MONITORING AND MAINTENANCE IMPLEMENTATION PLAN

University of Massachusetts

Dubois Library

Amherst, Massachusetts

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March 2013

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1. INTRODUCTION

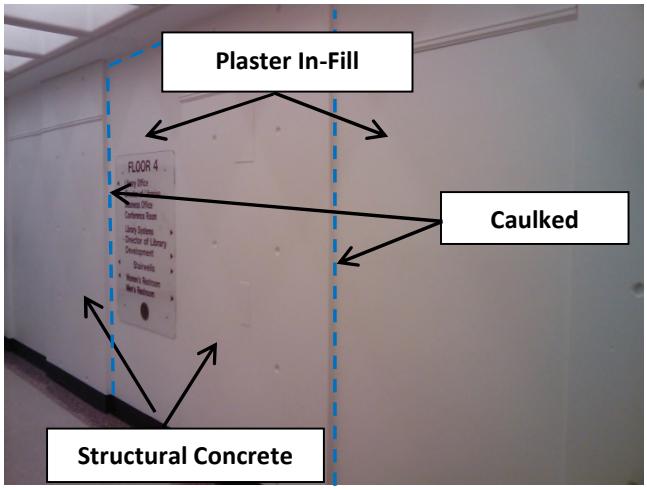
This Monitoring and Maintenance Implementation Plan (MMIP) has been prepared by Woodard & Curran on behalf of the University of Massachusetts (UMass) in pursuant to Condition 14 of the United States Environmental Protection Agency's (EPA) April 8, 2010 Dubois Library PCB Cleanup and Disposal Approval under 40 CFR 761.61(c) (the Approval) for polychlorinated biphenyl (PCB) remediation activities conducted at the Dubois Library on the UMass Campus in Amherst, Massachusetts.

This plan presents the monitoring and maintenance activities that will be conducted to assess the long term effectiveness of the encapsulants applied as an interim measure to residual concentrations of PCBs detected in interior masonry materials and to monitor and assess indoor air quality at the respective elevator lobby areas within the Dubois Library.

1.1 BACKGROUND / CONCEPTUAL SITE MODEL

The Dubois Library is a 28 story building constructed in the early 1970's on the University of Massachusetts Amherst Campus. The upper two floors, floors 27 and 28, consist primarily of roof access, the elevator machine room, and mechanical and electrical equipment. The remaining floors are currently in use as a library including study areas, classrooms, computer terminals, and common areas. A Location Map is provided as Figure 1.

The Dubois Library was originally constructed in the early 1970's, during a time period when PCBs were sometimes used in certain building materials (e.g., caulking). In preparation for the elevator replacement project, a materials survey was conducted to check for the presence of various hazardous materials that may be encountered during the project. This materials survey included an inspection and sampling of suspect materials for PCBs.



Typical Elevator Lobby (Pre-Remediation)

Analytical results indicated that certain caulking materials along elevator shaft masonry in-fill to structural concrete joints contained PCBs at concentrations greater than 50 parts per million (ppm). Adjacent building materials were sampled to determine whether PCBs had migrated from the caulking into these adjacent materials, and the characterization data confirmed that detectable concentrations of PCBs were present in certain adjacent materials at regulated concentrations. A photograph of a typical elevator lobby is shown to the right.

After completing the characterization of PCB-containing materials at the Site, these results were used to develop a remedial approach that was incorporated into the overall renovation project plans as presented in the PCB Remediation Plan submitted to EPA on March 2, 2010.

1.2 SUBMITTALS AND PROJECT TIMELINE

The following list provides a summary of the major activities conducted and document submittals prepared as part of the remediation activities. It should be noted that sampling was conducted throughout the program in support of these submittals.

- Initial Site Inspection and Characterization Sample Collection – April through November 2009;
- PCB Remediation Plan submitted – March 2, 2010;
- Response to Comments submitted – March 26, 2010;
- EPA Dubois Library PCB Cleanup and Disposal Approval under 40 CFR 761.61(c), 761.62, and 761.79(h) received by UMass – April 8, 2010;
- Contractor Work Plan submitted – May 14, 2010 (follow up comment response on May 19, 2010);
- First phase of PCB Remediation Activities – May 2010 to August 2010 (removal of plaster in-fill materials and application of Sikagard 550W coating);
- Project Status Update submitted – October 15, 2010;
- Second phase of PCB Remediation Activities - May 2011 to July 2011 (removal of CMU block in-fill materials);
- Project Status Update submitted – November 17, 2011;
- Elevator Replacement Project/PCB Remediation Activities Completed – August 2012 (final liquid coating application and installation of metal cladding);
- Final Inspection of encapsulated surfaces and post-abatement monitoring – August 28, 2012; and
- Initial Post-Remediation Monitoring Results Letter Report submitted – September 13, 2012.

