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Santa Monica-Malibu Unified School District
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CONCLUSION OF PCB SAMPLING PILOT STUDY AND 2015 PCB REMOVAL ACTIVITIES REPORT FOR MALIBU HIGH SCHOOL AND JUAN CABRILLO ELEMENTARY SCHOOL

FOR THE SANTA MONICA-MALIBU UNIFIED SCHOOL DISTRICT

RAMBOLL ENVIRON

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ACRONYMS AND ABBREVIATIONS

AIHA:	American Industrial Hygiene Association
BMP:	Best Management Practice
CCR:	California Code of Regulations
CFR:	Code of Federal Regulations
ENVIRON:	ENVIRON International Corporation
FLB:	florescent light bulbs
GC/MD:	Gas Chromatographic/Multi-Detector Detection
J:	Indicates an estimated value
JCES:	Juan Cabrillo Elementary School
LCS:	laboratory control sample
LCSD:	laboratory control sample duplicate
LDC:	Laboratory Data Consultants, Inc.
LED:	light emitting diode
MHS:	Malibu High School
NELAC:	National Environmental Laboratory Accreditation Conference
NELAP:	National Environmental Laboratory Accreditation Program
ng/m^3:	nanogram(s) per cubic meter
PCB:	polychlorinated biphenyl
Phylmar:	The Phylmar Group
ppm:	parts per million
PUF:	polyurethane foam
QA/QC:	quality assurance/quality control
QC:	quality control
Ramboll Environ:	Ramboll Environ US Corporation
RCRA:	Resource Conservation and Recovery Act
RPD:	relative percent difference
SAMOHI:	Santa Monica High School
SMMUSD:	Santa Monica-Malibu Unified School District
SOP:	standard operating procedure
SW:	solid waste
TO:	Toxic Organics

TSCA:	Toxic Substances Control Act
UCL:	upper confidence limit
UJ:	Indicates the compound or analyte was analyzed for but not detected; the sample detection limit is an estimated value
USC:	United States Code
USEPA:	United States Environmental Protection Agency
µg/100 cm^2:	microgram(s) per 100 square centimeters
%D:	percent differences
%R:	percent recovery
>:	greater than
≥:	greater than or equal to
<:	less than
%:	percent

EXECUTIVE SUMMARY

The Toxic Substance Control Act (TSCA) grants the U.S. Environmental Protection Agency (USEPA) sole authority to regulate the use of polychlorinated biphenyls (PCBs).[1] As the agency with primary jurisdiction, USEPA has developed regulations[2] and policies with respect to PCBs under TSCA and oversees PCB remediation at sites across the country. The USEPA has adopted a policy for PCBs in schools (and other buildings) that sets levels for evaluating PCB exposures to children and others in school buildings (<1 µg/100 cm^2 for surface wipes in USEPA Region IX and Exposure Levels for Evaluation of PCBs in Indoor School Air in USEPA 2015c), and has recommended Best Management Practices (BMPs) to ensure children can safely attend school in buildings with PCB containing materials while long-term plans are made for renovation or demolition (USEPA, 2015a, b). The work described in this report was done in consultation with USEPA Region IX to comply with USEPA's policies and regulations on PCBs under TSCA (USEPA, 2012c, 2015 a, b, and c and 40 CFR 761.61 and 761.62) at two schools operated by the Santa Monica-Malibu Unified School District (SMMUSD or District): Malibu High School (MHS)[3] and Juan Cabrillo Elementary School (JCES).

The purpose of the sampling and associated field activities was as follows:

- In accordance with USEPA's policy on PCBs in building materials (USEPA, 2015a), an air and surface wipe sampling Pilot Study, as described in the *Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan for the Library and Building E Rooms 1, 5, and 8 at Malibu High School* ("MHS Specific Plan") (ENVIRON, 2014b), was conducted by Ramboll Environ US Corporation (Ramboll Environ)[4] to obtain sampling data to (1) evaluate the effectiveness of the District's BMPs and (2) evaluate potential exposures to PCBs within MHS and JCES. The scope of this study was developed with concurrence by USEPA Region IX as per the USEPA's policy. This study was conducted during the 2014 summer break sampling event, 2014/2015 winter break sampling event, and concludes with the 2015 summer break sampling event. Based upon data collected during this Pilot Study, the District is required to propose a new monitoring plan for the period after July 1, 2015 for USEPA approval (USEPA, 2014c).
- In accordance with USEPA's Approval Letter (USEPA, 2014c) and TSCA 40 CFR 761.61 and 761.62, the District conducted caulk removal activities in the rooms at MHS and JCES containing known building materials in which PCBs were identified and verified at concentrations greater than or equal to (≥) 50 parts per million (ppm). The specific locations of the caulk removal were identified in the MHS Specific Plan and in the March 2015 *Notification of Additional Locations at Malibu High School and Juan Cabrillo Elementary School to be Addressed in Accordance with October 2014 USEPA Approved Plan* ("Notification of Additional Locations") (ENVIRON, 2015b). After removal of the caulk, post-decontamination surface wipe, post-encapsulation surface wipe, and post-removal

[1] See 15 United States Code (USC) § 2605(e)(1)(A) and (e)(2)(B) regarding Congress's express direction to USEPA to regulate the manufacture and disposal of PCBs and items containing PCBs.

[2] 49 Code of Federal Regulations (CFR) §§ 761.120-135.

[3] While MHS' formal name is Malibu High School, middle school classes (grades 7-8) are also housed on the MHS campus.

[4] As of May 1, 2015, ENVIRON International Corporation's (ENVIRON's) name has been changed to Ramboll Environ US Corporation (Ramboll Environ).

confirmatory air and surface wipe sampling was conducted in each room as required by USEPA's Approval Letter (USEPA, 2014c).

- The District also agreed to replace light fixtures, including stained fixtures, from pre-1981 buildings at both MHS and JCES (USEPA, 2014a). The sampling activities described above were also used to evaluate whether the light fixture removal activities were completed successfully and required no further actions pursuant to USEPA policy.

In summary, based on the information presented in this report as well as our other reports regarding our indoor investigations at MHS and JCES (ENVIRON, 2014e, 2015a), Ramboll Environ concludes the following:

- BMP cleaning is effective as exposure data at MHS and JCES shows PCB levels are below USEPA benchmarks for schools (i.e., <1 µg/100 cm^2 for surface wipes and Exposure Levels for Evaluation of PCBs in Indoor School Air in USEPA 2015c);
- Ramboll Environ previously sampled for air and surface dusts in 91 of the 112 regularly occupied[5] rooms across all pre-1981 buildings at MHS and JCES. During the 2015 summer break sampling event, Ramboll Environ sampled the remaining 21 regularly occupied rooms (18 in MHS and three in JCES as indicated in orange outlining in Figures ES-1 and ES-2). The results for these additional 21 rooms demonstrate that exposures in these rooms are below the USEPA benchmarks for schools. In addition, the results show that previous sampling in the other 91 regularly occupied rooms in pre-1981 buildings at MHS and JCES was representative of conditions in these remaining 21 regularly occupied rooms.
- Results demonstrate that BMPs are effective at keeping PCB exposures from the air and surface dust to levels below USEPA benchmarks; therefore, the results indicate that no future monitoring for PCBs is needed because the District shall continue implementation of BMPs recommended by USEPA. However, to further confirm the results of the Pilot Study, the District will voluntarily conduct future post-BMP monitoring during the 2016 and 2017 summer breaks;
- PCB removal activities were successful (i.e., building materials with identified and verified PCB concentrations of ≥50 ppm were removed along with stained lighting fixtures, and post-removal confirmatory air and surface wipe sampling indicates that PCB concentrations are below the cleanup goal of less than (<) 1 µg/100 cm^2 for surface wipes and below USEPA's Exposure Levels for Evaluation of PCBs in Indoor School Air in USEPA 2015c); and
- The approach taken at MHS and JCES is consistent with USEPA's regulations and policy on PCB-containing building materials in schools (and other buildings) (USEPA 2015a, b).

[5] Regularly occupied rooms are defined as typically occupied by an individual on a daily basis, excluding weekends, for at least 4 hours per day. These rooms were identified for both schools by SMMUSD personnel.

1. INTRODUCTION

The Toxic Substance Control Act (TSCA) grants the U.S. Environmental Protection Agency (USEPA) sole authority to regulate the use of polychlorinated biphenyls (PCBs).[6] As the agency with primary jurisdiction, USEPA has developed regulations[7] and policies with respect to PCBs under TSCA and oversees PCB remediation at sites across the country. The USEPA has adopted a policy for PCBs in schools (and other buildings) that sets levels for evaluating PCB exposures to children and others in school buildings (see Section 2.3.4), and has recommended Best Management Practices (BMPs) to ensure children can safely attend school in buildings with PCB containing materials while long-term plans are made for renovation described within: *Sensible Steps to Healthier School Environments* (USEPA, 2012c), *PCBs in Building Materials—Questions & Answers* (USEPA, 2015a), *Practical Actions for Reducing Exposures to PCBs in Schools and Other Buildings* (USEPA, 2015b), and *Exposure Levels for Evaluating PCBs in Indoor School Air* (USEPA, 2015c). The work described in this report was done in consultation with USEPA Region IX to comply with USEPA's policies and regulations on PCBs under TSCA at Malibu High School (MHS) and Juan Cabrillo Elementary School (JCES) in Malibu, California.

