRICHLOROPHENOL, PENTACHLOROPHENOL, AND PYRIDINE

DIFFICULT ANALYTES FOR SOIL RPDs: 3,3'-DICHLOROBENZIDINE, BENZOIC ACID, 4-NITROPHENOL, ANILINE, AND PYRIDINE

COMPOUNDS OUTSIDE OF CONTROL LIMITS: NONE OUTSIDE OF CONTROL LIMITS

ALL 8270 SURROGATE STANDARD RECOVERIES WERE WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD UNLESS LISTED BELOW: NONE OUTSIDE OF CONTROL LIMITS

ALL 8270 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES, SAMPLE DUPLICATE RPDs AND MSDRPD, IF REQUESTED IN THIS BATCH WERE WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD UNLESS LISTED BELOW: NONE REQUESTED

ALL ANALYTE LIST COMPOUNDS WERE REPORTED FOR METHOD 8270 UNLESS LISTED BELOW:
ALL RESULTS WERE REPORTED.

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REPORT DATE 12/11/2006

TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852
ATTN: DOT MCGLINCY

CONTRACT NUMBER:
PURCHASE ORDER NUMBER:

PROJECT NUMBER: 42462-1111

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02346
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs) IF REQUESTED ARE LISTED BELOW: NOT REQUESTED

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations :

AIHA 100033	AIHA ELLAP (LEAD) 100033	
MASSACHUSETTS MA0100	NEW HAMPSHIRE NELAP 2516	NEW JERSEY NELAP NJ MA007 (AIR)
CONNECTICUT PH-0567	VERMONT DOH (LEAD) No. LL015036	
NEW YORK ELAP/NELAP 10899	RHODE ISLAND (LIC. No. 112)	

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 12/11/06

SIGNATURE DATE

Tod Kopyscinski
Director of Operations

Sondra L. Slesinski
Quality Assurance Officer

Edward Denson
Technical Director

* See end of data tabulation for notes and comments pertaining to this sample

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

12/11/2006

Purchase Order No.:

Project Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Field Sample # : S1

Sample ID : *06B40488

Sampled : 12/9/2006
VAULT SOOT SAMPLE 1

Sample Matrix: SOLID

	Units	Results	RL	Method	Date Analyzed	Analyst
6010 solid				SW846 6010		
Antimony	mg/kg	1560	4.00		12/10/06	AMP
Arsenic	mg/kg	14.5	2.50		12/10/06	AMP
Barium	mg/kg	160.	0.50		12/10/06	AMP
Beryllium	mg/kg	ND	0.25		12/10/06	AMP
Cadmium	mg/kg	1480	0.25		12/10/06	AMP
Chromium	mg/kg	124.	0.50		12/10/06	AMP
Lead	mg/kg	3360	0.75		12/10/06	AMP
Nickel	mg/kg	115.	0.50		12/10/06	AMP
Selenium	mg/kg	ND	5.00		12/10/06	AMP
Silver	mg/kg	72.2	0.50		12/10/06	AMP
Thallium	mg/kg	ND	3.00		12/10/06	AMP
Vanadium	mg/kg	14.0	5.00		12/10/06	AMP
Zinc	mg/kg	27000	1.00		12/10/06	AMP
8082 solid				SW846 8081/8082		
PCB 1016	mg/kg	ND	20.0		12/11/06	JMR
PCB-1221	mg/kg	ND	20.0		12/11/06	JMR
PCB-1232	mg/kg	ND	20.0		12/11/06	JMR
PCB-1242	mg/kg	ND	20.0		12/11/06	JMR
PCB-1248	mg/kg	ND	20.0		12/11/06	JMR
PCB-1254	mg/kg	ND	20.0		12/11/06	JMR
PCB-1260	mg/kg	101.	20.0		12/11/06	JMR
PCB 1262	mg/kg	ND	20.0		12/11/06	JMR
PCB 1268	mg/kg	ND	20.0		12/11/06	JMR
Extraction Date PCBs		12/10/2006			12/11/06	JMR
8270 solid				SW846 8270		
Acenaphthene	mg/kg	ND	1.67		12/11/06	BGL
Acenaphthylene	mg/kg	10.8	1.67		12/11/06	BGL
Acetophenone	mg/kg	ND	3.34		12/11/06	BGL
Aniline	mg/kg	ND	3.34		12/11/06	BGL
Anthracene	mg/kg	12.8	1.67		12/11/06	BGL
Benzoic Acid	mg/kg	ND	10.0		12/11/06	BGL
Benzo(a)anthracene	mg/kg	5.51	1.67		12/11/06	BGL
Benzo(a)pyrene	mg/kg	5.25	1.67		12/11/06	BGL
Benzo(b)fluoranthene	mg/kg	5.34	1.67		12/11/06	BGL
Benzo(g,h,i)perylene	mg/kg	4.38	1.67		12/11/06	BGL

RL = Reporting Limit

ND = Not Detected at or above the Reporting Limit

NM = Not Measured

* = See end of report for comments and notes applying to this sample

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

Purchase Order No.:

Project Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Field Sample # : S1

Sample ID : *06B40488

Sampled : 12/9/2006
VAULT SOOT SAMPLE 1

Sample Matrix: SOLID

	Units	Results	RL	Method	Date Analyzed	Analyst
8270 solid				SW846 8270		
Benzo(k)fluoranthene	mg/kg	1.69	1.67		12/11/06	BGL
Bis(2-chloroethoxy)methane	mg/kg	ND	3.34		12/11/06	BGL
Bis(2-chloroethyl)ether	mg/kg	ND	3.34		12/11/06	BGL
Bis(2-chloroisopropyl)ether	mg/kg	ND	3.34		12/11/06	BGL
Bis(2-ethylhexyl)phthalate	mg/kg	16.3	3.33		12/11/06	BGL
4-Bromophenyl phenyl ether	mg/kg	ND	3.34		12/11/06	BGL
Butylbenzylphthalate	mg/kg	ND	6.67		12/11/06	BGL
Carbazole	mg/kg	ND	1.67		12/11/06	BGL
4-Chloroaniline	mg/kg	ND	6.67		12/11/06	BGL
4-Chloro-3-methylphenol	mg/kg	ND	6.67		12/11/06	BGL
2-Chloronaphthalene	mg/kg	ND	3.34		12/11/06	BGL
2-Chlorophenol	mg/kg	ND	3.34		12/11/06	BGL
4-Chlorophenylphenyl ether	mg/kg	ND	3.34		12/11/06	BGL
Chrysene	mg/kg	6.04	1.67		12/11/06	BGL
Dibenzofuran	mg/kg	ND	3.34		12/11/06	BGL
Dibenz(a,h)anthracene	mg/kg	ND	1.67		12/11/06	BGL
1,2-Dichlorobenzene	mg/kg	ND	3.34		12/11/06	BGL
1,3-Dichlorobenzene	mg/kg	ND	3.34		12/11/06	BGL
1,4-Dichlorobenzene	mg/kg	ND	3.34		12/11/06	BGL
3,3'-Dichlorobenzidine	mg/kg	ND	1.67		12/11/06	BGL
2,4-Dichlorophenol	mg/kg	ND	3.34		12/11/06	BGL
Diethylphthalate	mg/kg	ND	3.34		12/11/06	BGL
2,4-Dimethylphenol	mg/kg	ND	13.4		12/11/06	BGL
Dimethylphthalate	mg/kg	ND	6.67		12/11/06	BGL
Di-n-butylphthalate	mg/kg	ND	3.34		12/11/06	BGL
Di-n-octylphthalate	mg/kg	ND	6.67		12/11/06	BGL
4,6-Dinitro-2-methylphenol	mg/kg	ND	3.34		12/11/06	BGL
2,4-Dinitrophenol	mg/kg	ND	6.67		12/11/06	BGL
2,4-Dinitrotoluene	mg/kg	ND	3.34		12/11/06	BGL
2,6-Dinitrotoluene	mg/kg	ND	3.34		12/11/06	BGL
1,2-Diphenylhydrazine (as Azobenzene)	mg/kg	ND	3.34		12/11/06	BGL
Fluoranthene	mg/kg	22.1	1.67		12/11/06	BGL
Fluorene	mg/kg	10.0	1.67		12/11/06	BGL
Hexachlorobenzene	mg/kg	ND	3.34		12/11/06	BGL
Hexachlorobutadiene	mg/kg	ND	3.34		12/11/06	BGL
Hexachlorocyclopentadiene	mg/kg	ND	6.67		12/11/06	BGL

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

Purchase Order No.:

Project Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Field Sample # : S1

Sample ID : *06B40488

Sampled : 12/9/2006
VAULT SOOT SAMPLE 1

Sample Matrix: SOLID

	Units	Results	RL	Method	Date Analyzed	Analyst
8270 solid				SW846 8270		
Hexachloroethane	mg/kg	ND	3.34		12/11/06	BGL
Indeno(1,2,3-cd)pyrene	mg/kg	4.47	1.67		12/11/06	BGL
Isophorone	mg/kg	ND	3.34		12/11/06	BGL
o-cresol	mg/kg	ND	3.34		12/11/06	BGL
m & p-cresol(s)	mg/kg	ND	6.67		12/11/06	BGL
2-Methylnaphthalene	mg/kg	ND	1.67		12/11/06	BGL
Naphthalene	mg/kg	ND	1.67		12/11/06	BGL
2-Nitroaniline	mg/kg	ND	3.34		12/11/06	BGL
3-Nitroaniline	mg/kg	ND	3.34		12/11/06	BGL
4-Nitroaniline	mg/kg	ND	3.34		12/11/06	BGL
Nitrobenzene	mg/kg	ND	3.34		12/11/06	BGL
2-Nitrophenol	mg/kg	ND	3.34		12/11/06	BGL
4-Nitrophenol	mg/kg	ND	6.67		12/11/06	BGL
N-Nitrosodiphenylamine	mg/kg	ND	3.34		12/11/06	BGL
N-Nitroso-di-n-propylamine	mg/kg	ND	3.34		12/11/06	BGL
Pentachlorophenol	mg/kg	ND	3.34		12/11/06	BGL
Phenanthrene	mg/kg	36.0	1.67		12/11/06	BGL
Phenol	mg/kg	ND	3.34		12/11/06	BGL
Pyrene	mg/kg	26.8	1.67		12/11/06	BGL
Pyridine	mg/kg	ND	3.34		12/11/06	BGL
1,2,4-Trichlorobenzene	mg/kg	ND	3.34		12/11/06	BGL
2,4,5-Trichlorophenol	mg/kg	ND	3.34		12/11/06	BGL
2,4,6-Trichlorophenol	mg/kg	ND	3.34		12/11/06	BGL
Extraction Date 8270		12/10/2006			12/11/06	BGL
cu (mg/kg)				SW846 3050/6010		
Copper	mg/kg	193000.	0.50		12/10/06	AMP