1.3 REMEDIATION SUMMARY

In summary, the following remediation activities have been completed:

- Removal and off-site disposal of ≥ 50 ppm PCB containing caulking and elevator in-fill plaster materials as ≥ 50 ppm PCB waste:
    - Approximately 0.4 tons of bulk PCB waste (caulking, backer materials, and plaster in-fill materials) were removed for off-site disposal as ≥ 50 ppm PCB wastes and ACM at Environmental Quality's Wayne Disposal Landfill in Belleville, Michigan.
- Removal and off-site disposal of elevator in-fill CMU block materials as < 50 ppm PCB wastes or general demolition debris (based on results of verification sampling following plaster removal):
    - Approximately 13 tons of bulk < 50 ppm PCB waste (CMU block in-fill materials) were removed for off-site disposal at Waste Management's Turnkey Disposal facility in Rochester, New Hampshire.
- Encapsulation of all plaster surfaces (unused shaft and transom locations) scheduled to remain in place and concrete surfaces along the return to the right angle of the concrete (i.e., to the first 90-degree corner or approximately 2 inches for structural concrete and 12 inches for ceiling concrete) with two coats of an

elastomeric acrylic coating (Sikagard 550W); this coating was subsequently covered by either the final interior wall coating for the lobby and/or the metal frame associated with the new elevator doors (estimated area = 2,000 square feet);

- Final application of an acrylic latex paint to all surfaces scheduled to remain in place throughout the lobby area.

- Baseline sampling (surface wipes and indoor air).

With the exception of the monitoring and maintenance activities described in this MMIP and recording the deed notice to identify the encapsulated areas, no further work is warranted to meet the conditions of EPA's Approval.

2. POST REMEDIATION ACTIVITIES

Following completion of remediation activities included in the Notification, initial post-remediation sampling was conducted on August 28, 2012. The post-remediation sampling consisted of the collection of indoor air samples and verification wipe samples as specified under Condition 12b of the Approval. Based on the initial indoor air results, an additional, expanded round of indoor air sampling was conducted on October 13, 2012. A description of the samples collected and the analytical results is provided below.

2.1 LOBBY RESTORATION

Following completion of the PCB remediation activities described in the previous sections, the five elevators were replaced in accordance with the overall project schedule. As part of the restoration and final design, structural concrete materials formerly in direct contact with the caulking and the concrete transom materials were covered with stainless steel cladding. As part of the final restoration, a final coating of acrylic latex paint was applied to all exposed concrete surfaces within in the elevator lobbies.

2.2 SURFACE WIPE SAMPLING

In accordance with Condition 12b(ii) and upon completion of the remediation activities, eight verification wipe samples were collected on August 28, 2012 as part of the initial post-remediation sampling. These samples were collected following application of the final coat of acrylic latex paint to concrete surfaces located within the elevator lobbies. Wipe samples were collected in accordance with the standard wipe test as specified in 40 CFR 761.123 over a 100 cm^2 area, extracted via the 3540C (Soxhlet) extraction, and analyzed for PCBs using the USEPA Method 8082.

During the wipe sampling process, visual inspection confirmed that all areas were coated as required by the PCB Remediation Plan. Areas formerly in direct contact with the removed PCB caulking were not visible as a result of the new sheet metal cladding installed at the perimeter of each elevator shaft opening.

Analytical results from the wipe samples indicated the following:

- CMU Block In-Fill Materials - Three wipe samples were collected from encapsulated masonry block in-fills on the 4th, 15th, and 24th floors. Wipe samples were collected from distances of 1.5 or 6 inches from the former caulked joints. Analytical results indicated that PCBs were non-detect (< 0.20 ug/100cm^2) in all three samples;

- Transom Plaster – One sample was collected from the encapsulated plaster transom on the 3rd floor (prior to installation of sheet metal cladding). Analytical results indicated that PCBs were present at a concentration of 0.72 ug/100cm^2;

- Ceiling – One sample was collected from the encapsulated ceiling on the 15th floor. Analytical results indicated that PCBs were non-detect (< 0.20 ug/100 cm^2); and

- Structural Concrete Columns – Three wipe samples were collected from encapsulated structural concrete materials. Two wipe samples were collected from the parallel face of the structural concrete (facing the lobby) at a distance of 10 inches from the former caulked joint. Analytical results from these two samples indicated that PCBs were non-detected (< 0.20 ug/100cm^2). One sample was collected at a distance of two inches from the former caulked joint along the perpendicular face of the structural concrete (i.e., within the elevator recess). Analytical results indicated that PCBs were present at a concentration of 4.6 ug/100cm^2 in this sample (sample DL-4E0-VWC-100 collected from the fourth floor).

Results of the initial post-remediation verification wipe sample results were reported to EPA on September 13, 2012. A summary of the wipe sample results is presented on Table 1.