This report summarizes air and surface wipe sampling activities and results related to PCBs at MHS and JCES. The most recent sampling at the two schools was conducted during the 2015 summer break by Ramboll Environ US Corporation[8] (Ramboll Environ) on behalf of the Santa Monica-Malibu Unified School District (SMMUSD or District). Work was conducted and completed in accordance with the July 2014 *Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan for the Library and Building E Rooms 1, 5, and 8 at Malibu High School* ("MHS Specific Plan") (ENVIRON, 2014b), as supplemented by the *Supplemental Removal Information for the Library, Building E - Rooms 1, 5, and 8 and Building G - Room 506 at Malibu High School* ("Supplement") (ENVIRON, 2014c), and as approved by the USEPA Region IX ("USEPA's Approval Letter") (USEPA, 2014c). The sampling and analysis methods were the same as those documented in previous Ramboll Environ reports regarding sampling at MHS and JCES, including Ramboll Environ's December 2014 *PCB Inspection and Sampling Report for Malibu High School and Juan Cabrillo Elementary School* ("2014 Summer Sampling Report") (ENVIRON, 2014e) and March 2015 *2014/2015 Winter Break PCB Sampling Report for Malibu High School and Juan Cabrillo Elementary School* ("2014/2015 Winter Sampling Report") (ENVIRON, 2015a).

The purpose of the sampling and associated field activities was as follows:

- In accordance with USEPA's policy on PCBs in building materials (USEPA, 2015a), an air and surface wipe sampling Pilot Study, as described in the MHS Specific Plan (ENVIRON, 2014b), was conducted by Ramboll Environ to obtain sampling data to (1) evaluate the effectiveness of the District's BMPs and (2) to evaluate potential exposures to PCBs within MHS and JCES. The scope of this study was developed with concurrence by USEPA Region IX as per the USEPA's policy. This study was conducted during the 2014 summer break sampling event, 2014/2015 winter break sampling event, and concludes

[6] See 15 United States Code (USC) § 2605(e)(1)(A) and (e)(2)(B) regarding Congress's express direction to USEPA to regulate the manufacture and disposal of PCBs and items containing PCBs.

[7] 49 Code of Federal Regulations (CFR) §§ 761.120-135.

[8] As of May 1, 2015, ENVIRON International Corporation's (ENVIRON's) name has been changed to Ramboll Environ US Corporation (Ramboll Environ).

with the 2015 summer break sampling event. Based upon data collected during this Pilot Study, the District is required to propose a new monitoring plan for the period after July 1, 2015 for USEPA approval (USEPA, 2014c).

- In accordance with USEPA's Approval Letter (USEPA, 2014c) and TSCA 40 CFR 761.61 and 761.62, the District conducted caulk removal activities in the rooms at MHS and JCES containing known building materials in which PCBs were identified and verified at concentrations greater than or equal to (≥) 50 parts per million (ppm). The specific locations of the caulk removal were identified in the MHS Specific Plan and in the March 2015 *Notification of Additional Locations at Malibu High School and Juan Cabrillo Elementary School to be Addressed in Accordance with October 2014 USEPA Approved Plan* ("Notification of Additional Locations") (ENVIRON, 2015b). After removal of the caulk, post-decontamination surface wipe, post-encapsulation surface wipe, and post-removal confirmatory air and surface wipe sampling was conducted in each room as required by USEPA's Approval Letter (USEPA, 2014c).
- The District also agreed to replace light fixtures, including stained fixtures, from pre-1981 buildings at both MHS and JCES (USEPA, 2014a). The sampling activities described above were also used to evaluate whether the light fixture removal activities were completed successfully and requiring no further actions pursuant to USEPA policy.

As presented in Table 1-1 and further discussed in the 2014 Summer Sampling Report (ENVIRON, 2014e), buildings constructed after 1981 are not expected to contain potentially PCB-impacted building materials so were not included in the work described in this report. Site plans for MHS and JCES, which illustrate the locations of the pre-1981 buildings at both campuses, are shown in Figures 1-1 and 1-2, respectively.

The remainder of this report summarizes the objectives and methodology of the PCB air and surface wipe sampling; results of the PCB removal sampling; quality assurance/quality control (QA/QC) measures taken to confirm data reliability; and conclusions. Appendices A through D contain tables, figures, photographs, as well as laboratory analytical reports and data validation reports for the air and surface wipe sampling conducted during the 2015 summer break. Appendix E summarizes the lighting replacement activities conducted by SMMUSD during the 2015 summer break. Appendix F includes a discussion of waste characterization and analysis results for waste generated during the summer 2015 annual BMP cleaning.

2. PCB SAMPLING METHODOLOGY

2.1 Objectives of PCB Air and Surface Wipe Sampling

Two objectives of the 2015 summer break PCB sampling event at MHS and JCES were to conclude the Pilot Study evaluating the effectiveness of the BMP cleaning processes at the two schools and potential exposures to school occupants, and to conduct exposure monitoring in 21 of the 112 regularly[9] occupied rooms across all pre-1981 buildings at MHS and JCES that had not previously been sampled for air and surface dust.

A third objective of the 2015 summer break sampling event was to evaluate the effectiveness of PCB removal activities that occurred at MHS and JCES (i.e., PCB removal sampling) this summer. In accordance with the MHS Specific Plan (ENVIRON, 2014b), Supplement (ENVIRON, 2014d), Notification of Additional Locations (ENVIRON, 2015b), and the USEPA Approval Letter (USEPA, 2014c) and TSCA under 40 CFR 761(c), the District conducted caulk removal activities in the rooms at MHS and JCES containing known building materials in which PCBs were identified and verified at concentrations ≥50 ppm. The rooms where caulk was removed at MHS include Building A (800, Great White Shark) Library, Building E (000, Blue Shark) Rooms 1, 3, 5, 7, and 8; Building G (500, Angel Shark) Rooms 505 and 506;[10] Building I (400, Leopard Shark) Room 401; and Building J (700, Old Gymnasium) Rooms 704/704 Hallway and 705.[11] The rooms where caulk was removed at JCES include Building F Rooms 18, 19, 22, and 23.

2.2 Air and Surface Wipe Sampling Pilot Study

As described in the 2014 Summer Sampling Report (ENVIRON, 2014e), a Pilot Study was conducted to evaluate the effectiveness of BMPs, the recommended frequency of BMPs, and to make adjustments in the implementation of the BMPs, if appropriate. The data collected during the Pilot Study was also used to evaluate potential PCB exposures to occupants of pre-1981 buildings at MHS and JCES. The data collected from the 2015 summer break sampling event concludes the Pilot Study and is used to further assess the District's BMP measures and potential exposures to building occupants.

2.2.1 BMP Efficacy and Potential for Exposures to PCBs

As discussed in the 2014 Summer Sampling Report (ENVIRON, 2014e), one of the goals of the Pilot Study was to conduct air and surface wipe sampling across a representative sampling of regularly occupied rooms (classrooms and offices) to evaluate the efficacy of BMP cleaning procedures. The efficacy of the annual BMP cleaning was previously evaluated using pre- and post-BMP sampling data from the 2014 summer break sampling event and presented in the 2014 Summer Sampling Report (ENVIRON, 2014e). Similarly, the efficacy of regular (i.e., weekly and monthly) BMP cleanings, which the District has been implementing since the 2014 summer break sampling event, was previously evaluated using

[9] Regularly occupied rooms are defined as typically occupied by an individual on a daily basis, excluding weekends, for at least 4 hours per day. These rooms were identified for both schools by SMMUSD personnel.

[10] PCB concentrations ≥50 ppm were not identified and verified in bulk materials in MHS Building G (500, Angel Shark) Room 506 (woodshop); however, based on sampling and analytical results in which >10 µg/100cm^2 total PCBs were reported for surface wipe samples taken on caulk around interior door frames in this room, SMMUSD volunteered to remove the affected interior door caulk in this room.

[11] Although caulk with a PCB concentration ≥50 ppm was not identified and verified in MHS Building J (700, Old Gymnasium) Room 705, this room was included in caulk removal activities because the window from Room 704, which did contain caulk with a verified PCB concentration ≥50 ppm, extended into this room.

sampling data from the 2014/2015 winter break sampling event and presented in the 2014/2015 Winter Sampling Report (ENVIRON, 2015a).

The data collected during the 2015 summer break sampling event, as further discussed in Section 3 of this report, confirms the ongoing efficacy of the District's BMPs.

2.2.2 BMP Cleaning Frequency

A second goal of the Pilot Study was to evaluate the efficiency of the frequency of BMP cleanings. As further discussed in the 2014 Summer Sampling Report (ENVIRON, 2014d), the results of the 2014 summer break sampling event, when compared to previous sampling conducted in 2013 (Phylmar Group, 2014), indicated that the annual BMP cleaning is more than sufficient to maintain and control PCB concentrations below applicable USEPA PCB concentration evaluation benchmarks ("USEPA benchmarks", described in Section 2.3.4), once historical dust accumulations are removed during the initial BMP cleaning. As further discussed in the 2014/2015 Winter Sampling Report (ENVIRON, 2015a), the data collected during the 2014/2015 winter break sampling event provided additional support that the regular BMP cleaning procedures (i.e., weekly and monthly cleanings) are effective at reducing detected levels of PCBs or maintaining levels below the PCB laboratory reporting limit on indoor surfaces. As further discussed in Section 3 of this report, the data from the 2015 summer break sampling event confirms that the District's BMP cleaning frequency is more than sufficient to maintain PCBs at non-detect and/or at levels below the USEPA benchmarks.