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

Purchase Order No.:

Project Number: 42462-1111
LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

Field Sample # : S2

Sample ID : *06B40489

Sampled : 12/9/2006
AIRDUCT - FLR / NE (WIPES)

Sample Matrix: WIPE - OTHER

	Units	Results	RL	Method	Date Analyzed	Analyst
pcb wipe 8				SW846 8082		
PCB-1221	ug	ND	10.0		12/11/06	JMR
PCB-1232	ug	ND	10.0		12/11/06	JMR
PCB-1242	ug	ND	10.0		12/11/06	JMR
PCB-1248	ug	ND	10.0		12/11/06	JMR
PCB-1254	ug	ND	10.0		12/11/06	JMR
PCB-1260	ug	67.5	2.50		12/11/06	JMR

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NM = Not Measured

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
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LOWELL, MA 01852

Purchase Order No.:

Project Number: 42462-1111
LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

Field Sample # : S3

Sample ID : *06B40490

Sampled : 12/9/2006
5TH FLOOR - STAIRWELL (WIPE)

Sample Matrix: WIPE - OTHER

	Units	Results	RL	Method	Date Analyzed	Analyst
pcb wipe 8				SW846 8082		
PCB-1221	ug	ND	0.200		12/11/06	JMR
PCB-1232	ug	ND	0.200		12/11/06	JMR
PCB-1242	ug	ND	0.200		12/11/06	JMR
PCB-1248	ug	ND	0.200		12/11/06	JMR
PCB-1254	ug	0.560	0.050		12/11/06	JMR
PCB-1260	ug	0.307	0.050		12/11/06	JMR

RL = Reporting Limit

ND = Not Detected at or above the Reporting Limit

NM = Not Measured

* = See end of report for comments and notes applying to this sample

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

Purchase Order No.:

Project Number: 42462-1111
LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

Field Sample # : S4

Sample ID : 06B40491

Sampled : 12/9/2006
5TH FLOOR - NORTHWALL (WIPE)

Sample Matrix: WIPE - OTHER

	Units	Results	RL	Method	Date Analyzed	Analyst
pcb wipe 8				SW846 8082		
PCB-1221	ug	ND	0.200		12/11/06	JMR
PCB-1232	ug	ND	0.200		12/11/06	JMR
PCB-1242	ug	ND	0.200		12/11/06	JMR
PCB-1248	ug	ND	0.200		12/11/06	JMR
PCB-1254	ug	ND	0.200		12/11/06	JMR
PCB-1260	ug	ND	0.200		12/11/06	JMR

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ND = Not Detected at or above the Reporting Limit

NM = Not Measured

* = See end of report for comments and notes applying to this sample

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

12/11/2006

Purchase Order No.:

Project Number: 42462-1111
LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

Field Sample # : VAULT FLOOR

Sample ID : 06B40492

Sampled : 12/8/2006
OIL & WATER

Sample Matrix: OIL

	Units	Results	RL	Method	Date Analyzed	Analyst
pcb - oil				EPA 600/4-81-045		
PCB 1016	mg/kg	ND	1.79		12/10/06	JB
PCB-1221	mg/kg	ND	1.79		12/10/06	JB
PCB-1232	mg/kg	ND	1.79		12/10/06	JB
PCB-1242	mg/kg	18.9	1.79		12/10/06	JB
PCB-1248	mg/kg	ND	1.79		12/10/06	JB
PCB-1254	mg/kg	ND	1.79		12/10/06	JB
PCB-1260	mg/kg	ND	1.79		12/10/06	JB
PCB 1262	mg/kg	ND	1.79		12/10/06	JB
PCB 1268	mg/kg	ND	1.79		12/10/06	JB

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

Purchase Order No.:

Project Number: 42462-1111
LIMS-BAT #: LIMT-02346
Job Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006
The following notes were attached to the reported analysis :

Sample ID: * 06B40488
Analysis: 8082 solid

SAMPLE CONTAINS INCOMPLETELY RESOLVED MIXTURE OF AROCLORS.
AROCLOR(S) WITH THE CLOSEST MATCHING PATTERN IS REPORTED.

Sample ID: * 06B40489
Analysis: pcb wipe 8082

SAMPLE CONTAINS INCOMPLETELY RESOLVED MIXTURE OF AROCLORS.
AROCLOR(S) WITH THE CLOSEST MATCHING PATTERN IS REPORTED.

Sample ID: * 06B40490
Analysis: pcb wipe 8082

SAMPLE CONTAINS INCOMPLETELY RESOLVED MIXTURE OF AROCLORS.
AROCLOR(S) WITH THE CLOSEST MATCHING PATTERN IS REPORTED.

** END OF REPORT **

RL = Reporting Limit
ND = Not Detected at or above the Reporting Limit
NM = Not Measured
* = See end of report for comments and notes applying to this sample

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 12/11/2006 Lims Bat # : LIMT-02346

QC Batch Number: GC/ECD-9261

Sample Id	Analysis	QC Analysis	Values	Units	Limits
BLANK-95874					
	PCB-1232	Blank	<1.87	mg/kg	
	PCB-1242	Blank	<1.87	mg/kg	
	PCB-1254	Blank	<1.87	mg/kg	
	PCB-1260	Blank	<1.87	mg/kg	
	PCB-1248	Blank	<1.87	mg/kg	
	PCB-1221	Blank	<1.87	mg/kg	
	PCB 1016	Blank	<1.87	mg/kg	
	PCB 1262	Blank	<1.87	mg/kg	
	PCB 1268	Blank	<1.87	mg/kg	

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Method Blanks

QC Batch Number: GC/ECD-9263

Sample Id	Analysis	QC Analysis	Values	Units	Limits
06B40488					
	Decachlorobiphenyl	Surrogate Recovery	100.0	%	30-150
	Tetrachloro-m-Xylene	Surrogate Recovery	100.0	%	30-150
BLANK-95878					
	PCB-1232	Blank	<0.100	mg/kg	
	PCB-1242	Blank	<0.100	mg/kg	
	PCB-1254	Blank	<0.100	mg/kg	
	PCB-1260	Blank	<0.100	mg/kg	
	PCB-1248	Blank	<0.100	mg/kg	
	PCB-1221	Blank	<0.100	mg/kg	
	PCB 1016	Blank	<0.100	mg/kg	
	PCB 1262	Blank	<0.100	mg/kg	
	PCB 1268	Blank	<0.100	mg/kg	
LFBLANK-57577					
	PCB-1260	Lab Fort Blank Amt.	0.250	mg/kg	
		Lab Fort Blk. Found	0.315	mg/kg	
		Lab Fort Blk. % Rec.	126.000	%	40-140
		Dup Lab Fort Bl Amt.	0.250	mg/kg	
		Dup Lab Fort Bl. Fnd	0.330	mg/kg	
		Dup Lab Fort Bl %Rec	132.000	%	
		Lab Fort Blank Range	6.000	units	
		Lab Fort Bl. Av. Rec	129.000	%	
		LFB Duplicate RPD	4.651	%	0-30
	PCB 1016	Lab Fort Blank Amt.	0.250	mg/kg	
		Lab Fort Blk. Found	0.260	mg/kg	
		Lab Fort Blk. % Rec.	103.980	%	40-140
		Dup Lab Fort Bl Amt.	0.250	mg/kg	
		Dup Lab Fort Bl. Fnd	0.249	mg/kg	
		Dup Lab Fort Bl %Rec	99.560	%	
		Lab Fort Blank Range	4.420	units	
		Lab Fort Bl. Av. Rec	101.770	%	
		LFB Duplicate RPD	4.343	%	0-30

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Method Blanks

Report Date: 12/11/2006 Lims Bat # : LIMT-02346

QC Batch Number: GC/ECD-9264

Sample Id	Analysis	QC Analysis	Values	Units	Limits
06B40489					
	Decachlorobiphenyl	Surrogate Recovery	50.0	%	30-150
	Tetrachloro-m-Xylene	Surrogate Recovery	100.0	%	30-150
06B40490					
	Decachlorobiphenyl	Surrogate Recovery	88.0	%	30-150
	Tetrachloro-m-Xylene	Surrogate Recovery	98.0	%	30-150
06B40491					
	Decachlorobiphenyl	Surrogate Recovery	91.0	%	30-150
	Tetrachloro-m-Xylene	Surrogate Recovery	101.0	%	30-150
BLANK-95908					
	PCB-1232	Blank	<0.200	ug	
	PCB-1242	Blank	<0.200	ug	
	PCB-1254	Blank	<0.200	ug	
	PCB-1260	Blank	<0.200	ug	
	PCB-1248	Blank	<0.200	ug	
	PCB-1221	Blank	<0.200	ug	

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QC SUMMARY REPORT

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BATCH QC: Lab fortified Blanks and Duplicates
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Method Blanks