2.3 INDOOR AIR SAMPLING

In accordance with Condition 12b(i), three indoor air samples were collected on August 28, 2012 as part of the initial post-remediation sampling and submitted for PCB analysis (Method TO-10A). At each of the sample locations a low volume PUF cartridge was connected to a personal air pump (SKC AIRCHEK Sampler) with flexible tubing. The cartridge was positioned between 3 and 5 feet above the floor using a telescoping tubing in the approximate center of the selected lobbies. Placards were placed on the sample apparatus providing UMass EH&S contact information for questions regarding the sampling (no inquiries were made during sample collection).

Samples were collected at a rate of 2.6 liter per minute (L/min) for four hours. The flow rates were set by the equipment rental supply company prior to delivery and verified in the field by Woodard & Curran personnel using a BIOS digital flow rate calibrator. Pumps and flow rates were monitored periodically throughout the sample collection period and observations recorded. At the end of the required sample interval, the pumps were shut off and the cartridge placed in aluminum foil, labeled, and placed on ice for delivery to the analytical laboratory.

Analytical results indicated that PCBs were present at concentrations of 0.690, 0.977, and 1.146 ug/m^3 in the three samples collected within the lobby areas. Analytical results from the ambient air sample collected outside of the library indicated that PCBs were non-detect (< 0.005 ug/m^3). Results of the post-remediation air sampling were reported to EPA on September 13, 2012.

As presented on Table 2, these levels indicate that concentrations of PCBs continue to be detected in indoor air samples collected from three lobby areas. EPA's published guidance indoor air levels for schools (September 2009) are 0.450 ug/m^3 for adults and 0.600 ug/m^3 for children 15 to 19 years of age. As indicated above, the concentrations detected in the samples are close to, but above, this range.

These target levels are based on an assumed 8 hour school day over 180 days for adults or college-aged students. However, the samples are from lobby areas, which are transient in nature and not continuously occupied or used for even short durations, such as classrooms; therefore, EPA's guidance levels are not directly applicable to the site-specific conditions. To aid in understanding these indoor air levels in the context of their setting and for relative comparison purposes, action levels were derived using a health risk-based approach, following current USEPA risk assessment guidelines. The calculations and assumptions for these levels were presented in Appendix B of the Remediation Plan and were developed for both student and library staff scenarios. The level for the staff, who have a longer exposure duration relative to students, produced the most conservative action level, which was 1.180 ug/m^3. As indicated above, the reported indoor air concentrations were all below this calculated action level.

As part of the development of this MMIP and to gain an understanding of indoor air levels in the different floors of the library as well as over the different seasons to assess any variations over time, an expanded indoor air sampling program was developed. In support of this expanded indoor air sampling program, on October 16, 2012, indoor air samples were collected from nine lobby areas and submitted for PCB analysis as described above.

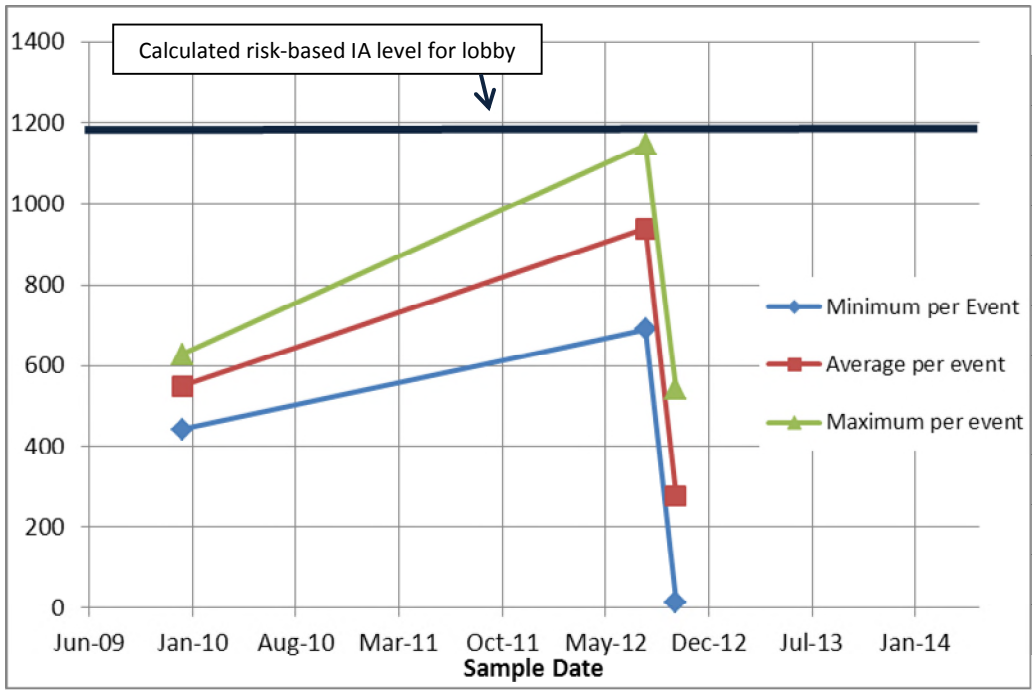
Analytical results indicated that total PCBs were present at concentrations ranging from 0.014 to 0.542 ug/m^3 in the nine samples collected from interior locations. Analytical results from the ambient air sample collected outside of the library indicated that PCBs were non-detect (< 0.005 ug/m^3). Refer to Table 2 for a summary of the indoor air results from all three events.