2.2.3 Conditions in Rooms with Building Materials Regulated by USEPA

A third goal of the Pilot Study focused on rooms at MHS in which previous sampling by the Phylmar Group (Phylmar) indicated PCBs in bulk materials (i.e., window caulk) at concentrations ≥ 50 ppm that are regulated by USEPA under TSCA. The rooms included in this portion of the Pilot Study have been the Library in Building A (800, Great White Shark) and Rooms 1, 5, and 8 in Building E (000, Blue Shark) (Phylmar Group, 2014). As further discussed in the 2014 Summer Sampling Report (ENVIRON, 2014e), the 2014 summer break sampling event indicated that the exposures in these rooms remained acceptable (i.e., below USEPA benchmarks) and that dusts containing PCBs had not significantly accumulated since the removal of the historical dusts during the December 2013 cleaning. As further discussed in the 2014/2015 Winter Sampling Report (ENVIRON, 2015a), these rooms were re-sampled during the 2014/2015 winter break and all air and surface wipe samples collected in these rooms were not detected above the laboratory reporting limit for PCBs, indicating that PCB concentrations in these rooms remained acceptable (i.e., below USEPA benchmarks). Per Ramboll Environ's Supplement (ENVIRON, 2014d), MHS Building G (500, Angel Shark) Room 506 (woodshop) was included in rooms in which caulk removal activities would occur.[10]

In March 2015, Ramboll Environ notified USEPA Region IX that the District had identified and verified additional rooms at MHS and JCES containing caulk with concentrations of PCBs ≥ 50 ppm (ENVIRON, 2015b). The additional rooms at MHS included Building E (000, Blue Shark) Rooms 3 and 7; MHS Building G (500, Angel Shark) Room 505; MHS Building I (400, Leopard Shark) Room 401; MHS Building J (700, Old Gymnasium) Room 704/704 Hallway and 705.[11] The additional rooms at JCES included Building F Rooms 18, 19, 22, and 23.

Following caulk removal in the rooms described above, these rooms were sampled during the 2015 summer break sampling event, and results are presented in Section 4.

2.2.4 Assessment of Future Monitoring Needs

The final goal of the Pilot Study was to assess future monitoring needs. As discussed in the 2014 Summer Sampling Report (ENVIRON, 2014e) and the 2014/2015 Winter Sampling Report (ENVIRON, 2015a), Ramboll Environ had previously identified three groups of rooms for assessing future monitoring needs:

- Group 1: Rooms with verified building materials ≥ 50 ppm PCBs regulated by USEPA;
- Group 2: Buildings where pre-BMP cleaning air and surface wipe sample results in sampled rooms were below USEPA benchmarks demonstrating exposures were acceptable even before implementation of BMP cleanings; and
- Group 3: Remaining pre-1981 buildings at MHS and JCES.

A representative subset of the regularly occupied rooms (chosen randomly) in each of these groups was re-sampled during the 2015 summer break sampling event, including all the rooms in Group 1 (post-removal), one room in every other JCES building (3 rooms total) and 5 rooms at MHS (10 percent (%) of regularly occupied rooms in pre-1981 buildings at MHS) in Group 2, and 15% of the regularly occupied rooms in Group 3 (7 rooms) which were sampled followed the annual BMP cleaning.

In addition, Ramboll Environ conducted exposure sampling in the 21 regularly occupied rooms in pre-1981 buildings at MHS and JCES that had not previously been sampled for air and surface dust (18 in MHS and three in JCES as indicated in orange outlining in Figures ES–1 and ES-2), six of which are classrooms. Given the large data set collected from the other 91 regularly occupied rooms across all pre-1981 buildings at MHS and JCES, it was not expected that air and surface wipe sample results would be different than the results from sampling conducted previously, which indicated exposures are below the USEPA benchmarks.

Results for the rooms sampled are presented in Section 3 and Appendices B and D.

2.3 Methods

This section includes a summary of the sampling and analytical methods used for air and surface wipe testing of PCBs, as well as a discussion of the USEPA benchmarks used to evaluate detected PCB concentrations. The methods are similar to those used in the 2014 summer break sampling event (ENVIRON, 2014e) and the 2014/2015 winter break sampling event (ENVIRON, 2015a). The methods and USEPA benchmarks described below apply to both the Pilot Study sampling and the decontamination surface wipe, post-encapsulation surface wipe, and post-removal confirmatory air and surface wipe sampling required after caulk removal in areas with identified and verified PCB concentrations ≥50 ppm in USEPA's Approval Letter (USEPA, 2014c).

2.3.1 General Sampling Techniques

Air and surface wipe samples were collected following USEPA guidelines and general methods as approved by USEPA Region IX for testing conducted at MHS in January 2014 (ENVIRON, 2014b). Samples were packed on ice and submitted to the laboratories in a sealed cooler under chain-of-custody procedures either by same-day courier service or overnight shipment unless otherwise noted.[12] Air samples were analyzed by ALS

[12] Samples that could not be submitted same day were stored on ice until courier service or overnight shipment was available.

Environmental in Simi Valley, California; surface wipe samples were analyzed by ALS Environmental in Holland, Michigan. As discussed in Section 5.2 of this report, duplicate, replicate, field blank, and ambient samples were utilized for quality control purposes.

2.3.2 Air Samples

Each air sample was collected as described in the 2014 Summer Sampling Report (ENVIRON, 2014e) including having the lights on, windows and doors closed, and ventilation turned off.

Air samples were packaged, delivered, and analyzed in accordance with the approach described in Section 3.3.2 of the 2014 Summer Sampling Report (ENVIRON, 2014e). Specifically, air samples were analyzed by ALS Environmental in Simi Valley, California, 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)* (USEPA, 1999) for PCB Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260. ALS Environmental's Simi Valley laboratory is accredited by the American Industrial Hygiene Association (AIHA) as well as National Environmental Laboratory Accreditation Conference (NELAC). All laboratory reporting limits were below the USEPA benchmarks presented in Section 2.3.4.1.

2.3.3 Surface Wipe Samples

Surface wipe samples were collected, packaged and delivered in accordance with the approach described in Section 3.3.3 of the 2014 Summer Sampling Report (ENVIRON, 2014e). Specifically, surface wipe samples were analyzed in accordance with *USEPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography* (USEPA, 2007), by ALS Environmental in Holland, Michigan for PCB Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268. ALS Environmental's Holland laboratory is accredited by National Environmental Laboratory Accreditation Program (NELAP). All laboratory reporting limits were significantly below the USEPA benchmark presented in Section 2.3.4.2.

2.3.4 PCB Concentration Evaluation Benchmarks

2.3.4.1 PCB Concentration Evaluation Benchmark for Air Samples

Total PCBs in air samples were conservatively compared to USEPA's age-specific Exposure Levels for Evaluating PCBs in Indoor School Air (USEPA, 2015c), which were published by USEPA in July 2015 with the intent of replacing USEPA's Recommended Public Health Levels in Indoor School Air, which were recommended by USEPA Region IX in USEPA's Approval Letter (USEPA, 2014c).[13] The health-protective USEPA Exposure Levels for Evaluating PCBs in Indoor School Air are 200, 300, 500, 600, and 500 nanograms per cubic meter (ng/m^3) for children 3 to less than 6 years old, elementary school (6 to less than 12 years old), middle school, high school, and faculty/adults, respectively, as shown below (USEPA, 2015c).

USEPA Exposure Levels for Evaluating PCBs in Indoor School Air (ng/m^3)[14]

[13] In July 2015, USEPA revised the terminology of these levels from "'Recommended Public Health Levels for PCBs in Indoor School Air' to 'Exposure Levels for Evaluation of PCBs in Indoor School Air' because the Agency believes the revised terminology better reflects the intended purpose of these levels. Additionally, the calculated indoor air levels have been revised to reflect more recent data on dietary exposure" (USEPA, 2015c). The conclusions presented in this report are the same using either the previous or current USEPA provided levels.

[14] According to USEPA (USEPA, 2015c), the exposure levels were rounded to the nearest hundred ng/m^3.

Age	1-<2 yr	2-<3 yr	3-<6 yr	6-<12 yr Elementary School	12-<15 yr Middle School	15-<19 yr High School	19+ yr Faculty/Adult
ng/m³	100	100	200	300	500	600	500

According to USEPA:

> "These exposure levels should not be interpreted nor applied as 'bright line' or 'not-to-exceed' criteria. Isolated or infrequent indoor air PCB measurements that exceed the exposure levels would not necessarily signal unsafe exposure to PCBs. When measured indoor school air PCB concentrations are above these exposure levels, the [US]EPA suggests that school building administrators take further steps to reduce PCB exposure such as reviewing, reevaluating and adjusting BMPs or taking other actions to identify and address PCB sources" (USEPA, 2015a).