QC Batch Number: GCMS/SEMI-8928

Sample Id	Analysis	QC Analysis	Values	Units	Limits
06B40488					
	Phenol-d6	Surrogate Recovery	72.5	%	30-130
	Nitrobenzene-d5	Surrogate Recovery	65.0	%	30-130
	2-Fluorobiphenyl	Surrogate Recovery	85.0	%	30-130
	2,4,6-Tribromophenol	Surrogate Recovery	82.5	%	30-130
	Terphenyl-d14	Surrogate Recovery	100.0	%	30-130
	2-Fluorophenol	Surrogate Recovery	62.5	%	30-130
BLANK-95875					
	1,4-Dichlorobenzene	Blank	<0.34	mg/kg	
	Naphthalene	Blank	<0.17	mg/kg	
	1,2-Dichlorobenzene	Blank	<0.34	mg/kg	
	1,3-Dichlorobenzene	Blank	<0.34	mg/kg	
	Acenaphthene	Blank	<0.17	mg/kg	
	Acenaphthylene	Blank	<0.17	mg/kg	
	Aniline	Blank	<0.34	mg/kg	
	Anthracene	Blank	<0.17	mg/kg	
	Benzo(a)anthracene	Blank	<0.17	mg/kg	
	Benzo(a)pyrene	Blank	<0.17	mg/kg	
	Benzo(b)fluoranthene	Blank	<0.17	mg/kg	
	Benzo(g,h,i)perylene	Blank	<0.17	mg/kg	
	Benzoic Acid	Blank	<1.00	mg/kg	
	Bis(2-chloroethyl)ether	Blank	<0.34	mg/kg	
	Bis(2-chloroethoxy)methane	Blank	<0.34	mg/kg	
	Bis(2-chloroisopropyl)ether	Blank	<0.34	mg/kg	
	Bis(2-ethylhexyl)phthalate	Blank	<0.34	mg/kg	
	4-Bromophenyl phenyl ether	Blank	<0.34	mg/kg	
	Butylbenzylphthalate	Blank	<0.67	mg/kg	
	4-Chloroaniline	Blank	<0.67	mg/kg	
	2-Chloronaphthalene	Blank	<0.34	mg/kg	
	4-Chlorophenylphenyl ether	Blank	<0.34	mg/kg	
	Chrysene	Blank	<0.17	mg/kg	
	Dibenz(a,h)anthracene	Blank	<0.17	mg/kg	
	Dibenzofuran	Blank	<0.34	mg/kg	
	3,3'-Dichlorobenzidine	Blank	<0.17	mg/kg	
	Diethylphthalate	Blank	<0.34	mg/kg	
	Dimethylphthalate	Blank	<0.67	mg/kg	
	Di-n-butylphthalate	Blank	<0.34	mg/kg	
	2,4-Dinitrotoluene	Blank	<0.34	mg/kg	
	2,6-Dinitrotoluene	Blank	<0.34	mg/kg	
	1,2-Diphenylhydrazine (as Azobenzene)	Blank	<0.34	mg/kg	
	Di-n-octylphthalate	Blank	<0.67	mg/kg	
	Fluoranthene	Blank	<0.17	mg/kg	
	Fluorene	Blank	<0.17	mg/kg	
	Hexachlorobenzene	Blank	<0.34	mg/kg	

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Sample Id	Analysis	QC Analysis	Values	Units	Limits
BLANK-95875					
	Hexachlorobutadiene	Blank	<0.34	mg/kg	
	Hexachlorocyclopentadiene	Blank	<0.67	mg/kg	
	Hexachloroethane	Blank	<0.34	mg/kg	
	Indeno(1,2,3-cd)pyrene	Blank	<0.17	mg/kg	
	Isophorone	Blank	<0.34	mg/kg	
	2-Methylnaphthalene	Blank	<0.17	mg/kg	
	2-Nitroaniline	Blank	<0.34	mg/kg	
	3-Nitroaniline	Blank	<0.34	mg/kg	
	Nitrobenzene	Blank	<0.34	mg/kg	
	N-Nitroso-di-n-propylamine	Blank	<0.34	mg/kg	
	N-Nitrosodiphenylamine	Blank	<0.34	mg/kg	
	Phenanthrene	Blank	<0.17	mg/kg	
	Pyrene	Blank	<0.17	mg/kg	
	1,2,4-Trichlorobenzene	Blank	<0.34	mg/kg	
	4-Chloro-3-methylphenol	Blank	<0.67	mg/kg	
	2-Chlorophenol	Blank	<0.34	mg/kg	
	2,4-Dichlorophenol	Blank	<0.34	mg/kg	
	2,4-Dimethylphenol	Blank	<1.34	mg/kg	
	4,6-Dinitro-2-methylphenol	Blank	<0.34	mg/kg	
	2,4-Dinitrophenol	Blank	<0.67	mg/kg	
	o-cresol	Blank	<0.34	mg/kg	
	m & p-cresol(s)	Blank	<0.67	mg/kg	
	2-Nitrophenol	Blank	<0.34	mg/kg	
	4-Nitrophenol	Blank	<0.67	mg/kg	
	Phenol	Blank	<0.34	mg/kg	
	2,4,5-Trichlorophenol	Blank	<0.34	mg/kg	
	2,4,6-Trichlorophenol	Blank	<0.34	mg/kg	
	Pentachlorophenol	Blank	<0.34	mg/kg	
	Pyridine	Blank	<0.34	mg/kg	
	Benzo(k)fluoranthene	Blank	<0.17	mg/kg	
	4-Nitroaniline	Blank	<0.34	mg/kg	
	Acetophenone	Blank	<0.34	mg/kg	
	Carbazole	Blank	<0.17	mg/kg	
LFBLANK-57576					
	1,4-Dichlorobenzene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.43	mg/kg	
		Lab Fort Blk. % Rec.	85.90	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.44	mg/kg	
		Dup Lab Fort Bl %Rec	86.46	%	
		Lab Fort Blank Range	0.56	units	
		Lab Fort Bl. Av. Rec	86.18	%	
		LFB Duplicate RPD	0.65	%	0-30

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QC Batch Number: GCMS/SEMI-8928

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	Naphthalene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.53	mg/kg	
		Lab Fort Blk. % Rec.	92.00	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.51	mg/kg	
		Dup Lab Fort Bl %Rec	90.66	%	
		Lab Fort Blank Range	1.34	units	
		Lab Fort Bl. Av. Rec	91.33	%	
		LFB Duplicate RPD	1.47	%	0-30
	1,2-Dichlorobenzene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.44	mg/kg	
		Lab Fort Blk. % Rec.	86.60	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.42	mg/kg	
		Dup Lab Fort Bl %Rec	85.26	%	
		Lab Fort Blank Range	1.34	units	
		Lab Fort Bl. Av. Rec	85.93	%	
		LFB Duplicate RPD	1.56	%	0-30
	1,3-Dichlorobenzene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.43	mg/kg	
		Lab Fort Blk. % Rec.	85.52	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.40	mg/kg	
		Dup Lab Fort Bl %Rec	83.72	%	
		Lab Fort Blank Range	1.80	units	
		Lab Fort Bl. Av. Rec	84.62	%	
		LFB Duplicate RPD	2.13	%	0-30
	Acenaphthene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.64	mg/kg	
		Lab Fort Blk. % Rec.	98.46	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.63	mg/kg	
		Dup Lab Fort Bl %Rec	97.70	%	
		Lab Fort Blank Range	0.76	units	
		Lab Fort Bl. Av. Rec	98.08	%	
		LFB Duplicate RPD	0.77	%	0-30
	Acenaphthylene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.65	mg/kg	
		Lab Fort Blk. % Rec.	99.22	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.62	mg/kg	
		Dup Lab Fort Bl %Rec	97.40	%	
		Lab Fort Blank Range	1.82	units	

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Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	Acenaphthylene	Lab Fort Bl. Av. Rec	98.31	%	
		LFB Duplicate RPD	1.85	%	0-30
	Aniline	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	0.69	mg/kg	
		Lab Fort Blk. % Rec.	41.22	%	10-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	0.70	mg/kg	
		Dup Lab Fort Bl %Rec	42.04	%	
		Lab Fort Blank Range	0.82	units	
		Lab Fort Bl. Av. Rec	41.63	%	
		LFB Duplicate RPD	1.97	%	0-50
	Anthracene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.71	mg/kg	
		Lab Fort Blk. % Rec.	102.52	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.65	mg/kg	
		Dup Lab Fort Bl %Rec	98.76	%	
		Lab Fort Blank Range	3.76	units	
		Lab Fort Bl. Av. Rec	100.64	%	
		LFB Duplicate RPD	3.74	%	0-30
	Benzo(a)anthracene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.70	mg/kg	
		Lab Fort Blk. % Rec.	101.90	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.67	mg/kg	
		Dup Lab Fort Bl %Rec	100.06	%	
		Lab Fort Blank Range	1.84	units	
		Lab Fort Bl. Av. Rec	100.98	%	
		LFB Duplicate RPD	1.82	%	0-30
	Benzo(a)pyrene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.64	mg/kg	
		Lab Fort Blk. % Rec.	98.14	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.60	mg/kg	
		Dup Lab Fort Bl %Rec	95.90	%	
		Lab Fort Blank Range	2.24	units	
		Lab Fort Bl. Av. Rec	97.02	%	
		LFB Duplicate RPD	2.31	%	0-30
	Benzo(b)fluoranthene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.54	mg/kg	
		Lab Fort Blk. % Rec.	92.54	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.54	mg/kg	

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LFBLANK-57576					
	Benzo(b)fluoranthene	Dup Lab Fort Bl %Rec	92.12	%	
		Lab Fort Blank Range	0.42	units	
		Lab Fort Bl. Av. Rec	92.33	%	
		LFB Duplicate RPD	0.45	%	0-30
	Benzo(g,h,i)perylene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.94	mg/kg	
		Lab Fort Blk. % Rec.	116.40	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.82	mg/kg	
		Dup Lab Fort Bl %Rec	109.04	%	
		Lab Fort Blank Range	7.36	units	
		Lab Fort Bl. Av. Rec	112.72	%	
		LFB Duplicate RPD	6.53	%	0-30
	Benzoic Acid	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	0.76	mg/kg	
		Lab Fort Blk. % Rec.	45.30	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	0.62	mg/kg	
		Dup Lab Fort Bl %Rec	37.20	%	
		Lab Fort Blank Range	8.10	units	
		Lab Fort Bl. Av. Rec	41.25	%	
		LFB Duplicate RPD	19.64	%	0-50
	Bis(2-chloroethyl)ether	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.63	mg/kg	
		Lab Fort Blk. % Rec.	97.80	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.60	mg/kg	
		Dup Lab Fort Bl %Rec	96.20	%	
		Lab Fort Blank Range	1.60	units	
		Lab Fort Bl. Av. Rec	97.00	%	
		LFB Duplicate RPD	1.65	%	0-30
	Bis(2-chloroethoxy)methane	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.62	mg/kg	
		Lab Fort Blk. % Rec.	96.98	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.63	mg/kg	
		Dup Lab Fort Bl %Rec	97.52	%	
		Lab Fort Blank Range	0.54	units	
		Lab Fort Bl. Av. Rec	97.25	%	
		LFB Duplicate RPD	0.56	%	0-30
	Bis(2-chloroisopropyl)ether	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	2.22	mg/kg	
		Lab Fort Blk. % Rec.	133.38	%	40-140