The October indoor air results were much lower than both the August 2012 and January 2010 indoor air results. To assess the indoor air data in regard to building ventilation, a review of the building's ventilation system indicated that the building is divided into two separate ventilation zones. One zone provides ventilation to the lower 14 floors and

the other zone provides ventilation to upper floors 15 through 26. A review of the indoor air data collected from these two zones (as shown on Table 2) indicates no differences between indoor air results and the zones (Zone 1 reported an average concentration of 338 ng/m^3 and Zone 2 reported an average concentration of 228 ng/m^3).

However, the amount of ambient/outdoor make-up air introduced to the building is different throughout the heating/cooling season and may affect indoor air levels. Under normal operating conditions, the dampers for both ventilation zones are less open in the winter and summer months to maintain temperatures within the building and more open in the spring and fall months to allow more outdoor air to aid in cooling the building. As shown on the chart below, the higher levels were observed in the winter and summer months (less make-up air) and the lowest level was observed in the Fall with the dampers more open. This information is being used in the development of the MMIP.

Range of PCB Concentrations in Indoor Air Samples over the Three Sampling Events (ng/m^3)



3. MONITORING AND MAINTENANCE IMPLEMENTATION PLAN

This MMIP presents the monitoring and maintenance activities that will be conducted to assess the long term effectiveness of the encapsulants applied as an interim measure to residual concentrations of PCBs detected in interior masonry materials and to monitor and assess indoor air quality at the respective elevator lobby areas within the Dubois Library.

The field monitoring components of the plan include: visual inspection and verification wipe sampling of encapsulated areas; indoor air sampling; and corrective measures, if needed. A description of each component is presented in the sections below.

3.1 INSPECTION

Visual inspections of the encapsulated surfaces will consist of an assessment of the following:

- Physical condition of the outer coating (cracking, peeling, discoloration, etc.);
- Signs of the underlying coating (via color observance);
- Signs of disturbance of the coatings or elevator door frame components; and
- A general inspection of the surrounding areas.

The inspections will be conducted by a general walk-through of the lobbies inspecting those areas subject to the encapsulation. Upon completion of the visual inspections, corrective measures will be implemented, if needed, as described below. All inspections will be recorded and included in the report to the EPA. This report will include a recommendation for continuing or refining the inspection frequency based on the results.

3.2 VERIFICATION WIPE SAMPLING

To verify the effectiveness of the encapsulating products over time, surface wipe samples will be collected and analyzed for PCBs. No surface wipe samples will be collected from encapsulated surfaces formerly in direct contact with the caulking joint at the perimeter of the elevator frame, as direct contact access to these surfaces is prohibited by a secondary barrier (i.e., metal cladding installed over the encapsulant). The locations and numbers of samples for each of the encapsulated surfaces are summarized below:

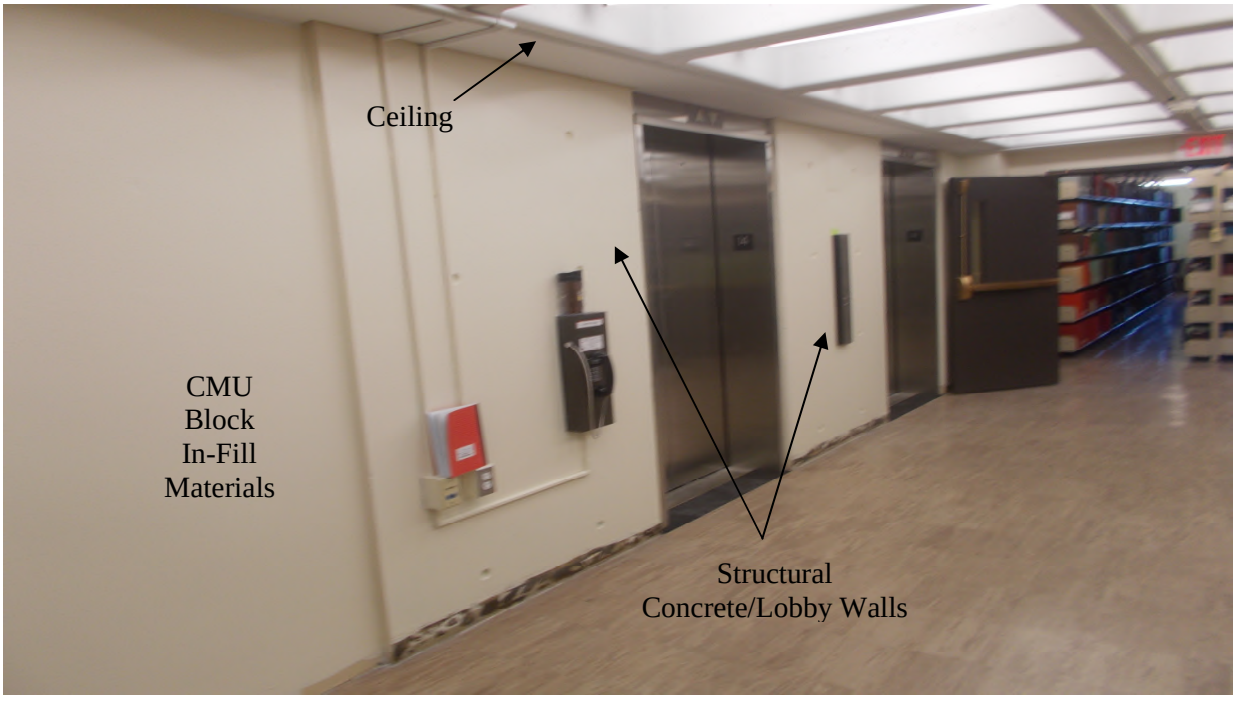
- CMU Block In-Fill Materials - Three verification wipe samples will be collected from encapsulated masonry block in-fills on three randomly selected floors. The location of the wipe sample on the in-fill will be randomly selected using a random number generator based on the total height and width of the in-fill;
- Structural Concrete/Lobby Walls – Three verification wipe samples will be collected from structural concrete/lobby wall materials on three randomly selected floors. The location of each wipe sample will be selected as follows:
    - The associated elevator shaft will be randomly selected;
    - The location of the wipe along the former joints will be randomly selected using a random number generator with the “zero” point being located on the lower left hand corner and proceeding clockwise along the former joints; and

- One wipe sample will be collected at a distance of 1.5 inches from the former caulked joint (i.e., within the return of the elevator door recess, prior to the first 90-degree angle). Two wipe samples will be collected at a distance of 10 inches from the former joint (the higher number of samples is based on the higher likelihood of direct contact with the lobby walls beyond the relatively small [1.5 inch wide] elevator door recess).

During the 2013 sampling event, one of the three verification wipe samples will be collected from concrete adjacent to the fourth floor elevator in-fill where PCBs were reported at a concentration > 1 µg/100cm^2 during the post-abatement monitoring event.

- Ceiling – One verification sample will be collected from ceiling materials on a randomly selected floor. The location of the wipe will be selected as follows:
  - The elevator shaft will be randomly selected; and
  - The location of the wipe along the former joint will be randomly selected using a random number generator with the "zero" point being located on the left end of the former joint.
- Transom Plaster – The final construction includes the installation of sheet metal cladding/façade over the existing transom plaster. No verification wipe samples will be collected due to the lack of direct contact exposure pathway to the transom plaster.

As indicated above, a total of seven wipe samples will be collected during each event. Wipe samples will be collected in accordance with the standard wipe test method as described in 40 CFR 761.123. At each sample location, a 2-inch square gauze pad, saturated with hexane, will be wiped across a 100 cm^2 template area. All samples will be transported to the laboratory under standard Chain of Custody procedures, extracted using USEPA Method 3540C (Soxhlet extraction), and analyzed for PCBs using USEPA Method 8082. In addition to the primary samples indicated above, one duplicate sample will be collected during each event and submitted to the laboratory as part of the QA/QC procedures associated with the sample collection procedures. The photo below depicts the various materials included in the verification wipe sampling program.



Upon receipt of the analytical results and data validation, the sample data will be compared to the action levels as described below and documented in the report submitted to EPA. This report will include a recommendation for continuing or refining the sample frequency based on the results.

3.3 INDOOR AIR SAMPLING

As noted in Section 2, results of the post-abatement indoor air monitoring indicated that concentrations of PCBs continue to be detected in indoor air samples. These concentrations have been shown to vary depending on the season and potentially how much make-up/ambient air is introduced to the building by the ventilation system during the different times of years. All results over the three events have been below the calculated site-specific action level developed for the library lobby areas, as presented in the PCB Remediation Plan.

Based on the existing data set, an expanded indoor air monitoring program has been developed for 2013 monitoring to gain an understanding of indoor air levels across the different floors of the library and over the different seasonal variations in ventilation configuration.