2.3.4.2 PCB Concentration Evaluation Benchmark for Surface Wipe Samples

Total PCBs in surface wipe samples collected at the schools were compared to 1 µg/100 cm^2, the value conservatively being used by USEPA Region IX as a surface wipe benchmark for schools. As reported in the 2014 Summer Sampling Report (ENVIRON, 2014e), samples were evaluated in accordance with Appendix D of the MHS Specific Plan (ENVIRON, 2014b) (approved by USEPA Region IX in October of 2014 [USEPA, 2014c]) as follows: if any surface wipe sample collected in a room exceeded the benchmark, a 95 percent (%) upper confidence limit (UCL) of the mean concentration of all surface wipe samples collected during that event in the room would be calculated.[15] In the event that the 95% UCL exceeded the benchmark, that room would be re-cleaned and re-sampled. If warranted by the condition of sampled surfaces, the District would initiate repairs on those surfaces prior to re-sampling. According to USEPA,

> "In regard to the health-based screening levels for air and dust, those are conservative numbers typically used to make a 'no further action' decision – i.e., that no additional work is necessary at that location. When testing results are above these numbers, a school or other facility may elect to conduct additional testing, make its own evaluation based on site specific information, or elect to take other steps" (USEPA, 2014a).

Post-decontamination, post-encapsulation, and post-removal confirmatory surface wipe sampling were compared to the cleanup goal less than (<) 1 µg/100 cm^2 specified in USEPA's Approval Letter (USEPA, 2014c).

[15] The USEPA's ProUCL Software was utilized for the 95% UCL calculations. Replicate surface wipe samples were not included, however the maximum duplicate surface wipe sample result was included. In situations where there were not at least 4 results above the reporting limit, the reporting limit (0.1 µg/100 cm^2) was included as a detected result.

3. SUMMARY OF PILOT STUDY FINDINGS

This section includes a summary of Pilot Study findings based on the 2015 summer break sampling event (including pre- and post-BMP sampling, sampling of the remaining 21 regularly occupied rooms in pre-1981 buildings, and post removal confirmatory sampling described in more detail in Section 4 of this report). Detailed sampling information is provided in Appendix A (sample location figures), Appendix B (summary tables), Appendix C (photographs), and Appendix D (laboratory analytical reports and data validation reports).

3.1 Pre- and Post-BMP Sampling

This section includes a summary of findings based on the pre- and post-BMP sampling conducted by Ramboll Environ at MHS and JCES during the 2015 summer break sampling event.

3.1.1 Overview of Sampling – Evaluation of Potential for Exposures to PCBs

As described in USEPA's Approval Letter (USPEA, 2014c), USEPA research studies have shown that the main health concerns due to the presence of PCBs in building materials are related primarily to the inhalation of PCBs in air and secondarily from skin contact with PCBs in dusts and incidental ingestion of these dusts (USEPA, 2012a). Thus, the sampling conducted by Ramboll Environ during the 2015 summer break sampling event focused on the collection of both air and surface wipe samples to evaluate the presence of PCBs in the air and in surface dusts.

Based on the pre- and post-BMP air and surface wipe sample results described in the following sections, potential exposures to PCBs at MHS and JCES continue to be acceptable (i.e., below USEPA benchmarks), similar to the results from the 2014 summer break sampling event and 2014/2015 winter break sampling event.

3.1.1.1 Pre- and Post-BMP Air Sample Results

As indicated in Table 3-1, airborne levels of PCBs in pre- and post-BMP samples were not detected at concentrations above the specified laboratory reporting limit[16] in any of the samples, which were collected from 20 rooms. Therefore, PCB concentrations in air were determined to be less than USEPA Exposure Levels for Evaluating PCBs in Indoor School Air[17] as specified in Section 2.3.4.1 of this report.

3.1.1.2 Pre- and Post-BMP Surface Wipe Sample Results

As indicated in Table 3-2, all of the 14 pre-cleaning surface wipe samples (including duplicates and replicates) and all of the 55 post-cleaning surface wipe samples (including duplicates and replicates) were non-detect and therefore below USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2.

3.1.2 Evaluation of Efficacy and Frequency of BMP Cleaning

In addition to evaluating PCB exposures to building occupants at MHS and JCES, the pre- and post-BMP air and surface wipe sampling results collected from MHS and JCES were also used to evaluate the effectiveness of BMPs and the recommended frequency of BMP

[16] The laboratory reporting limit for the samples in ranges from 67 ng/m^3 to 74 ng/m^3.

[17] This conclusion is the same if compared to the USEPA Recommended Public Health Levels for PCBs in Indoor School Air which are superseded by USEPA's Exposure Levels for Evaluation of PCBs in Indoor School Air (USEPA, 2015c).

implementation, as well as to make adjustments in the implementation of the BMPs, if appropriate. Additional details on each of these elements are provided below.

3.1.2.1 BMP Cleaning Efficacy

Annual BMP cleaning previously was evaluated using pre- and post-BMP sampling data from the 2014 summer break sampling event. As presented in the 2014 Summer Sampling Report (ENVIRON, 2014e), the surface wipe sampling results from the 2014 summer break sampling event demonstrated that the annual BMP cleaning was effective at removing dusts impacted by PCBs, and the air sampling results suggested that the annual BMP cleaning did not increase PCB concentrations in the air above USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air[18] and in some cases, resulted in decreased airborne PCB concentrations.

The results from the 2014/2015 winter break sampling event continued to support the conclusion that BMPs are effective. Although Ramboll Environ did not conduct a detailed comparison of 2014/2015 winter break sampling event results to the 2014 summer break sampling event results, the vast majority of surface wipe samples collected during the 2014/2015 winter break sampling event were either not detected above the PCB laboratory reporting limit or were below USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2. Furthermore, PCBs were not detected in any air samples collected during the 2014/2015 winter break sampling event at concentrations above the PCB laboratory reporting limits. These results suggested that BMPs are effective at maintaining PCBs exposures below USEPA benchmarks.

The results from the 2015 summer break sampling event continue to support the conclusion that BMPs are effective and that conditions at MHS and JCES continue to be protective of public health as previously concluded by USEPA (USEPA, 2014c). As discussed above, all of the pre- and post-BMP surface wipe samples collected during the 2015 summer break sampling event were not detected above the PCB laboratory reporting limit and were therefore below USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2. Furthermore, PCBs were not detected above the PCB laboratory reporting limits in any pre- and post-BMP air samples collected during the 2015 summer break sampling event and therefore below USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air.[19] These results confirm that BMPs are effective at maintaining PCBs exposures below USEPA benchmarks.

3.1.2.2 Frequency

As discussed in Section 2.2.2, another goal of the Pilot Study was to evaluate the frequency of BMP cleanings. Based on the pre- and post-BMP samples collected during the 2015 summer break sampling event, all of the pre-1981 buildings tested during the 2015 summer break continued to have surface wipe and air concentrations of PCBs below USEPA benchmarks. The results indicate that conditions continue to be health protective and that the presence of potential PCB-impacted building materials is not producing unacceptable health risks as previously concluded by USEPA (USEPA, 2014c). Because all of the regularly occupied rooms underwent annual BMP cleanings during the 2014 and 2015 summer breaks,

[18] This conclusion is the same if compared to the USEPA Recommended Public Health Levels for PCBs in Indoor School Air which are superseded by USEPA's Exposure Levels for Evaluation of PCBs in Indoor School Air (USEPA, 2015c).

[19] This conclusion is the same if compared to the USEPA Recommended Public Health Levels for PCBs in Indoor School Air which are superseded by USEPA's Exposure Levels for Evaluation of PCBs in Indoor School Air (USEPA, 2015c).

and have undergone regular BMP cleaning on a weekly and monthly basis in accordance with the MHS Specific Plan (ENVIRON, 2014b), these results indicate that the BMP cleaning procedures and the frequency at which they are being implemented are more than sufficient to keep PCB exposure concentrations below USEPA's benchmarks.

3.2 Additional 21 Regularly Occupied Rooms

This section includes a summary of findings based on air and surface exposure monitoring for PCBs conducted by Ramboll Environ during the 2015 summer break in the remaining 21 regularly occupied rooms not previously sampled in pre-1981 buildings at MHS and JCES.

3.2.1 Overview of Sampling in Additional 21 Regularly Occupied Rooms

Sampling conducted by Ramboll Environ during the 2014 summer break sampling event and 2014/2015 winter break sampling event collected data in 91 of the 112 regularly occupied rooms across all pre-1981 buildings at MHS and JCES. One goal of the 2015 summer break sampling event was to conduct exposure sampling in the remaining 21 regularly occupied rooms that had not previously been sampled for air and surface dust (18 in MHS and three in JCES as indicated in orange outlining in Figures ES-1 and ES-2), six of which are classrooms. As further discussed below, the results demonstrate that exposures in these rooms are below the USEPA benchmarks. In addition, the results show that previous sampling in the other 91 regularly occupied rooms in pre-1981 buildings at MHS and JCES was representative of conditions in these remaining 21 rooms.

3.2.1.1 Air Sample Results in Additional 21 Regularly Occupied Rooms

As indicated in Table 3-3, airborne levels of PCBs in the additional 21 regularly occupied rooms were not detected at concentrations above the specified PCB laboratory reporting limit[20] in all 21 rooms sampled. Therefore, PCB concentrations in air were determined to be less than USEPA Exposure Levels for Evaluating PCBs in Indoor School Air[21] as specified in Section 2.3.4.1 of this report.

3.2.1.2 Surface Wipe Sample Results in Additional 21 Regularly Occupied Rooms

As indicated in Table 3-4, all of the surface wipe results from these 21 rooms were below the laboratory reporting limit (non-detected) except for one surface wipe sample; that sample had reported PCB levels of 0.22 µg/100 cm^2, nearly five times lower than the USEPA Region IX surface wipe benchmark for schools of 1 µg/100 cm^2. Therefore, all surface samples from the additional 21 regularly occupied rooms were below USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2.