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LFBLANK-57576					
	Bis(2-chloroisopropyl)ether	Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	2.17	mg/kg	
		Dup Lab Fort Bl %Rec	130.32	%	
		Lab Fort Blank Range	3.06	units	
		Lab Fort Bl. Av. Rec	131.85	%	
		LFB Duplicate RPD	2.32	%	0-30
	Bis(2-ethylhexyl)phthalate	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	2.27	mg/kg	
		Lab Fort Blk. % Rec.	136.30	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	2.03	mg/kg	
		Dup Lab Fort Bl %Rec	122.08	%	
		Lab Fort Blank Range	14.22	units	
		Lab Fort Bl. Av. Rec	129.19	%	
		LFB Duplicate RPD	11.01	%	0-30
	4-Bromophenyl phenyl ether	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.69	mg/kg	
		Lab Fort Blk. % Rec.	101.62	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.63	mg/kg	
		Dup Lab Fort Bl %Rec	97.56	%	
		Lab Fort Blank Range	4.06	units	
		Lab Fort Bl. Av. Rec	99.59	%	
		LFB Duplicate RPD	4.08	%	0-30
	Butylbenzylphthalate	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	2.17	mg/kg	
		Lab Fort Blk. % Rec.	130.42	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.98	mg/kg	
		Dup Lab Fort Bl %Rec	119.02	%	
		Lab Fort Blank Range	11.40	units	
		Lab Fort Bl. Av. Rec	124.72	%	
		LFB Duplicate RPD	9.14	%	0-30
	4-Chloroaniline	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	0.58	mg/kg	
		Lab Fort Blk. % Rec.	34.86	%	10-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	0.50	mg/kg	
		Dup Lab Fort Bl %Rec	29.84	%	
		Lab Fort Blank Range	5.02	units	
		Lab Fort Bl. Av. Rec	32.35	%	
		LFB Duplicate RPD	15.52	%	0-30
	2-Chloronaphthalene	Lab Fort Blank Amt.	1.67	mg/kg	

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Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

QC Batch Number: GCMS/SEMI-8928

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	2-Chloronaphthalene	Lab Fort Blk. Found	1.53	mg/kg	
		Lab Fort Blk. % Rec.	91.54	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.52	mg/kg	
		Dup Lab Fort Bl %Rec	91.16	%	
		Lab Fort Blank Range	0.38	units	
		Lab Fort Bl. Av. Rec	91.35	%	
		LFB Duplicate RPD	0.42	%	0-30
	4-Chlorophenylphenyl ether	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.63	mg/kg	
		Lab Fort Blk. % Rec.	97.64	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.57	mg/kg	
		Dup Lab Fort Bl %Rec	94.42	%	
		Lab Fort Blank Range	3.22	units	
		Lab Fort Bl. Av. Rec	96.03	%	
		LFB Duplicate RPD	3.35	%	0-30
	Chrysene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.72	mg/kg	
		Lab Fort Blk. % Rec.	103.22	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.65	mg/kg	
		Dup Lab Fort Bl %Rec	99.26	%	
		Lab Fort Blank Range	3.96	units	
		Lab Fort Bl. Av. Rec	101.24	%	
		LFB Duplicate RPD	3.91	%	0-30
	Dibenz(a,h)anthracene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.81	mg/kg	
		Lab Fort Blk. % Rec.	108.74	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.87	mg/kg	
		Dup Lab Fort Bl %Rec	112.18	%	
		Lab Fort Blank Range	3.44	units	
		Lab Fort Bl. Av. Rec	110.46	%	
		LFB Duplicate RPD	3.11	%	0-30
	Dibenzofuran	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.48	mg/kg	
		Lab Fort Blk. % Rec.	89.08	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.46	mg/kg	
		Dup Lab Fort Bl %Rec	87.58	%	
		Lab Fort Blank Range	1.50	units	
		Lab Fort Bl. Av. Rec	88.33	%	

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Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	Dibenzofuran	LFB Duplicate RPD	1.70	%	0-30
	3,3'-Dichlorobenzidine	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	0.70	mg/kg	
		Lab Fort Blk. % Rec.	42.14	%	20-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	0.63	mg/kg	
		Dup Lab Fort Bl %Rec	38.06	%	
		Lab Fort Blank Range	4.08	units	
		Lab Fort Bl. Av. Rec	40.10	%	
		LFB Duplicate RPD	10.17	%	0-50
	Diethylphthalate	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.69	mg/kg	
		Lab Fort Blk. % Rec.	101.62	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.61	mg/kg	
		Dup Lab Fort Bl %Rec	96.56	%	
		Lab Fort Blank Range	5.06	units	
		Lab Fort Bl. Av. Rec	99.09	%	
		LFB Duplicate RPD	5.11	%	0-30
	Dimethylphthalate	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.61	mg/kg	
		Lab Fort Blk. % Rec.	96.88	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.60	mg/kg	
		Dup Lab Fort Bl %Rec	95.70	%	
		Lab Fort Blank Range	1.18	units	
		Lab Fort Bl. Av. Rec	96.29	%	
		LFB Duplicate RPD	1.23	%	0-30
	Di-n-butylphthalate	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.73	mg/kg	
		Lab Fort Blk. % Rec.	103.68	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.66	mg/kg	
		Dup Lab Fort Bl %Rec	99.62	%	
		Lab Fort Blank Range	4.06	units	
		Lab Fort Bl. Av. Rec	101.65	%	
		LFB Duplicate RPD	3.99	%	0-30
	2,4-Dinitrotoluene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.65	mg/kg	
		Lab Fort Blk. % Rec.	98.94	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.57	mg/kg	
		Dup Lab Fort Bl %Rec	93.96	%	

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Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	2,4-Dinitrotoluene	Lab Fort Blank Range	4.98	units	
		Lab Fort Bl. Av. Rec	96.45	%	
		LFB Duplicate RPD	5.16	%	0-30
	2,6-Dinitrotoluene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.66	mg/kg	
		Lab Fort Blk. % Rec.	99.86	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.60	mg/kg	
		Dup Lab Fort Bl %Rec	95.84	%	
		Lab Fort Blank Range	4.02	units	
		Lab Fort Bl. Av. Rec	97.85	%	
		LFB Duplicate RPD	4.11	%	0-30
	1,2-Diphenylhydrazine (as Azobenzene)	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.83	mg/kg	
		Lab Fort Blk. % Rec.	109.94	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.72	mg/kg	
		Dup Lab Fort Bl %Rec	103.02	%	
		Lab Fort Blank Range	6.92	units	
		Lab Fort Bl. Av. Rec	106.48	%	
		LFB Duplicate RPD	6.50	%	0-30
	Di-n-octylphthalate	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.79	mg/kg	
		Lab Fort Blk. % Rec.	107.18	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.66	mg/kg	
		Dup Lab Fort Bl %Rec	99.44	%	
		Lab Fort Blank Range	7.74	units	
		Lab Fort Bl. Av. Rec	103.31	%	
		LFB Duplicate RPD	7.49	%	0-30
	Fluoranthene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.49	mg/kg	
		Lab Fort Blk. % Rec.	89.30	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.52	mg/kg	
		Dup Lab Fort Bl %Rec	91.28	%	
		Lab Fort Blank Range	1.98	units	
		Lab Fort Bl. Av. Rec	90.29	%	
		LFB Duplicate RPD	2.19	%	0-30
	Fluorene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.72	mg/kg	
		Lab Fort Blk. % Rec.	103.12	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	

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LFBLANK-57576					
	Fluorene	Dup Lab Fort Bl. Fnd	1.66	mg/kg	
		Dup Lab Fort Bl %Rec	99.78	%	
		Lab Fort Blank Range	3.34	units	
		Lab Fort Bl. Av. Rec	101.45	%	
		LFB Duplicate RPD	3.29	%	0-30
	Hexachlorobenzene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.65	mg/kg	
		Lab Fort Blk. % Rec.	99.24	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.60	mg/kg	
		Dup Lab Fort Bl %Rec	96.06	%	
		Lab Fort Blank Range	3.18	units	
		Lab Fort Bl. Av. Rec	97.65	%	
		LFB Duplicate RPD	3.26	%	0-30
	Hexachlorobutadiene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.44	mg/kg	
		Lab Fort Blk. % Rec.	86.12	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.46	mg/kg	
		Dup Lab Fort Bl %Rec	87.30	%	
		Lab Fort Blank Range	1.18	units	
		Lab Fort Bl. Av. Rec	86.71	%	
		LFB Duplicate RPD	1.36	%	0-30
	Hexachlorocyclopentadiene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.67	mg/kg	
		Lab Fort Blk. % Rec.	99.96	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.84	mg/kg	
		Dup Lab Fort Bl %Rec	110.20	%	
		Lab Fort Blank Range	10.24	units	
		Lab Fort Bl. Av. Rec	105.08	%	
		LFB Duplicate RPD	9.74	%	0-30
	Hexachloroethane	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.50	mg/kg	
		Lab Fort Blk. % Rec.	90.26	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.47	mg/kg	
		Dup Lab Fort Bl %Rec	87.96	%	
		Lab Fort Blank Range	2.30	units	
		Lab Fort Bl. Av. Rec	89.11	%	
		LFB Duplicate RPD	2.58	%	0-30
	Indeno(1,2,3-cd)pyrene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.92	mg/kg	