Two rounds of indoor air sampling will be conducted in 2013. The first sampling event will be conducted in Winter / early Spring to monitor indoor air conditions when the ventilation system dampers are in a more closed position. The second sampling event will be conducted in the Fall to monitor indoor air conditions when the ventilation system dampers are more open. Indoor air samples will be collected from the nine locations previously sampled in October 2012 for comparison purposes to previous results over time. These locations include the 4th, 5th, 8th, 13th, 15th, 18th, 19th, 23rd, and 26th floors. In addition to the above samples, one background air sample, collected from outside the library, and one duplicate sample will be collected as part of the QA/QC procedures associated with the sample collection procedures.

Indoor air samples will be collected in accordance with the US EPA Compendium Method TO-10A "Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)". Samples will be submitted to a certified analytical laboratory for PCB Homolog Analysis via US EPA Method 680A with a laboratory reporting limit of < 0.10 µg/m^3.

Following completion of the two sampling events, an evaluation of the data and proposed next steps will be provided within the monitoring report.

3.4 ACTION LEVELS AND CORRECTIVE MEASURES

A description of the action levels and corrective measures is provided in the following sections.

3.4.1 Visual Inspection and Verification Wipes

Based on a review of the product's technical specifications and that it has been applied at interior locations, it is not anticipated the coatings will require any routine maintenance activities. A combination of visual inspections and laboratory sample results will be used to verify the continued effectiveness of the applied barriers. Upon receipt of the verification wipe laboratory results after each monitoring round, the data will be compared to the following action levels to determine whether additional monitoring or corrective measures are needed:

- If ≤ 1 µg/100 cm^2 and no deterioration observed – no additional action; long term maintenance and monitoring to continue in accordance with this plan;
- In areas where significant encapsulant deterioration is observed or PCBs are reported at concentrations ≥ 10 µg/100 cm^2, the following actions will be taken:

- An additional coat of an encapsulating product will be applied to the affected area and follow-up wipe samples collected. If analytical results indicate that PCBs are still present at concentrations ≥ 10 µg/100 cm^2 after the prescribed re-application, UMass will evaluate alternative solutions in conjunction with EPA.

- If > 1 and < 10 µg/100 cm^2 and no to minor deterioration observed – continued monitoring will occur to establish patterns or trends.

These levels are considered representative and protective for this project given that this area is an elevator lobby area where access is transitory in nature (students progressing to and from the various floors) and where staff and students would not spend any routine time. All analytical results and corrective measures will be reported to EPA in the scheduled report.

3.4.2 Indoor Air

Results of the indoor air sampling program will be compared to the results of previous sampling events and to the risk-based action levels and EPA target levels described above. Following completion of the air sampling events described above, an evaluation of the results including proposed action levels will be presented in the scheduled report.

3.5 SCHEDULE

The visual inspection and verification wipe sampling of encapsulated will be conducted in the Summer of 2013.

As described in Section 3.3, due to the variability between the existing data sets, two rounds of indoor air sampling will be conducted in 2013; once in winter / early spring to monitor conditions when the ventilation system dampers are more closed and once in the Fall to monitor conditions when the ventilation system dampers are more open.

Following the Fall indoor air event, the 2013 monitoring report will be prepared for submittal to EPA, as described in Section 5. The 2013 report will include a proposed schedule for the 2014 (and beyond) monitoring activities.

4. TRAINING AND COMMUNICATIONS

It is not anticipated that any workers or building occupants will come into prolonged contact with the encapsulated areas. The only activities that may encounter the encapsulants are planned maintenance activities. It is not anticipated that workers performing maintenance activities would require any special training or need to take extra precautions due to the presence of the coatings and sheet metal cladding; however, UMass will conduct general awareness training for facility and maintenance personnel to ensure they are aware of the importance of maintaining the encapsulant.

For any non-routine projects that involve work that could encounter the encapsulant (e.g., elevator service) relevant and appropriate worker training requirements and procedures specific to the task will be developed and implemented. Current UMass procedures dictate that all work that impacts building materials must undergo an "all hazard review". This review would indicate that portions of building materials at the Dubois Library have been flagged as having residual PCB containing material under encapsulants/barriers. As such, any work that will disturb these materials will be conducted by appropriately trained workers following the necessary work procedures for containments (polyethylene sheeting, etc.) and disposal. These activities will be reported to EPA in the monitoring report. In addition, UMass has included, as a component of their annual "Right-To-Know" and Asbestos Training Program, a PCBs in materials awareness session, including the encapsulated areas on the campus.