3.3 Conditions in Rooms with Building Materials Regulated by USEPA

As discussed in Section 2.2.3, another part of the Pilot Study focused on rooms at MHS and JCES with identified and verified PCB concentrations in bulk materials (i.e., caulk) ≥50 ppm. This originally included MHS Building A (800, Great White Shark) Library; MHS Building E (000, Blue Shark) Rooms 1, 5, and 8, but this was amended on September 26, 2014 in the Supplement (ENVIRON, 2014d) to include MHS Building G (500, Angel Shark) Room 506 (woodshop),[10] and then again in the Notification of Additional Rooms (ENVIRON, 2015b) on March 20, 2015 to include: MHS Building E (000, Blue Shark) Rooms 3, and 7; MHS

[20] The laboratory reporting limit for the samples in ranges from 68 ng/m^3 to 72 ng/m^3.

[21] This conclusion is the same if compared to the USEPA Recommended Public Health Levels for PCBs in Indoor School Air which are superseded by USEPA's Exposure Levels for Evaluation of PCBs in Indoor School Air (USEPA, 2015c).

Building G (500, Angel Shark) Room 505; MHS Building I (400, Leopard Shark) Room 401; MHS Building J (700, Old Gymnasium) Room 704/704 Hallway and 705;[11] and JCES Building F Rooms 18, 19, 22, and 23. Following caulk removal in each of these rooms, the District or the District's contractors (Castlerock Environmental and Ramboll Environ) implemented the following procedures:

1. Decontaminated non-porous surface materials adjacent to ≥50 ppm PCB-impacted caulk and perform post-decontamination confirmation surface wipe sampling with a cleanup goal of <1 µg/100 cm^2.
2. Prepared surfaces and encapsulated porous substrate in contact with ≥50 ppm PCB-impacted caulk up to 1 foot away from the caulk/substrate contact.
3. Conducted post-removal confirmatory air and surface wipe sampling with the goal of achieving USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air (USEPA, 2015c) and USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2.

The results of the post-decontamination, post-encapsulation, and post-removal sampling met the above criteria and are presented in more detail in Section 4.1.2 of this report.

3.4 Assessment of Future Monitoring

Per USEPA's Approval Letter (USEPA, 2014c), the Pilot Study results are to be used to evaluate future monitoring needs at MHS and JCES. Based on the results from the 2014 summer break sampling event, 2014/2015 winter break sampling event, and 2015 summer break sampling event, implementation of BMPs yields concentrations of PCBs in air samples that are below USEPA's benchmarks and can maintain surface dust concentrations below the USEPA benchmark. Ramboll Environ concludes that these results indicate that no future monitoring needs are necessary because the District shall continue its implementation of BMPs. However, to further confirm the results of the concluded Pilot Study, the District will voluntarily conduct future post-BMP monitoring during the 2016 and 2017 summer breaks as described in Section 6.1.3.

4. REMOVAL ACTIVITIES AND POST-REMOVAL SAMPLING RESULTS

The MHS Specific Plan (ENVIRON, 2014b) calls for known building materials identified and verified with ≥50 ppm PCBs to be remediated during planned and funded building renovations within 15 years.[22] However, on August 15, 2014, the SMMUSD agreed to "remedy the TSCA violations identified at four window areas at Malibu High School within the next 10 months, no later than June 30, 2015".[23] The four window areas corresponded to previously tested window units located in the MHS Building A (800, Great White Shark) Library and Building E (000, Blue Shark) Rooms 1, 5, and 8. In addition, based on subsequent sampling and analytical results in which >10 µg/100cm^2 total PCBs were reported for surface wipe samples taken on caulk around interior door frames in Building G (500, Angel Shark) Room 506 (woodshop)[24] at MHS even after repairs and additional cleaning, SMMUSD volunteered to implement a similar remedy for interior door caulk in this room.

In March 2015 (ENVIRON, 2015b), Ramboll Environ notified USEPA Region IX that the District had identified and verified concentrations of PCBs ≥50 ppm in additional rooms at MHS and JCES. The additional rooms at MHS included Building E (000, Blue Shark) Rooms 3 and 7; MHS Building G (500, Angel Shark) Room 505; MHS Building I (400, Leopard Shark) Room 401; MHS Building J (700, Old Gymnasium) Room 704/704 Hallway and 705.[11] The additional rooms at JCES included Building F Rooms 18, 19, 22, and 23.

4.1.1 Objectives

As outlined in the Supplement (ENVIRON, 2014d) and USEPA's Approval Letter (USEPA, 2014c), the PCB removal activities included several objectives:

- Physically remove caulk identified and verified with ≥50 ppm PCBs.
- Decontaminate non-porous surface materials adjacent to ≥50 ppm PCB-impacted caulk and perform post-decontamination confirmation surface wipe sampling with a cleanup goal of <1 µg/100 cm^2.
- Prepare surfaces and encapsulate porous substrate in contact with ≥50 ppm PCB-impacted caulk up to 1 foot away from the caulk/substrate contact.
- Conduct post-removal confirmatory air and surface wipe sampling with the goal of achieving USEPA's Public Health Levels for PCBs in Indoor School Air (USEPA, 2012b) which has recently been replaced by the USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air (USEPA, 2015c) and USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2.

Detailed sampling information is provided in Appendix A (sample location figures), Appendix B (summary tables), Appendix C (photographs), and Appendix D (laboratory analytical reports and data validation reports). The specific locations of the caulk removal are

[22] Provided management in place BMPs are implemented.

[23] Email from Janece Maez, Associate Superintendent Business and Fiscal Services, SMMUSD, to Tom Huetteman, USEPA, dated August 14, 2014.

[24] Fourth Update on Recent Building Inspections Activities Related to Polychlorinated Biphenyls (PCBs), dated September 5, 2014 (see Appendix V.1 in ENVIRON, 2014e).

summarized in Figures A-17 through A-30 in Appendix A. All work was conducted in a manner consistent with the MHS Specific Plan (ENVIRON, 2014b), Supplement (ENVIRON, 2014d), Notification of Additional Locations (ENVIRON, 2015b), and USEPA's Approval Letter (USEPA, 2014c).

4.1.2 Remedy Implementation

4.1.2.1 Caulk Removal

In accordance with Appendix F.1.4.1 of the MHS Specific Plan (ENVIRON, 2014b) and the USEPA Approval Letter (USEPA, 2014c), the caulk in which ≥50 ppm PCBs was identified and verified was physically removed by the District's contractor (Castle Rock). This includes caulk on interior doors in MHS Building G (500 Angel Shark) Room 505 (art room) and Building J (700, Old Gymnasium) Room 704 Hallway, as well as caulk on several window units located in MHS Building A (800, Great White Shark) Library; MHS Building E (000, Blue Shark) Rooms 1, 3, 5, 7, and 8; MHS Building I (400, Leopard Shark) Room 401; MHS Building J (700, Old Gymnasium) Rooms 704 and 705;[11] and JCES Building F Rooms 18, 19, 22, and 23. A similar procedure was completed for the caulk for two interior doors in MHS Building G (500, Angel Shark) Room 506 (woodshop).[10] Removal of window and door units was not required in order to remove the caulk.

Although SMMUSD was only required to remove building materials with verified PCB concentrations ≥50 ppm, the District voluntarily removed caulk from neighboring windows in the same room without verified PCB concentrations of ≥50 ppm if similar in construction to the windows with verified PCB concentration of ≥50 ppm. This includes MHS Building E (000, Blue Shark) Rooms 1, 5, and 8; MHS Building I (400, Leopard Shark) Room 401;[25] MHS Building J (700, Old Gymnasium) Room 705;[11] and JCES Building F Room 22.

The locations of caulk removal at MHS and JCES are shown in orange highlighting in Figures A-17 through A-30 in Appendix A.

4.1.2.2 Decontamination of Non-Porous Surfaces

In accordance with Appendices F.1.5 and F.1.9 of the MHS Specific Plan (ENVIRON, 2014b) and the USEPA's Approval Letter (USEPA, 2014c), non-porous surfaces adjacent to ≥50 ppm PCB-impacted caulk were decontaminated by the District and its contractor (Castle Rock). Decontamination occurred in MHS Building E (000, Blue Shark) Rooms 1, 3, 5, 7, and 8, as well as JCES Rooms 18, 19, 22, and 23. Following decontamination, surface wipe samples were collected from the decontaminated surfaces in each room. Once the PCB concentrations in the post-decontamination surface wipe samples were below the cleanup goal of <1 µg/100 cm^2, the removed caulk was replaced with new, non-PCB containing caulk. The final post-decontamination sampling results are summarized in Table 4-1.

As indicated in Table 4-1, all of the rooms at MHS Building E (000, Blue Shark) requiring caulk removal (i.e., Rooms 1, 3, 5, 7, and 8) and JCES (i.e., Rooms 18, 19, 22, and 23) had final post-decontamination surface wipe PCB concentrations below the cleanup goal of <1 µg/100 cm^2.

[25] In MHS Building I (400, Leopard Shark) Room 401, the neighboring window unit (adjacent to the window unit with a verified PCB concentration of ≥50 ppm) was also connected to an adjacent door unit. As a result, the caulk was removed from both the neighboring window unit as well as the door unit.