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Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	Indeno(1,2,3-cd)pyrene	Lab Fort Blk. % Rec.	115.04	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.85	mg/kg	
		Dup Lab Fort Bl %Rec	111.24	%	
		Lab Fort Blank Range	3.80	units	
		Lab Fort Bl. Av. Rec	113.14	%	
		LFB Duplicate RPD	3.36	%	0-30
	Isophorone	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.49	mg/kg	
		Lab Fort Blk. % Rec.	89.36	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.51	mg/kg	
		Dup Lab Fort Bl %Rec	90.66	%	
		Lab Fort Blank Range	1.30	units	
		Lab Fort Bl. Av. Rec	90.01	%	
		LFB Duplicate RPD	1.44	%	0-30
	2-Methylnaphthalene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.34	mg/kg	
		Lab Fort Blk. % Rec.	80.60	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.28	mg/kg	
		Dup Lab Fort Bl %Rec	76.98	%	
		Lab Fort Blank Range	3.62	units	
		Lab Fort Bl. Av. Rec	78.79	%	
		LFB Duplicate RPD	4.59	%	0-30
	2-Nitroaniline	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.58	mg/kg	
		Lab Fort Blk. % Rec.	94.86	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.50	mg/kg	
		Dup Lab Fort Bl %Rec	90.18	%	
		Lab Fort Blank Range	4.68	units	
		Lab Fort Bl. Av. Rec	92.52	%	
		LFB Duplicate RPD	5.06	%	0-30
	3-Nitroaniline	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	0.97	mg/kg	
		Lab Fort Blk. % Rec.	58.32	%	30-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	0.89	mg/kg	
		Dup Lab Fort Bl %Rec	53.12	%	
		Lab Fort Blank Range	5.20	units	
		Lab Fort Bl. Av. Rec	55.72	%	
		LFB Duplicate RPD	9.33	%	0-30

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LFBLANK-57576					
	Nitrobenzene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.51	mg/kg	
		Lab Fort Blk. % Rec.	90.70	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.53	mg/kg	
		Dup Lab Fort Bl %Rec	91.52	%	
		Lab Fort Blank Range	0.82	units	
		Lab Fort Bl. Av. Rec	91.11	%	
		LFB Duplicate RPD	0.90	%	0-30
	N-Nitroso-di-n-propylamine	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.65	mg/kg	
		Lab Fort Blk. % Rec.	98.88	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.59	mg/kg	
		Dup Lab Fort Bl %Rec	95.68	%	
		Lab Fort Blank Range	3.20	units	
		Lab Fort Bl. Av. Rec	97.28	%	
		LFB Duplicate RPD	3.29	%	0-30
	N-Nitrosodiphenylamine	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	2.03	mg/kg	
		Lab Fort Blk. % Rec.	122.02	%	80-180
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.90	mg/kg	
		Dup Lab Fort Bl %Rec	114.24	%	
		Lab Fort Blank Range	7.78	units	
		Lab Fort Bl. Av. Rec	118.13	%	
		LFB Duplicate RPD	6.59	%	0-30
	Phenanthrene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.73	mg/kg	
		Lab Fort Blk. % Rec.	104.04	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.67	mg/kg	
		Dup Lab Fort Bl %Rec	100.44	%	
		Lab Fort Blank Range	3.60	units	
		Lab Fort Bl. Av. Rec	102.24	%	
		LFB Duplicate RPD	3.52	%	0-30
	Pyrene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	2.07	mg/kg	
		Lab Fort Blk. % Rec.	124.26	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.82	mg/kg	
		Dup Lab Fort Bl %Rec	109.32	%	
		Lab Fort Blank Range	14.94	units	

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LFBLANK-57576					
	Pyrene	Lab Fort Bl. Av. Rec	116.79	%	
		LFB Duplicate RPD	12.79	%	0-30
	1,2,4-Trichlorobenzene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.43	mg/kg	
		Lab Fort Blk. % Rec.	85.92	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.43	mg/kg	
		Dup Lab Fort Bl %Rec	85.80	%	
		Lab Fort Blank Range	0.12	units	
		Lab Fort Bl. Av. Rec	85.86	%	
		LFB Duplicate RPD	0.14	%	0-30
	4-Chloro-3-methylphenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.62	mg/kg	
		Lab Fort Blk. % Rec.	97.22	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.56	mg/kg	
		Dup Lab Fort Bl %Rec	93.48	%	
		Lab Fort Blank Range	3.74	units	
		Lab Fort Bl. Av. Rec	95.35	%	
		LFB Duplicate RPD	3.92	%	0-30
	2-Chlorophenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.46	mg/kg	
		Lab Fort Blk. % Rec.	87.38	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.46	mg/kg	
		Dup Lab Fort Bl %Rec	87.58	%	
		Lab Fort Blank Range	0.20	units	
		Lab Fort Bl. Av. Rec	87.48	%	
		LFB Duplicate RPD	0.23	%	0-30
	2,4-Dichlorophenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.48	mg/kg	
		Lab Fort Blk. % Rec.	89.00	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.48	mg/kg	
		Dup Lab Fort Bl %Rec	89.04	%	
		Lab Fort Blank Range	0.04	units	
		Lab Fort Bl. Av. Rec	89.02	%	
		LFB Duplicate RPD	0.04	%	0-30
	2,4-Dimethylphenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.60	mg/kg	
		Lab Fort Blk. % Rec.	95.78	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.58	mg/kg	

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LFBLANK-57576					
	2,4-Dimethylphenol	Dup Lab Fort Bl %Rec	94.96	%	
		Lab Fort Blank Range	0.82	units	
		Lab Fort Bl. Av. Rec	95.37	%	
		LFB Duplicate RPD	0.86	%	0-30
	4,6-Dinitro-2-methylphenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.38	mg/kg	
		Lab Fort Blk. % Rec.	83.06	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.31	mg/kg	
		Dup Lab Fort Bl %Rec	78.78	%	
		Lab Fort Blank Range	4.28	units	
		Lab Fort Bl. Av. Rec	80.92	%	
		LFB Duplicate RPD	5.29	%	0-30
	2,4-Dinitrophenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.08	mg/kg	
		Lab Fort Blk. % Rec.	64.76	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.00	mg/kg	
		Dup Lab Fort Bl %Rec	60.24	%	
		Lab Fort Blank Range	4.52	units	
		Lab Fort Bl. Av. Rec	62.50	%	
		LFB Duplicate RPD	7.23	%	0-30
	o-cresol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.37	mg/kg	
		Lab Fort Blk. % Rec.	82.30	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.34	mg/kg	
		Dup Lab Fort Bl %Rec	80.58	%	
		Lab Fort Blank Range	1.72	units	
		Lab Fort Bl. Av. Rec	81.44	%	
		LFB Duplicate RPD	2.11	%	0-30
	m & p-cresol(s)	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.31	mg/kg	
		Lab Fort Blk. % Rec.	78.68	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.30	mg/kg	
		Dup Lab Fort Bl %Rec	78.12	%	
		Lab Fort Blank Range	0.56	units	
		Lab Fort Bl. Av. Rec	78.40	%	
		LFB Duplicate RPD	0.71	%	0-30
	2-Nitrophenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.43	mg/kg	
		Lab Fort Blk. % Rec.	85.74	%	30-130

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

QC Batch Number: GCMS/SEMI-8928

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	2-Nitrophenol	Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.42	mg/kg	
		Dup Lab Fort Bl %Rec	85.12	%	
		Lab Fort Blank Range	0.62	units	
		Lab Fort Bl. Av. Rec	85.43	%	
		LFB Duplicate RPD	0.73	%	0-30
	4-Nitrophenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.67	mg/kg	
		Lab Fort Blk. % Rec.	99.94	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.58	mg/kg	
		Dup Lab Fort Bl %Rec	95.10	%	
		Lab Fort Blank Range	4.84	units	
		Lab Fort Bl. Av. Rec	97.52	%	
		LFB Duplicate RPD	4.96	%	0-50
	Phenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.30	mg/kg	
		Lab Fort Blk. % Rec.	77.88	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.26	mg/kg	
		Dup Lab Fort Bl %Rec	75.62	%	
		Lab Fort Blank Range	2.26	units	
		Lab Fort Bl. Av. Rec	76.75	%	
		LFB Duplicate RPD	2.94	%	0-30
	2,4,5-Trichlorophenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.54	mg/kg	
		Lab Fort Blk. % Rec.	92.14	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.57	mg/kg	
		Dup Lab Fort Bl %Rec	94.24	%	
		Lab Fort Blank Range	2.10	units	
		Lab Fort Bl. Av. Rec	93.19	%	
		LFB Duplicate RPD	2.25	%	0-30
	2,4,6-Trichlorophenol	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.58	mg/kg	
		Lab Fort Blk. % Rec.	94.64	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.58	mg/kg	
		Dup Lab Fort Bl %Rec	94.86	%	
		Lab Fort Blank Range	0.22	units	
		Lab Fort Bl. Av. Rec	94.75	%	
		LFB Duplicate RPD	0.23	%	0-30
	Pentachlorophenol	Lab Fort Blank Amt.	1.67	mg/kg	

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Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

QC Batch Number: GCMS/SEMI-8928

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	Pentachlorophenol	Lab Fort Blk. Found	1.25	mg/kg	
		Lab Fort Blk. % Rec.	75.06	%	30-130
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.23	mg/kg	
		Dup Lab Fort Bl %Rec	73.54	%	
		Lab Fort Blank Range	1.52	units	
		Lab Fort Bl. Av. Rec	74.30	%	
		LFB Duplicate RPD	2.05	%	0-30
	Pyridine	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	0.98	mg/kg	
		Lab Fort Blk. % Rec.	58.54	%	30-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.09	mg/kg	
		Dup Lab Fort Bl %Rec	65.40	%	
		Lab Fort Blank Range	6.86	units	
		Lab Fort Bl. Av. Rec	61.97	%	
		LFB Duplicate RPD	11.07	%	0-50
	Benzo(k)fluoranthene	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.61	mg/kg	
		Lab Fort Blk. % Rec.	96.32	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.54	mg/kg	
		Dup Lab Fort Bl %Rec	92.66	%	
		Lab Fort Blank Range	3.66	units	
		Lab Fort Bl. Av. Rec	94.49	%	
		LFB Duplicate RPD	3.87	%	0-30
	4-Nitroaniline	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.38	mg/kg	
		Lab Fort Blk. % Rec.	82.58	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.32	mg/kg	
		Dup Lab Fort Bl %Rec	78.96	%	
		Lab Fort Blank Range	3.62	units	
		Lab Fort Bl. Av. Rec	80.77	%	
		LFB Duplicate RPD	4.48	%	0-30
	Acetophenone	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.20	mg/kg	
		Lab Fort Blk. % Rec.	71.84	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.20	mg/kg	
		Dup Lab Fort Bl %Rec	72.22	%	
		Lab Fort Blank Range	0.38	units	
		Lab Fort Bl. Av. Rec	72.03	%	

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QC SUMMARY REPORT

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Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