5. REPORTING

The report documenting the monitoring activities will include the following:

- Results of the visual inspections;
- Results of the sampling and analyses;
- Comparisons to action levels and recommendations for corrective measures;
- Any corrective measures implemented;
- Any non-routine major projects conducted at the building that encountered the encapsulated area, and the training and protective measures that were implemented;
- Any proposed modifications to the monitoring and maintenance program (e.g., based on the sampling results or discussions with EPA, the frequency of the program may be modified); and
- A statement on the continued effectiveness of the encapsulant.

It is possible that results of long term monitoring may warrant or require modifications to this plan. In the event that a modification to the MMIP is necessary, such an amendment will be proposed to EPA for approval as part of the scheduled report submittal.

Table 1
Summary of Verification Wipe Sample Results
UMass Dubois Library
Amherst, Massachusetts

Surface Material	Sampling Event	Encapsulant Applied	Lobby and Elevator Shaft	Distance from Caulked Joint (inches) [1]	Verification Wipe Sample ID	Sample Date	Total PCBs (µg/100cm^2)
In-Fill	Pre-Remediation	Existing Painted Masonry (original painted surfaces)	4E0	10	DL-4E6-PWS(8-12)-087	1/15/2010	< 0.50
			15E0	8	DL-15E6-PWS(6-10)-084	1/15/2010	< 0.50
			18E4	9	DL-18E4-PWS(7-11)-081	1/15/2010	0.5
	Initial Encapsulation	Two Coats of Sikagard 550W	24E0	1	DL-VWP-001	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	4E0	6	DL-19E0-VWC-103	8/28/2012	< 0.20
			15E0	6	DL-22E0-VWC-104	8/28/2012	< 0.20
			24E0	1.5	DL-24E0-VWC-105	8/28/2012	< 0.20
Transom Plaster	Initial Encapsulation	Two Coats of Sikagard 550W	3E4	6	DL-VWP-004	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	3E3	6	DL-3E3-VWC-106	8/28/2012	0.72
Ceiling	Initial Encapsulation	Two Coats of Sikagard 550W	15E2	6	DL-VWP-002	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	15E2	6	DL-15E2-VWC-107	8/28/2012	< 0.20
Structural Concrete (parallel face)	Pre-Remediation	Existing Painted Masonry (original painted surfaces)	4E1	9	DL-4E1-CWS(7-11)-086	1/15/2010	< 0.50
			15E2	9	DL-15E2-CWS(7-11)-083	1/15/2010	< 0.50
			18E4	10	DL-18E4-CWS(8-12)-080	1/15/2010	< 0.50
	Initial Post-Remediation	Interior Paint Final Coat	4E1	10	DL-4E1-VWC-101	8/28/2012	< 0.20
			15E2	10	DL-15E2-VWC-102	8/28/2012	< 0.20
Structural Concrete (elevator recess)	Initial Encapsulation	Two Coats of Sikagard 550W	6E1	1	DL-VWP-003	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	4E0	2	DL-4E0-VWC-100	8/28/2012	4.6

Notes:
(1) Centerpoint of area included in the wipe sample as measured from original caulked joint except for ceiling wipe sample which is measured from the lobby wall. Wipe samples collected in accordance with the standard wipe test procedures of 40 CFR 761.123 and analyzed for PCBs (USEPA Method 3540C/8082).

Table 2
Summary of Indoor Air Sample Results
UMass Dubois Library
Amherst, Massachusetts

Floor	Air Sample	PCB Concentration (µg/cartridge)	Flow Rate (L/Minute)	Duration (minutes)	PCB Concentration (µg/m^3)
Project Specific Risk-Based Action Level: 1.18 µg/m^3					
Pre PCB Remediation Indoor Air Samples January 15, 2010					
4	DL-4E-IAS-088	0.198	2.58	121	0.629
15	DL-15E-IAS-085	0.146	2.6	127	0.442
18	DL-18E-IAS-082	0.193	2.57	128	0.580
Background	N/A	N/A	N/A	N/A	N/A
Post PCB Remediation Indoor Air Samples August 28, 2012					
4	DL-4E-IAS-108	0.41	2.6	240	0.690
15	DL-15E-IAS-109	0.68	2.6	240	1.146
18	DL-18E-IAS-110	0.58	2.6	240	0.977
Background	DL-OUT-IAS-112	< 0.005	2.6	250	< 0.005 R[1]
Post PCB Remediation Indoor Air Samples October 16, 2012					
Zone 1 Ventilation					
4	DL-4E-IAS-113	0.34	2.6406	241	0.542
5	DL-5E-IAS-114	0.21	2.6517	242	0.332
8	DL-8E-IAS-115	0.25	2.6589	242	0.394
13	DL-13E-IAS-116	0.052	2.6451	244	0.082 J[1]
Zone 2 Ventilation					
15	DL-15E-IAS-117	0.053	2.637	244	0.084 J[1]
18	DL-18E-IAS-118	0.31	2.6225	246	0.488
19	DL-19E-IAS-119	0.1	2.6826	246	0.154 J/UJ
23	DL-23E-IAS-120	0.26	2.6605	248	0.4
26	DL-26E-IAS-121	0.0091	2.6456	250	0.014 J/UJ
Background	DL-OUT-IAS-122	< 0.005	2.6591	240	< 0.005