4.1.2.3 Encapsulation of Adjacent Porous Substrate

In accordance with Appendix F.1.6 of the MHS Specific Plan (ENVIRON, 2014b) and the USEPA's Approval Letter (USEPA, 2014c), porous substrate adjacent to ≥50 ppm PCB-impacted caulk had its surface prepared and encapsulated up to 1 foot away from the caulk/substrate contact by the District and its contractor (Castle Rock). Encapsulation occurred in MHS Building A (800, Great White Shark) Library; MHS Building G (500, Angel Shark) Rooms 505 and 506; MHS Building I (400, Leopard Shark) Room 401; MHS Building J (700, Old Gymnasium) Rooms 704/704 Hallway and 705; and JCES Building F Rooms 18, 19, 22, and 23.

As recommended by USEPA's Approval Letter (USEPA, 2014c), a non-VOC epoxy-based encapsulant (i.e., Sikagard® 62) was used. Following encapsulation, surface wipe samples were collected from the encapsulated surfaces in each room. The PCB concentrations in the post-encapsulation surface wipe samples were below the cleanup goal of <1 µg/100 cm^2, therefore the removed caulk was replaced with new, non-PCB containing caulk.

In addition, encapsulation also occurred in MHS Building E (000, Blue Shark) Rooms 1 and 3 on the wall under the windows (up to 1 foot away from the windows). Although these walls were not observed to be in direct contact with building materials with verified PCB concentrations ≥50 ppm, this encapsulation was performed, in consultation with USEPA (Ramboll Environ, 2015c), after determining that small portions of the porous wall likely absorbed residual materials from the removal action. Post-encapsulation results met the cleanup goal of <1 µg/100 cm^2 in these areas.

The post-encapsulation sampling results are summarized in Table 4-2. As indicated in Table 4-2, none of the PCB concentrations in the post-encapsulation surface wipe samples collected in each of the rooms requiring caulk removal and encapsulation were detected above the PCB laboratory reporting limit, indicating that the encapsulation process was successful in keeping surface PCB concentrations below USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2. In accordance with USEPA's Approval Letter (USEPA, 2014c), the District conducted monitoring of the encapsulated areas and BMP measures through July 1, 2015. Herein, the District proposes that the surfaces of these encapsulated areas will be monitored and maintained to ensure the ongoing efficacy of the encapsulant for the period following July 1, 2015 as described further in Sections 4.1.3 and 6.2.1.

4.1.2.4 Post-Removal Confirmatory Air and Surface Wipe Samples

In accordance with Appendix F.1.11 of the MHS Specific Plan (ENVIRON, 2014b), air and additional surface wipe samples were collected by Ramboll Environ from the rooms after caulk removal, decontamination of non-porous surfaces, encapsulation of porous surfaces, and re-caulk occurred. The PCB concentrations in all post-removal confirmatory air samples were below USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air and once the PCB concentrations in all post-removal confirmatory surface wipe samples were below the USEPA Region IX surface wipe benchmark for schools of <1 µg/100 cm^2, the rooms were re-opened for occupancy. The post-removal air and final surface wipe samples are summarized in Tables 4-3 and 4-4, respectively.

As indicated in Table 4-3, none of the post-removal confirmatory air samples detected PCBs above the laboratory reporting limit. As shown in Table 4-4, the final results of the post-

removal confirmatory surface wipe samples met the USEPA Region IX surface wipe benchmark for schools of <1 µg/100 cm^2.

4.1.2.5 Remedy Conclusions

The final post-decontamination, post-encapsulation, and post-removal confirmatory sampling in each room with caulk removal indicated that PCB concentrations were below the cleanup goal of <1 µg/100 cm^2 for dust and below USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air,[26] thus indicating that caulk removal activities were completed successfully. For nonporous substrate areas with caulk removed, no further actions are required. Encapsulated porous substrate areas where caulk was removed will be maintained in place until the next renovation or demolition in accordance with USEPA's Approval Letter (USEPA, 2014c).

4.1.3 Future Assessment of Encapsulated Areas

A provision of the USEPA's Approval Letter (USEPA, 2014c) requires the District to submit a supplement to the District's Application which proposes the monitoring for the efficacy of the encapsulated removal areas being managed in place until the next scheduled demolition or renovation. The surfaces of the removal areas will be inspected visually on a periodic basis, not to exceed six (6) months between each inspection. If the integrity of the encapsulant is compromised, the District will conduct repairs to re-encapsulate the area, conduct BMP cleaning, and confirm successful repairs with surface wipe sampling.

[26] This conclusion is the same if compared to the USEPA Recommended Public Health Levels for PCBs in Indoor School Air which are superseded by USEPA's Exposure Levels for Evaluation of PCBs in Indoor School Air (USEPA, 2015c).

5. QUALITY CONTROL

5.1 Data Quality Objectives

Ramboll Environ maintains a QA/QC standard for all of its work products. Several types of QA/QC methods were utilized to confirm accurate data are represented, including external third party data validation and collection of QA/QC and comparison samples, such as duplicates, replicates, field blanks, and ambient samples. QA/QC methods are discussed in further detail below. Data is presented for all of the samples collected during the 2015 summer break sampling event (i.e., pre- and post-BMP samples, additional 21 regularly occupied rooms, as well as PCB post-removal samples).

5.2 Quality Control Samples

5.2.1 Evaluation of Duplicate Samples

Duplicate samples were collected to evaluate data precision. One duplicate air sample was collected for every 10 air samples, on average. As depicted in Table 5-1, 7 duplicate air samples (approximately 12% of the 57 primary samples) were collected. PCBs were not detected above similar laboratory reporting limits in any of the duplicate air samples (7 of 7) as shown in Table 5-1, indicating no relative difference in these duplicates. These results indicate a high level of precision in the sampling and analysis procedures.

One duplicate surface wipe sample was collected for every 10 surface wipe samples, on average. Table 5-2 shows 42 duplicate samples (approximately 10% of the 408 primary samples) were collected. The majority of the primary and duplicate surface wipe sample sets were non-detect for PCBs (26 of 42), indicating no relative difference in these duplicates. Of the small subset of samples with detects, the percent difference ranged from 6% to 100%, but the overall duplicate results generally confirm the same outcomes for the vast majority of duplicate samples.

5.2.2 Evaluation of Replicate Surface Wipe Samples

Replicate samples, which are samples collected in the same location as the primary sample but after the primary sample is collected, were collected to evaluate the collection efficacy of the surface wipe sampling (i.e., measure of residual surface dust remaining after collection of the primary sample). As reported in Table 5-3, 42 replicate samples (approximately 10% of the primary 408 samples) were collected. The majority of the primary and replicate surface wipe sample sets were both not detected above the PCB laboratory reporting limit (approximately 64%, 27 of 42). Most of the remaining replicates had similar or lower results than primary sampling except for two samples. The overall data set suggests adequate collection efficiency.

5.2.3 Evaluation of Field Blank Samples

Field blank samples were used to assess the potential presence of contaminants arising from field sampling procedures. Field blank samples were obtained by exposing the media to the atmosphere; air was not drawn through the air media and the surface wipe was not placed in contact with a surface.

One field blank air sample was collected for every day of sampling, for a total of 14 field blank air samples. All of these field blanks were reported as not detected above the PCB laboratory reporting limit.

One hexane field blank and/or one isopropanol field blank sample was collected for each day surface wipes were collected using the approved solvent. If both isopropanol and hexane were used on the same day, blanks for both solvents were collected. A total of 35 field blank surface wipe samples were collected. All of these field blanks were reported as non-detect above the laboratory reporting limit for PCBs.

The absence of PCB detections in the field blank samples indicates that the samples were not impacted by possible contamination arising from field sampling procedures.

5.2.4 Evaluation of Outdoor Ambient Air Samples

Ambient air samples were collected to evaluate the concentrations of PCBs in the outdoor air around MHS and JCES. One ambient air sample was collected during each 24-hour sampling event. Over the course of the 2015 summer break sampling event, 15 ambient air samples were collected, all of which were not detected above the PCB laboratory reporting limit,[27] indicating that PCB concentrations in ambient air in the immediate vicinity of the two campuses are relatively low.

5.3 Data Validation

Laboratory Data Consultants, Inc. (LDC) in Carlsbad, California, performed Level III and Level IV third-party data validation for all air and surface wipe samples collected during the 2015 summer sampling event at MHS and JCES, following the procedures described in the USEPA *Contract Laboratory Program National Functional Guidelines* (USEPA, 2008). The data validation reports are included in Appendix D. LDC reviewed sample data for the following parameters:

- Technical holding time
- Initial and continuing calibrations
- Method and field blanks
- Field duplicates
- Surrogate spike recoveries
- Laboratory control sample (LCS) and duplicate (LCSD)
- Target compound identification, and
- Compound quantitation (dual-column relative percent difference [RPD])

Through third-party validation, the following qualifiers were used in the assessment of the air and surface wipe samples:

J = Indicates an estimated value.

UJ = Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

Data with J qualifiers are usable. Per USEPA's *Risk Assessment Guidance for Superfund Human Health Evaluation* (USEPA, 1989), a J qualifier is the most commonly encountered data qualifier in environmental sampling data results. According to the guidance, J-qualified

[27] The laboratory reporting limit for the samples in ranges from 69 ng/m^3 to 72 ng/m^3.

concentrations (including UJ) are used the same way as positive data that do not have this qualifier and it is appropriate to use such data for decision-making purposes.