QC Batch Number: GCMS/SEMI-8928

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57576					
	Acetophenone	LFB Duplicate RPD	0.53	%	0-30
	Carbazole	Lab Fort Blank Amt.	1.67	mg/kg	
		Lab Fort Blk. Found	1.60	mg/kg	
		Lab Fort Blk. % Rec.	96.16	%	40-140
		Dup Lab Fort Bl Amt.	1.67	mg/kg	
		Dup Lab Fort Bl. Fnd	1.62	mg/kg	
		Dup Lab Fort Bl %Rec	96.92	%	
		Lab Fort Blank Range	0.76	units	
		Lab Fort Bl. Av. Rec	96.54	%	
		LFB Duplicate RPD	0.79	%	0-30

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BATCH QC: Lab fortified Blanks and Duplicates
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Method Blanks

QC Batch Number: ICP-15497

Sample Id	Analysis	QC Analysis	Values	Units	Limits
BLANK-95852					
	Silver	Blank	<0.50	mg/kg	
	Arsenic	Blank	<2.50	mg/kg	
	Barium	Blank	<0.50	mg/kg	
	Beryllium	Blank	<0.25	mg/kg	
	Cadmium	Blank	<0.25	mg/kg	
	Chromium	Blank	<0.50	mg/kg	
	Copper	Blank	0.18	mg/kg	
	Nickel	Blank	<0.50	mg/kg	
	Lead	Blank	<0.75	mg/kg	
	Antimony	Blank	<4.00	mg/kg	
	Selenium	Blank	<5.00	mg/kg	
	Thallium	Blank	<3.00	mg/kg	
	Vanadium	Blank	<5.00	mg/kg	
	Zinc	Blank	<1.00	mg/kg	
LFBLANK-57560					
	Silver	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	97.69	mg/kg	
		Lab Fort Blk. % Rec.	97.69	%	65-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	93.42	mg/kg	
		Dup Lab Fort Bl %Rec	93.42	%	65-120
		Lab Fort Blank Range	4.28	units	
		Lab Fort Bl. Av. Rec	95.55	%	
		LFB Duplicate RPD	4.47	%	0-35
	Arsenic	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	107.83	mg/kg	
		Lab Fort Blk. % Rec.	107.83	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	102.54	mg/kg	
		Dup Lab Fort Bl %Rec	102.54	%	80-120
		Lab Fort Blank Range	5.29	units	
		Lab Fort Bl. Av. Rec	105.19	%	
		LFB Duplicate RPD	5.02	%	0-35
	Barium	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	106.21	mg/kg	
		Lab Fort Blk. % Rec.	106.21	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	102.32	mg/kg	
		Dup Lab Fort Bl %Rec	102.32	%	80-120
		Lab Fort Blank Range	3.90	units	
		Lab Fort Bl. Av. Rec	104.26	%	
		LFB Duplicate RPD	3.74	%	0-35
	Beryllium	Lab Fort Blank Amt.	100.00	mg/kg	

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Sample Matrix Spikes and Matrix Spike Duplicates

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Method Blanks

QC Batch Number: ICP-15497

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57560					
	Beryllium	Lab Fort Blk. Found	101.23	mg/kg	
		Lab Fort Blk. % Rec.	101.23	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	100.42	mg/kg	
		Dup Lab Fort Bl %Rec	100.42	%	80-120
		Lab Fort Blank Range	0.81	units	
		Lab Fort Bl. Av. Rec	100.82	%	
		LFB Duplicate RPD	0.80	%	0-35
	Cadmium	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	103.05	mg/kg	
		Lab Fort Blk. % Rec.	103.05	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	99.05	mg/kg	
		Dup Lab Fort Bl %Rec	99.05	%	80-120
		Lab Fort Blank Range	4.00	units	
		Lab Fort Bl. Av. Rec	101.05	%	
		LFB Duplicate RPD	3.96	%	0-35
	Chromium	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	109.41	mg/kg	
		Lab Fort Blk. % Rec.	109.41	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	105.74	mg/kg	
		Dup Lab Fort Bl %Rec	105.74	%	80-120
		Lab Fort Blank Range	3.67	units	
		Lab Fort Bl. Av. Rec	107.58	%	
		LFB Duplicate RPD	3.41	%	0-35
	Copper	Lab Fort Blank Amt.		units	
		Lab Fort Blk. Found		units	
		Lab Fort Blk. % Rec.		%	80-120
		Lab Fort Blank Range		units	
	Nickel	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	107.13	mg/kg	
		Lab Fort Blk. % Rec.	107.13	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	102.98	mg/kg	
		Dup Lab Fort Bl %Rec	102.98	%	80-120
		Lab Fort Blank Range	4.14	units	
		Lab Fort Bl. Av. Rec	105.06	%	
		LFB Duplicate RPD	3.95	%	0-35
	Lead	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	103.01	mg/kg	
		Lab Fort Blk. % Rec.	103.01	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	

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QC SUMMARY REPORT

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Method Blanks

QC Batch Number: ICP-15497

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57560					
	Lead	Dup Lab Fort Bl. Fnd	98.56	mg/kg	
		Dup Lab Fort Bl %Rec	98.56	%	80-120
		Lab Fort Blank Range	4.45	units	
		Lab Fort Bl. Av. Rec	100.78	%	
		LFB Duplicate RPD	4.42	%	0-35
	Antimony	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	104.70	mg/kg	
		Lab Fort Blk. % Rec.	104.70	%	65-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	100.26	mg/kg	
		Dup Lab Fort Bl %Rec	100.26	%	65-120
		Lab Fort Blank Range	4.44	units	
		Lab Fort Bl. Av. Rec	102.48	%	
		LFB Duplicate RPD	4.34	%	0-35
	Selenium	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	98.58	mg/kg	
		Lab Fort Blk. % Rec.	98.58	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	94.06	mg/kg	
		Dup Lab Fort Bl %Rec	94.06	%	80-120
		Lab Fort Blank Range	4.52	units	
		Lab Fort Bl. Av. Rec	96.32	%	
		LFB Duplicate RPD	4.69	%	0-35
	Thallium	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	100.66	mg/kg	
		Lab Fort Blk. % Rec.	100.66	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	94.94	mg/kg	
		Dup Lab Fort Bl %Rec	94.94	%	80-120
		Lab Fort Blank Range	5.72	units	
		Lab Fort Bl. Av. Rec	97.80	%	
		LFB Duplicate RPD	5.85	%	0-35
	Vanadium	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	106.70	mg/kg	
		Lab Fort Blk. % Rec.	106.70	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	102.52	mg/kg	
		Dup Lab Fort Bl %Rec	102.52	%	80-120
		Lab Fort Blank Range	4.18	units	
		Lab Fort Bl. Av. Rec	104.61	%	
		LFB Duplicate RPD	4.00	%	0-35
	Zinc	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	104.33	mg/kg	

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Sample Matrix Spikes and Matrix Spike Duplicates

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Method Blanks

QC Batch Number: ICP-15497

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-57560					
	Zinc	Lab Fort Blk. % Rec.	104.33	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	99.64	mg/kg	
		Dup Lab Fort Bl %Rec	99.64	%	80-120
		Lab Fort Blank Range	4.69	units	
		Lab Fort Bl. Av. Rec	101.98	%	
		LFB Duplicate RPD	4.60	%	0-35
LFBLANK-57583					
	Copper	Lab Fort Blank Amt.	100.00	mg/kg	
		Lab Fort Blk. Found	103.39	mg/kg	
		Lab Fort Blk. % Rec.	103.39	%	80-120
		Dup Lab Fort Bl Amt.	100.00	mg/kg	
		Dup Lab Fort Bl. Fnd	107.46	mg/kg	
		Dup Lab Fort Bl %Rec	107.46	%	
		Lab Fort Blank Range	4.08	units	
		Lab Fort Bl. Av. Rec	105.43	%	
		LFB Duplicate RPD	3.87	%	

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QUALITY CONTROL DEFINITIONS AND ABBREVIATIONS

QC BATCH NUMBER	This is the number assigned to all samples analyzed together that would be subject to comparison with a particular set of Quality Control Data.
LIMITS	Upper and Lower Control Limits for the QC ANALYSIS Reported. All values normally would fall within these statistically determined limits, unless there is an unusual circumstance that would be documented in a NOTE appearing on the last page of the QC SUMMARY REPORT. Not all QC results will have Limits defined.
Sample Amount	Amount of analyte found in a sample.
Blank	Method Blank that has been taken though all the steps of the analysis.
LFBLANK	Laboratory Fortified Blank (a control sample)
STDADD	Standard Added (a laboratory control sample)
Matrix Spk Amt Added	Amount of analyte spiked into a sample
MS Amt Measured	Amount of analyte found including amount that was spiked
Matrix Spike % Rec.	% Recovery of spiked amount in sample.
Duplicate Value	The result from the Duplicate analysis of the sample.
Duplicate RPD	The Relative Percent Difference between two Duplicate Analyses.
Surrogate Recovery	The % Recovery for non-environmental compounds (surrogates) spiked into samples to determine the performance of the analytical methods.
Sur. Recovery (ELCD)	Surrogate Recovery on the Electrolytic Conductivity Detector.
Sur. Recovery (PID)	Surrogate Recovery on the Photoionization Detector.
Standard Measured	Amount measured for a laboratory control sample
Standard Amt Added	Known value for a laboratory control sample
Standard % Recovery	% recovered for a laboratory control sample with a known value.
Lab Fort Blank Amt	Laboratory Fortified Blank Amount Added
Lab Fort Blk. Found	Laboratory Fortified Blank Amount Found
Lab Fort Blk % Rec	Laboratory Fortified Blank % Recovered
Dup Lab Fort Bl Amt	Duplicate Laboratory Fortified Blank Amount Added
Dup Lab Fort Bl Fnd	Duplicate Laboratory Fortified Blank Amount Found
Dup Lab Fort Bl % Rec	Duplicate Laboratory Fortified Blank % Recovery
Lab Fort Blank Range	Laboratory Fortified Blank Range (Absolute value of difference between recoveries for Lab Fortified Blank and Lab Fortified Blank Duplicate).
Lab Fort Bl. Av. Rec.	Laboratory Fortified Blank Average Recovery
Duplicate Sample Amt	Sample Value for Duplicate used with Matrix Spike Duplicate
MSD Amount Added	Matrix Spike Duplicate Amount Added (Spiked)
MSD Amt Measured	Matrix Spike Duplicate Amount Measured
MSD % Recovery	Matrix Spike Duplicate % Recovery
MSD Range	Absolute difference between Matrix Spike and Matrix Spike Duplicate Recoveries

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: **CON-TEST Analytical Laboratory**	Project #: LIMT-02346
Project Location: ONE BROADWAY, CAMBRIDGE, MA	MADEP RTN[1]:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

06B40488

Sample Matrices: ☐ Groundwater ☐ Soil/Sediment ☐ Drinking Water ☒ Other: SOOT

MCP SW-846 Methods Used					
	8260B ( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A ( )
	8270C (X)	8081A ( )	VPH ( )	6020 ( )	9014M [2] ( )
As specified in MADEP Compendium of Analytical Methods. (check all that apply)	8082 (X)	8021B ( )	EPH ( )	7000 S[3] ( )	7196A ( )

1 List Release Tracking Number (RTN), if known
2 M – SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method
3 S – SW-846 Methods 7000 Series List individual method and analyte.