Notes:
Project Specific Risk-based Action Level as specified in the *Risk-Based Disposal and Cleanup PCB Remediation Plan* for the Dubois Library dated March 2010.
Air samples collected in accordance with USEPA Compendium Method TO-10A "Determination of Pesticides and Polychlorinated Biphenyls In Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)" and submitted for laboratory analysis of PCBs homologs.
J/UJ = Analytical results qualified as estimated based on external data validation of individual homolog groups.
1. Total PCB results calculated from individual homolog groups including non-detect results. All individual homolog group non-detect results have been rejected due to low surrogate recoveries.

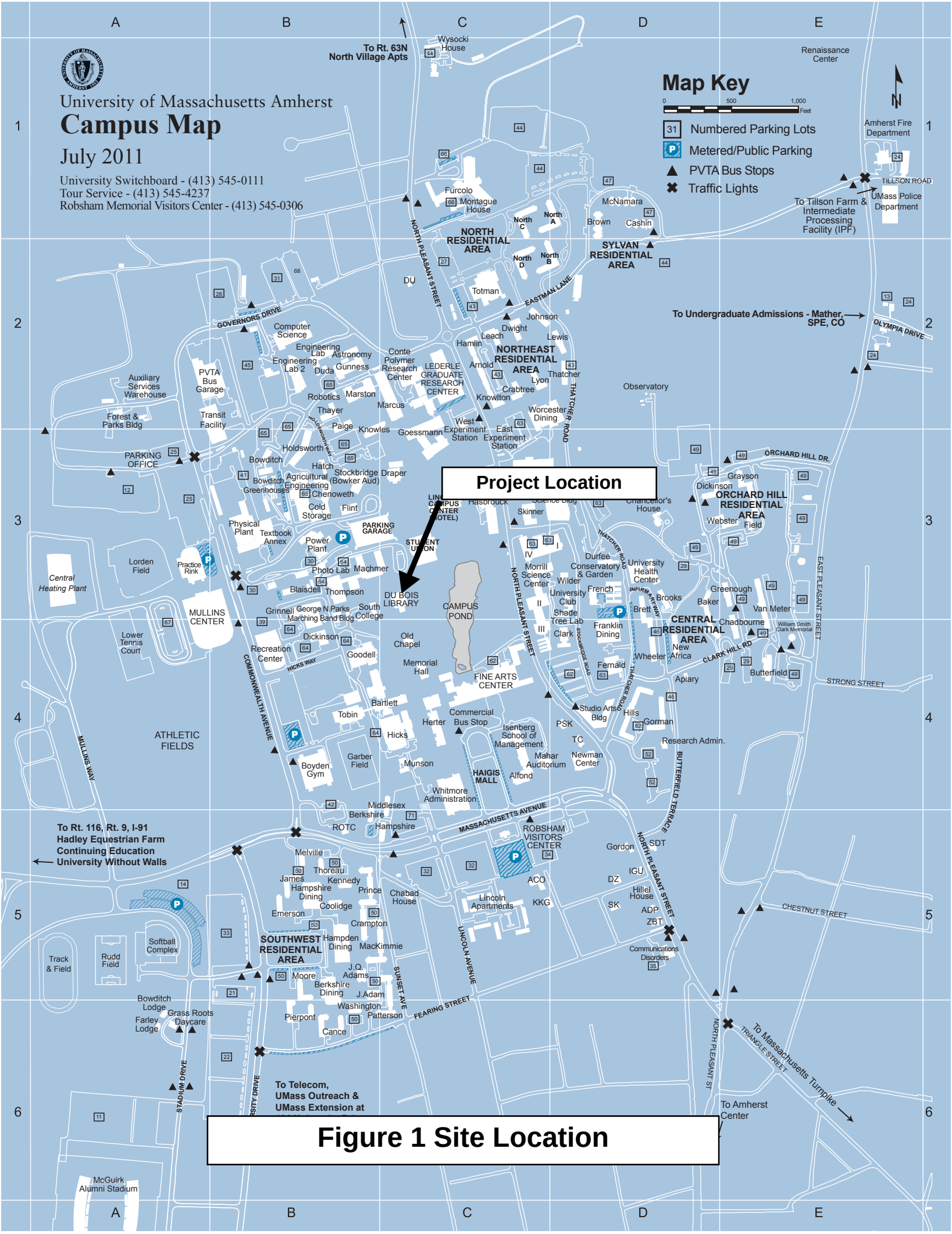


Figure 1 Site Location