5.3.1 Data Completeness

Validation was performed on 93 air samples for 7 Aroclors (651 data points) and on 527 surface wipe samples for 9 Aroclors[28] (4,743 data points), including field blanks, duplicates, and replicates. 100% completeness was achieved for both air and surface wipe samples.

5.3.2 Air Samples

Of a total of 93 air samples (including ambient, field blank samples, and duplicates), no Aroclors were detected. One air sample was UJ qualified for all Aroclors, due to surrogate percent recovery (%R) value slightly below 60-120% quality control (QC) limits. Thus, results for that sample may be slightly low biased.

Since the laboratory's method reporting limit for the 2015 summer break sampling event was approximately 70 ng/m^3, the results were not detected and do not exceed the USEPA Exposure Levels for Evaluating PCBs in Indoor School Air of 200, 300, 500, 600, and 500 ng/m^3 for children 3 to less than 6 years old, elementary school (6 to less than 12 years old), middle school, high school, and faculty/adults, respectively.

5.3.3 Surface Wipe Samples

Of a total of 527 surface wipe samples (including field blank samples, replicates, and duplicates), 344 had no Aroclor detections, and Aroclor 1254 was detected in 183 samples. The following reasons contributed to the J/UJ-qualifiers on the surface wipe samples:

- Percent differences (%D) for continuing calibration were higher than the control limit of 20%;
- %D for initial calibration verification were higher than the control limit of 20%;
- Surrogate %R was slightly above the QC limits of 40 to 140%, thus the results may be slightly high biased;
- RPD between two gas chromatogram columns >40%.

5.4 Data Quality Conclusions

In conclusion, all of the data are valid and usable as reported, and may be used for decision-making purposes. The overall data completeness for the 2015 summer break sampling event is 100%.

[28] The lists of Aroclors vary from laboratory to laboratory based on project requirements or the laboratory's established Standard Operating Procedures (SOPs). Laboratories can add additional Aroclors to the SOP, beyond the original 7 Aroclors listed in SW 8082 (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

6. CONCLUSIONS

As described in the Introduction Section, USEPA has developed regulations[29] and policies (USEPA, 2012, 2015a, b, and c) with respect to PCBs under TSCA. The USEPA has adopted a policy for PCBs in schools (and other buildings) that sets levels for evaluating PCB exposures to children and others in school buildings (see Section 2.3.4) and has recommended BMPs to ensure children can safely attend school in buildings with PCB containing materials while long-term plans are made for renovation. The work described in this report was done in consultation with USEPA Region IX to comply with USEPA's policies and regulations on PCBs under TSCA at MHS and JCES. Based on the information presented in this as well as our other reports regarding our indoor investigations at MHS and JCES (ENVIRON, 2014e, 2015a), Ramboll Environ concludes the following:

6.1 BMP Cleaning is Effective as Exposure Data Show PCB Levels are Below USEPA Benchmarks for Schools

Based on exposure (air and surface wipe) pre- and post-BMP sampling results from the 2014 summer break sampling event (ENVIRON, 2014e), USEPA's Approval Letter (USEPA, 2014c) concluded that

> "[o]verall, the sampling data from the two schools demonstrate that these [air and dust contact/incidental ingestion] PCB exposure pathways are currently being addressed by the District's BMPs in a manner that protects public health. Thus, the District's undertaking of the BMPs, as verified by pre- and post-BMP sampling data, demonstrates that the TSCA standard for no unreasonable risk is currently being met at MHS and JCES."

In accordance with USEPA's policy on PCBs in building materials (USEPA, 2015a), this conclusion was based on comparison of the data collected at the schools to applicable USEPA benchmarks for dust and indoor air. In accordance with USEPA's policy on PCBs in building materials (USEPA, 2015a), an air and surface wipe sampling Pilot Study, as described in the MHS Specific Plan (ENVIRON, 2014b), was conducted by Ramboll Environ to obtain sampling data to (1) evaluate the effectiveness of the District's BMPs and (2) evaluate potential exposures to PCBs within MHS and JCES. The scope of this study was developed with concurrence by USEPA Region IX as per the USEPA's policy. This study was conducted during the 2014 summer break sampling event, 2014/2015 winter break sampling event, and concluded with the 2015 summer break sampling event. Based upon data collected during this Pilot Study, the District is required to propose a new monitoring plan for the period after July 1, 2015 for USEPA approval (USEPA, 2014c). The following subsections describe the conclusions made based on the data collected in the Pilot Study and recommendations for future monitoring.

6.1.1 Exposure Data Show PCB Levels are Below USEPA Exposure Levels

The results from both the 2015 summer break sampling event presented in this report and the 2014/2015 winter break sampling events (ENVIRON, 2015a) at MHS and JCES demonstrate that conditions in the schools continue to be protective of public health and meet the TSCA standard for no unreasonable risk as described in USEPA's Approval Letter, which was based on 2014 summer break sampling event results (USEPA, 2014c):

[29] 49 CFR §§ 761.120-135.

- In the 2014/2015 winter break sampling event, PCBs were not detected in air at concentrations above the specified laboratory reporting limit for all samples in the 31 rooms tested. For the initial surface wipe sample detections, all were below USEPA's Region IX surface wipe benchmark for schools of 1 µg/100 cm^2 (USEPA, 2014c) except for one room, which met this benchmark after it had subsequent re-cleaning as specified in the MHS Specific Plan (ENVIRON, 2015b).
- As discussed in the next subsection, all pre- and post-BMP air and surface wipe samples collected during the 2015 summer break sampling event were not detected for PCBs above the laboratory reporting limits.
- Sampling conducted by Ramboll Environ during the 2014 summer break sampling event and 2014/2015 winter break sampling event collected data in 91 of the 112 regularly occupied rooms across all pre-1981 buildings at MHS and JCES. During the 2015 summer break sampling event, exposure sampling was conducted in the remaining 21 regularly occupied rooms that had not previously been sampled for air and surface dust. The air and surface wipe results from these 21 rooms were all below the laboratory reporting limit (non-detected) except for one surface wipe sample; that sample had reported PCB levels of 0.22 µg/100 cm^2, nearly five times lower than the USEPA Region IX surface wipe benchmark for schools of 1 µg/100 cm^2. These results also demonstrate that previously collected exposure data at the two schools were representative of conditions in the additional 21 rooms sampled during the 2015 summer break sampling event.

Conclusion: Given that the results of the Pilot Study demonstrate that exposures in all regularly occupied rooms continue to be below the USEPA benchmarks with the District's implementation of BMPs, Ramboll Environ concludes that conditions at MHS and JCES continue to be protective of public health and meet the TSCA standard for no unreasonable risk as previously concluded by USEPA (USEPA, 2014c) with the District's use of BMPs. Ramboll Environ recommends that the Pilot Study be concluded at both schools.

- The District seeks USEPA's concurrence with these conclusions per consultation recommendations in USEPA's policy on PCBs in building materials (USEPA, 2015a).

6.1.2 BMP Cleaning is Effective

In accordance with USEPA's policy on PCBs in building materials (USEPA, 2015a) and the provisions of the USEPA's Approval Letter (USEPA, 2014c), the District has been implementing BMPs since the 2014 summer break.

All pre- and post-BMP air and surface wipe samples collected during the 2015 summer break sampling event as part of the Pilot Study were not detected for PCBs above the laboratory reporting limits (non-detect). These results, coupled with the pre- and post-BMP sampling results from the 2014 summer break sampling event and 2014/2015 winter break sampling events, indicate that the District's current weekly, monthly, and annual BMP cleaning methods and schedule are more than sufficient to maintain PCBs at non-detect and/or at levels below USEPA's benchmarks for dust and indoor air.

Conclusion: Given that the results of the Pilot Study demonstrate that exposures in all regularly occupied rooms continue to be below the USEPA benchmarks, Ramboll Environ concludes that BMP cleaning can successfully manage PCBs in place until the next scheduled building demolition/renovation and maintain conditions at MHS and JCES that are protective

of public health and that meet the TSCA standard for no unreasonable risk as previously concluded by USEPA (USEPA, 2014c). Ramboll Environ recommends that the District continue implementation of BMPs as recommended in guidance from USEPA (such as USEPA, 2015a, b). Per USEPA's policy on PCBs in building materials (Q&A 21 in USEPA, 2015a), the results of the Pilot Study indicate that beyond continued implementation of BMPs, no further action (for example, testing of building materials) is warranted.

- The District seeks USEPA's concurrence with these conclusions per consultation recommendations in USEPA's policy on PCBs in building materials (USEPA, 2015a).

6.1.3 Future Monitoring

Based upon Pilot Study data collected to date, the District is required by the USEPA's Approval Letter (USEPA, 2014c) to propose a new monitoring plan for the period after July 1, 2015 for USEPA approval.

The cumulative data collected during the 2014 summer break sampling event (ENVIRON, 2014e), 2014/2015 winter break sampling event (ENVIRON, 2015a), and 2015 summer break sampling event demonstrate that the District's implementation of BMPs is more than sufficient to maintain PCBs below laboratory reporting limits and/or at levels below USEPA benchmarks for dust and indoor air. These results indicate that no future monitoring is necessary because the District shall continue its implementation of BMPs. However, to further confirm the results of the concluded Pilot Study, the District will voluntarily conduct future post-BMP monitoring during the 2016 and 2017 summer breaks.