An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status

A	Were all samples received by the laboratory in a condition consistent with that described on the Chain-of-Custody documentation for the data set?	☒ Yes ☐ No[1]
B	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	☒ Yes ☐ No[1]
C	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No[1]
D	***VPH and EPH Methods only***: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)	☐ Yes ☐ No [1]

A response to questions E and F below is required for "Presumptive Certainty" status

E	Were all analytical QC performance standards and recommendations for the specified methods achieved?	☐ Yes ☒ No[1]
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	☒ Yes ☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Edward Denson	**Position: Technical Director**
Printed Name: Edward Denson	**Date:** 12/11/06

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Cell # (978) 879-0943

LIMT# 02346

Company Name: TRC Environmental
Address: 116 John St
Lowell
Attention: DOT McGLINCY
Project Location: One Broadway, Cambridge
Sampled By: Dorothy McGlinc

Telephone: (978) 656-3659
Project #: 42462-1111
Client PO #:

Proposal Provided? (For Billing purposes) ☐ yes ______ proposal date

State Form Required? ☐ yes ☐ no

DATA DELIVERY (check one): ☒ FAX ☒ EMAIL ☐ WEBSITE CLIENT
Fax #:
Email: 978-453-1995
Format: ☐ EXCEL ☒ PDF ☐ GIS KEY ☐ OTHER ______

ANALYSIS REQUESTED

# of containers	1	1	1		1	1	1
**Preservation	None	None	None		None	None	None
~Cont. Code	G	G	G		G	G	G
Analysis	PCBs (SOLIDS)	SVOCs (")	MCP Metals by ICP (")	WIPE SAMPLES	PCBs	SVOCs ⊛	MCP Metals ICP

Field ID	Sample Description	Lab # 06B	Start Date/Time	Stop Date/Time	Composite	Grab	*Matrix Code	Conc. Code	PCBs (solids)	SVOCs (solids)	MCP Metals by ICP (solids)	PCBs (wipe)	SVOCs (wipe)	MCP Metals ICP (wipe)
S1	Vault Soot Sample 1	40488	12/9 6:30 PM	12/9/06 6:45	✓				X	X	X			
S2	AIR DUCT-FLR/NE (WIPES)	89	6:20 PM	6:25	✓							X	X	X
S3	5th FLOOR-Stairwell (Wipe)	90	6:10 PM	6:15	✓							X	X	X
S4	5th FLOOR-North Wall Wipe	91	5:50 PM	6:00	✓							X	X	X
Vault Floor	OIL + WATER collected by Dan Watton, NSTAR on 12/8/06	92	12/8 5 PM	12/8		✓						X		

DOT McGLINCY Note: S1 = 1 JAR, S2 = 1 JAR, S3 = 1 JAR, S4 = 1 JAR, VAULT OIL 1 JAR

(S2–S4) sampled using isopropyl alcohol

⊛ Insufficient sample to analyze - Do Not run per client per LVD. AP 12/11/06

Client Comments:
RUN OIL for PCBs ~~SVOCs~~
CALL DOT WITH PCB SAMPLES

~Cont. Code: A=amber glass, G=glass, P=plastic, ST=sterile, V=vial, S=summa can, T=tedlar bag, O=Other

Laboratory Comments:
Note: Sample "Vault Floor OW" was collected from the vault by Dan WATTON of NSTAR at 5PM on 08 Dec 2006, stored on ice 24-hrs, released to Dot McGlincy 09 Dec 8PM DW DW

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in **Matrix/Conc.** Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished / Received	Date/Time
Relinquished by: (signature) Dorothy M. McGlincy	12/9/06 8:19PM
Received by: (signature) [signature]	12-9-6 8:19
Relinquished by: (signature) [signature] TO COOLER	12-9-6 22:30
Received by: (signature) [signature] FROM COOLER	12-10-06 08:00 AM

Turnaround **
☐ 7-Day
☐ 10-Day
☐ Other ____
RUSH *
☒ *24-Hr ☐ *48-Hr
☐ *72-Hr ☐ *4-Day
* Require lab approval

Detection Limit Requirements
Regulations? ______
Data Enhancement Project/RCP? ☒ Y ☐ N ⊛
⊛ 12/10/06 0830 - Per T.V. Sr. - run D.E. per TRC
Special Requirements or DL's:

***Matrix Code:**
GW = groundwater
WW = wastewater
DW = drinking water
A = air
S = soil/solid
SL = sludge
O = other____

****Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
O = Other____
X = Na hydroxide
T = Na thiosulfate

* TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

AIHA, NELAC & WBE/DBE Certified

con-test ANALYTICAL LABORATORY
www.contestlabs.com
39 Spruce Street
East Longmeadow, MA
Phone: 1-413-525-2332
Fax: 1-413-525-6405

SAMPLE RECEIPT CHECKLIST

CLIENT NAME: TRC Environmental

RECEIVED BY: LVD / TEVSR DATE: 12/10/06

1. Was chain of custody relinquished and signed? (YES) NO
2. Does Chain agree with samples? (YES) NO

If not, explain:

3. All Samples in good condition? (YES) NO

If not, explain:

4. Were samples received in compliance with Temperature 0-6 degrees C? (YES) NO Degrees: 4.9°C
5. Are all soil vph & voc samples covered with preservation? YES NO N/A
6. Are there any on hold samples? YES (NO)
7. Laboratory analysts notified? (YES) NO
   Who Ryan Shumate/BL/SB Time 0815 Am Date 12/10/06
8. Location where samples are stored: _____

CONTAINERS SENT IN TO CON-TEST	# of containers	CONTAINERS SENT TO CON-TEST	# of containers
1 liter amber		Air Cassettes	
500 ml amber		8 oz clear jar	
250 ml amber (8oz. Amber)	1	4 oz clear jar	
1 liter plastic		2 oz clear jar	
500 ml plastic		Plastic bag	
250 ml plastic		Encore	
40 ml vial		Brass Sleeves	
Colisure bottle		Tubes	
Dissolved oxygen bottle		Summa cans	
Flashpoint bottle		Other 12/10/06 LVD (4) 4 clear glass jars	

Laboratory comments:
limited water/oil sample; S2, S3, S4 are cotton swabs; S1 is a soil - limited samples

RUN PCB as highest priority → then SVOC → then

Do all the samples have the correct pH levels? YES NO If no, please explain below:

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REPORT DATE 12/11/2006

TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852
ATTN: DOT MCGLINCY

CONTRACT NUMBER:
PURCHASE ORDER NUMBER:

PROJECT NUMBER: 42462-1111

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02359
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: ONE BROADWAY, CAMBRIDGE, MA

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
S1	06B40546	SOLID	VAULT SOOT SAMPLE 1	hg (mg/kg)

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REPORT DATE 12/11/2006

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ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02359
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

Comments :

LIMS BATCH NO. : LIMT-02359

CASE NARRATIVE SUMMARY

THERE ARE NO ANALYTICAL ISSUES AFFECTING THE USABILITY OF THE DATA

DETAILED CASE NARRATIVE

METHOD SW846-7471A

RECOMMENDED SAMPLE HOLDING TIMES WERE NOT EXCEEDED FOR ALL SAMPLES ANALYZED BY METHOD 7471A UNLESS LISTED BELOW: NONE EXCEEDED

ALL SAMPLES FOR METHOD 7471A WERE RECEIVED PRESERVED PROPERLY IN THE PROPER CONTAINERS AS SPECIFIED ON THE CHAIN-OF-CUSTODY FORM UNLESS LISTED BELOW: ALL PROPERLY PRESERVED

INITIAL AND CONTINUING CALIBRATIONS MET ALL REQUIRED PERFORMANCE STANDARDS FOR METHOD 7471A EXCEPT AS LISTED BELOW: ALL STANDARDS MET

LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE RECOVERIES, AS WELL AS LCS RPD, FOR REQUIRED MCP DATA ENHANCEMENT MERCURY 7471A WERE ALL WITHIN REQUIRED CONTROL LIMITS EXCEPT AS LISTED BELOW: NONE OUTSIDE CONTROL LIMITS

THE 7471A METHOD BLANK WAS FOUND NOT TO BE CONTAMINATED AT LEVELS ABOVE THE REPORTING LIMIT EXCEPT WHERE LISTED BELOW: NO CONTAMINATION NOTED

ALL 7471A MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES, SAMPLE DUPLICATE RPDs AND MSDRPD, IF REQUESTED IN THIS BATCH WERE WITHIN CONTROL LIMITS SPECIFIED BY THE METHOD UNLESS LISTED BELOW: NONE REQUESTED OR PERFORMED ON SAMPLES SPECIFIC TO THIS CHAIN-OF-CUSTODY.

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations :

AIHA 100033	AIHA ELLAP (LEAD) 100033	
MASSACHUSETTS MA0100	NEW HAMPSHIRE NELAP 2516	NEW JERSEY NELAP NJ MA007 (AIR)
CONNECTICUT PH-0567	VERMONT DOH (LEAD) No. LL015036	
NEW YORK ELAP/NELAP 10899	RHODE ISLAND (LIC. No. 112)	

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 12/11/06

SIGNATURE DATE

Tod Kopyscinski
Director of Operations

Sondra L. Slesinski
Quality Assurance Officer

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REPORT DATE 12/11/2006

TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852
ATTN: DOT MCGLINCY

CONTRACT NUMBER:
PURCHASE ORDER NUMBER:

PROJECT NUMBER: 42462-1111

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-02359
JOB NUMBER: 42462-1111

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

Edward Denson
Technical Director

* See end of data tabulation for notes and comments pertaining to this sample

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

12/11/2006

Purchase Order No.:

Project Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006
Field Sample # : S1

LIMS-BAT #: LIMT-02359
Job Number: 42462-1111

Sample ID : 06B40546

Sampled : 12/9/2006
VAULT SOOT SAMPLE 1

Sample Matrix: SOLID

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo	SPEC Limit Hi	P/ F
Mercury	mg/kg	0.167	12/11/06	SY	0.009			

Analytical Method:
SW846 3050/7471
SAMPLES ARE DIGESTED WITH ACIDS AND THEN ANALYZED BY
COLD VAPOR (FLAMELESS) ATOMIC ABSORPTION SPECTROPHOTOMETRY

RL = Reporting Limit

ND = Not Detected at or above the Reporting Limit

NM = Not Measured

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.

* = See end of report for comments and notes applying to this sample

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DOT MCGLINCY
TRC SOLUTIONS - LOWELL
BOOTT MILLS SOUTH, FOOT OF JOHN ST.
LOWELL, MA 01852

Purchase Order No.:

Project Number: 42462-1111
LIMS-BAT #: LIMT-02359
Job Number: 42462-1111

Project Location: ONE BROADWAY, CAMBRIDGE, MA
Date Received: 12/9/2006

** END OF REPORT **

RL = Reporting Limit

ND = Not Detected at or above the Reporting Limit

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SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.

* = See end of report for comments and notes applying to this sample

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 12/11/2006 Lims Bat # : LIMT-02359

QC Batch Number: HG-7281

Sample Id	Analysis	QC Analysis	Values	Units	Limits
BLANK-95915					
	Mercury	Blank	<0.010	mg/kg	
LFBLANK-57606					
	Mercury	Lab Fort Blank Amt.	0.500	mg/kg	
		Lab Fort Blk. Found	0.450	mg/kg	
		Lab Fort Blk. % Rec.	90.000	%	80-120
		Dup Lab Fort Bl Amt.	0.500	mg/kg	
		Dup Lab Fort Bl. Fnd	0.452	mg/kg	
		Dup Lab Fort Bl %Rec	90.500	%	
		Lab Fort Blank Range	0.500	units	
		Lab Fort Bl. Av. Rec	90.250	%	
		LFB Duplicate RPD	0.554	%	

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

QUALITY CONTROL DEFINITIONS AND ABBREVIATIONS

QC BATCH NUMBER	This is the number assigned to all samples analyzed together that would be subject to comparison with a particular set of Quality Control Data.
LIMITS	Upper and Lower Control Limits for the QC ANALYSIS Reported. All values normally would fall within these statistically determined limits, unless there is an unusual circumstance that would be documented in a NOTE appearing on the last page of the QC SUMMARY REPORT. Not all QC results will have Limits defined.
Sample Amount	Amount of analyte found in a sample.
Blank	Method Blank that has been taken though all the steps of the analysis.
LFBLANK	Laboratory Fortified Blank (a control sample)
STDADD	Standard Added (a laboratory control sample)
Matrix Spk Amt Added	Amount of analyte spiked into a sample
MS Amt Measured	Amount of analyte found including amount that was spiked
Matrix Spike % Rec.	% Recovery of spiked amount in sample.
Duplicate Value	The result from the Duplicate analysis of the sample.
Duplicate RPD	The Relative Percent Difference between two Duplicate Analyses.
Surrogate Recovery	The % Recovery for non-environmental compounds (surrogates) spiked into samples to determine the performance of the analytical methods.
Sur. Recovery (ELCD)	Surrogate Recovery on the Electrolytic Conductivity Detector.
Sur. Recovery (PID)	Surrogate Recovery on the Photoionization Detector.
Standard Measured	Amount measured for a laboratory control sample
Standard Amt Added	Known value for a laboratory control sample
Standard % Recovery	% recovered for a laboratory control sample with a known value.
Lab Fort Blank Amt	Laboratory Fortified Blank Amount Added
Lab Fort Blk. Found	Laboratory Fortified Blank Amount Found
Lab Fort Blk % Rec	Laboratory Fortified Blank % Recovered
Dup Lab Fort Bl Amt	Duplicate Laboratory Fortified Blank Amount Added
Dup Lab Fort Bl Fnd	Duplicate Laboratory Fortified Blank Amount Found
Dup Lab Fort Bl % Rec	Duplicate Laboratory Fortified Blank % Recovery
Lab Fort Blank Range	Laboratory Fortified Blank Range (Absolute value of difference between recoveries for Lab Fortified Blank and Lab Fortified Blank Duplicate).
Lab Fort Bl. Av. Rec.	Laboratory Fortified Blank Average Recovery
Duplicate Sample Amt	Sample Value for Duplicate used with Matrix Spike Duplicate
MSD Amount Added	Matrix Spike Duplicate Amount Added (Spiked)
MSD Amt Measured	Matrix Spike Duplicate Amount Measured
MSD % Recovery	Matrix Spike Duplicate % Recovery
MSD Range	Absolute difference between Matrix Spike and Matrix Spike Duplicate Recoveries

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: **CON-TEST Analytical Laboratory**	Project #: LIMT-
Project Location: ONE BROADWAY, CAMBRIDGE, MA	MADEP RTN[1]:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

06B40546.

Sample Matrices: ☐ Groundwater ☒ Soil/Sediment ☐ Drinking Water ☐ Other: _____

MCP SW-846 Methods Used					
	8260B ( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A (☒)
	8270C ( )	8081A ( )	VPH ( )	6020 ( )	9014M [2] ( )
As specified in MADEP Compendium of Analytical Methods. (check all that apply)	8082 ( )	8021B ( )	EPH ( )	7000 S[3] ( )	7196A ( )

1 List Release Tracking Number (RTN), if known
2 M – SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method
3 S – SW-846 Methods 7000 Series List individual method and analyte.

An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status

A	Were all samples received by the laboratory in a condition consistent with that described on the Chain-of-Custody documentation for the data set?	☒ Yes ☐ No[1]
B	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	☒ Yes ☐ No[1]
C	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No[1]
D	***VPH and EPH Methods only***: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)	☐ Yes ☐ No[1]

A response to questions E and F below is required for "Presumptive Certainty" status

E	Were all analytical QC performance standards and recommendations for the specified methods achieved?	☒ Yes ☐ No[1]
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	☒ Yes ☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Edward Denson	**Position: Technical Director**
Printed Name: Edward Denson	**Date:** 12/11/06

5/13

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Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

02359

39 SPRUCE ST, 2ND FLOOR
EAST LONGMEADOW, MA 01028

Cell # (978) 877-0943

Lim# ~~02346~~ LVD 12/11/06

Company Name: TRC Environmental
Address: 116 John St, Lowell
Attention: Dot McGlincy
Project Location: One Broadway, Cambridge
Sampled By: Dorothy McGlincy

Telephone: (978) 656-3659
Project #: 42462-1111
Client PO #:

Proposal Provided? (For Billing purposes) ☐ yes ______ proposal date

State Form Required? ☐ yes ☐ no

DATA DELIVERY (check one): ☒ FAX ☒ EMAIL ☐ WEBSITE CLIENT
Fax #:
Email: 978-453-1995
Format: ☐ EXCEL ☒ PDF ☐ GIS KEY ☐ OTHER ______

ANALYSIS REQUESTED

Field ID	Sample Description	Lab # 06B	Start Date/Time	Stop Date/Time	Composite	Grab	*Matrix Code	Conc. Code	PCBs (Solids)	SVOCs (")	MCP Metals by ICP (")	Wipe Samples: PCBs	SVOCs	MCP Metals ICP	✱ Mercury			Client Comments
# of containers									1	1	1	1	1	1				
**Preservation									None	None	None	None	None	None				
~Cont. Code									G	G	G	G	G	G				
✱ S1	Vault Soot Sample 1	~~40488~~ 40546	12/9/06 6:30 PM	12/9/06 6:45	✓				X	X	X				X			
S2	Airduct-Flr/NE (Wipes)	~~84~~	6:20 PM	6:25	✓							X	X	X				sampled using isopropyl alcohol
S3	5th Floor-Stairwell (Wipe)	~~90~~	6:10 PM	6:15	✓							X	X	X				
S4	5th Floor-North Wall Wipe	~~94~~	5:50 PM	6:00	✓							X	X	X				
Vault Floor	Oil + Water	~~92~~	12/8 5 PM	12/8		✓						X						Run oil for PCBs ~~SVOCs~~
	collected by Dan Watton, NSTAR on 12/8/06																	Call Dot with PCB samples
	✱ 12/11/06 Mercury added by client. - LVD per TV Sr. 2pm																	

Dot McGlincy Note: S1 = 1 JAR, S2 = 1 JAR, S3 = 1 JAR, S4 = 1 JAR, Vault Oil = 1 JAR

Laboratory Comments:
Note: Sample "Vault Floor OW" was collected from the vault by Dan Watton of NSTAR at 5PM on 08 Dec 2006, stored on ice 24-hrs, released to Dot McGlincy 09 Dec 8PM. DW DM

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in **Matrix/Conc.** Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished / Received	Date/Time
Relinquished by: (signature) Dorothy A. McGlincy	12/9/06 8:19 PM
Received by: (signature) [signature]	12-9-6 8:19
Relinquished by: (signature) [signature] to cooler	12-9-6 22:30
Received by: (signature) [signature] from cooler	12-10-06 08:00 AM

Turnaround **
☐ 7-Day
☐ 10-Day
☐ Other ____
RUSH *
☒ *24-Hr ☐ *48-Hr
☐ *72-Hr ☐ *4-Day
* Require lab approval

Detection Limit Requirements
Regulations? ______
Data Enhancement Project/RCP? ☒ Y ☐ N
✱ 12/10/06 0830 - Per T.V. Sr. - run D.E. per TRC
Special Requirements or DL's:

***Matrix Code:**
GW = groundwater
WW = wastewater
DW = drinking water
A = air
S = soil/solid
SL = sludge
O = other ______

****Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
O = Other ______
X = Na hydroxide
T = Na thiosulfate

~Cont. Codes:
A = amber glass
G = glass
P = plastic
ST = sterile
V = vial
S = summa can
T = tedlar bag
O = Other

** TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

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