Proposed Supplement to the District's Application for MHS and JCES: During the 2016 and 2017 summer breaks, conduct additional post-BMP air and surface wipe sampling at MHS and JCES similar in scope to the 2015 summer break sampling event post-BMP efforts described in this report. Reports from 2016 and 2017 sampling would be prepared for public and USEPA review. This monitoring would conclude after the 2017 summer break if the future results continue to demonstrate that the conditions at MHS and JCES are protective of public health and meet the TSCA standard for no unreasonable risk as previously concluded by USEPA (USEPA, 2014c) and if the District continues to implement the BMPs as recommended in guidance from USEPA (such as USEPA, 2015a, b).

- The District seeks USEPA's approval of this supplement to the Application per USEPA's Approval letter (USEPA, 2014c).

6.2 PCB Removal Activities Were Successful

6.2.1 Completed Removal of Caulk Identified and Verified at Concentrations ≥50 ppm

In accordance with USEPA's Approval Letter (USEPA, 2014c) and TSCA 40 CFR 761.61(c), the District conducted caulk removal activities in the rooms at MHS and JCES containing building materials in which PCBs were identified and verified at concentrations ≥50 ppm. As further discussed in Section 4 and summarized in the caulk removal figures in Appendix A (Figures A-17 to A-30), these areas included the following:

Interior window caulk only in contact with non-porous substrates

- Building E (000, Blue Shark) Rooms 1, 3, 5, 7, and 8

Interior window caulk also in contact with porous substrate

- MHS Building A (800, Great White Shark) Library
- JCES Building F Rooms 18, 19, 22, and 23
- MHS Building J (700, Old Gymnasium) Room 704 and 705[11]

Interior door caulk in contact with porous substrate

- MHS Building G (500, Angel Shark) Room 506 (woodshop)[10]
- MHS Building G (500, Angel Shark) Room 505 (art room)
- MHS Building J (700, Old Gymnasium) Room 704 Hallway

Interior window and door caulk in contact with porous substrate

- MHS Building I (400, Leopard Shark) Room 401

The caulk removal related activities during the 2015 summer break sampling event met the goals for areas with identified and verified PCB concentrations ≥50 ppm, as required under 40 CFR 761.61(c) and outlined in the Supplement (ENVIRON, 2015d) and USEPA's Approval Letter (USEPA, 2014c):

- Physically removed caulk identified and verified with ≥50 ppm PCBs.
- Decontaminated non-porous surface materials adjacent to ≥50 ppm PCB-impacted caulk and performed post-decontamination confirmation surface wipe sampling that met the cleanup goal <1 µg/100 cm^2.
- Prepared surfaces and encapsulated porous substrate in contact with ≥50 ppm PCB-impacted caulk up to 1 foot away from the caulk/substrate contact. Post-encapsulation confirmation surface wipe sampling met the cleanup goal of <1 µg/100 cm^2.
- Conducted post-removal confirmatory air and surface wipe sampling, which met the goal of being below Exposure Levels for Evaluating PCBs in Indoor School Air and PCB surface wipe concentrations of <1 µg/100 cm^2.

Conclusion: The final post-decontamination, post-encapsulation, and post-removal confirmatory sampling in each room with caulk removal indicated that PCB concentrations were below the cleanup goal of <1 µg/100 cm^2 for dust and below USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air,[30] thus indicating that caulk removal activities were completed successfully:

- For nonporous substrate areas with caulk removed, no further actions are required.
- Encapsulated porous substrate areas where caulk was removed will be maintained in place until the next renovation or demolition in accordance with USEPA's Approval Letter (USEPA, 2014c).

[30] This conclusion is the same if compared to the USEPA Recommended Public Health Levels for PCBs in Indoor School Air which are superseded by USEPA's Exposure Levels for Evaluation of PCBs in Indoor School Air (USEPA, 2015c).

- The District seeks USEPA's concurrence with these conclusions per consultation recommendations in USEPA's policy on PCBs in building materials (USEPA, 2015a).

Proposed Supplement to the District's Application for MHS and JCES: A provision of the USEPA's Approval Letter (USEPA, 2014c) requires the District to propose a supplement to the Application which proposes the monitoring for the encapsulated areas being managed in place until the next scheduled demolition or renovation. The surfaces of the encapsulated areas where caulk was removed during the 2015 summer break will be inspected visually on a periodic basis, not to exceed six (6) months between each inspection. If the integrity of the encapsulant is compromised, the District will conduct repairs to re-encapsulate the area, conduct BMP cleaning, and confirm successful repairs with surface wipe sampling.

- The District seeks USEPA's approval of this supplement to the Application per USEPA's Approval Letter (USEPA, 2014c).

6.2.2 Removal of Stained Light Fixtures was Completed

The District agreed to replace light fixtures, including stained fixtures, from pre-1981 buildings at both MHS and JCES (USEPA, 2014a). Appendix E summarizes the lighting replacement activities conducted by SMMUSD during the 2015 summer break.

Conclusion: Based on review of lighting contractor (Walton Electric) records, information provided by the District, hazardous waste manifests, and the post-BMP PCB air and surface wipe sampling results described in Section 3 that were all below USEPA benchmarks for dust and indoor air, Ramboll Environ concludes that the light fixture removal activities were completed successfully and that no further actions are required in accordance with USEPA's policy on PCBs in building materials (USEPA, 2015a).

- The District seeks USEPA's concurrence that removal of the stained light fixtures follows USEPA's policy on PCBs in building materials and no further actions are needed based on USEPA's policy, per consultation recommendations in USEPA's policy on PCBs in building materials (USEPA, 2015a).

6.3 Approach Taken at MHS and JCES is Consistent with USEPA's Policy on PCB-Containing Building Materials in Schools (and other buildings)

The approach currently taken by the District at MHS and JCES regarding building materials potentially containing PCBs has followed USEPA's policy on PCBs in building materials (USEPA, 2015a, b):

- To reduce PCB exposures, USEPA recommends first removing all PCB-containing fluorescent light ballasts (FLB) and conducting BMPs on a frequent, ongoing basis to minimize potential exposures to PCBs. FLBs potentially containing PCBs were previously removed from pre-1981 buildings at both MHS and JCES (ENVIRON, 2014c) and BMPs are currently ongoing, and it is the District's intent to continue BMPs until the next renovation or demolition of pre-1981 buildings at MHS and JCES. Light fixtures were removed during the 2015 summer break.
- If after BMPs there is still concern about possible exposure to PCBs in school indoor air, USEPA recommends that the school administrators consult with their USEPA Regional PCB Coordinator to assess whether to consider testing indoor air for PCBs. As of August 2015,

300 air samples had been collected from MHS and JCES in consultation with USEPA Region IX.

- USEPA has updated their Exposure Levels for Evaluating PCBs in Indoor School Air in their policy on PCBs in building materials (USEPA, 2015a). These levels are not intended by USEPA to be treated as a bright line above which health risks are presumed to occur. In other words, while the Exposure Levels are health protective and exposures below the set levels would not lead to health risks, exposures above the USEPA Exposure Levels are not automatically presumed to cause harm. Further, USEPA notes that

  > "USEPA calculated the Exposure Levels for Evaluating PCBs in Indoor School Air so that if children and adults breathed PCBs at or below those levels for the hours per day and the days per year in which school is in session, those PCB exposures would not lead to risks of suffering adverse health effects."

  All air samples collected to date from MHS and JCES have been below these USEPA age-specific Exposure Levels for Evaluating PCBs in Indoor School Air.[31]

- USEPA policy recommends further steps (which could include additional BMPs, further investigation of potential PCB sources, expanding air testing, or removal of PCB-containing building materials) only if air concentrations exceed their Exposure Levels for Evaluating PCBs in Indoor School Air (Q&A 21 in USEPA, 2015a). This is not the case at MHS and JCES so no further actions are warranted under the USEPA's policy on PCBs in building materials given the sampling results described above (USEPA, 2015a).

- USEPA policy recommends characterizing and removing PCB-containing caulk and other PCB-containing materials during planned building renovations and repair activities (Q&A 18 in USEPA, 2015a).[32] Bulk material sampling for PCBs was conducted in connection with demolition for other schools in the District (Ramboll Environ, 2015a, b) in order to properly characterize demolition debris that was planned to be removed during these activities for appropriate offsite disposal, as recommended by USEPA. It is the District's intent to follow USEPA's policy at MHS and JCES (and other District schools) for future demolitions or renovation projects.

Conclusion: As described above, the District's approach to address building materials at MHS and JCES that potentially contain PCBs is consistent with USEPA's policy on PCBs in building materials (USEPA, 2015a, b). As the exposures in all regularly occupied rooms continue to be

[31] One air sample collected on July 1, 2014, had a reported PCB concentration of 480 ng/m^3, which is ≥ 450 ng/m^3 benchmark for faculty contained in USEPA's Recommended Public Health Levels in Indoor School Air. The one result above USEPA's benchmark was in a room where orchestra risers (building materials) were removed just prior to the start of Ramboll Environ's June through August 2014 investigation even though District Facility's staff had requested that the school and parents not remove these building materials until after the planned summer investigation. It is likely that this activity impacted the results seen in this room as the riser removal resulted in damage to surrounding building materials. Thus, this finding is not typical of conditions in any other rooms at MHS or JCES. After the District made repairs and conducted BMP cleaning in this room, air results were less than the USEPA's benchmark. Furthermore, as noted in Section 2.3.4, USEPA has updated these benchmarks with Exposure Levels for Evaluating PCBs in Indoor School Air. The 480 ng/m^3 value measured on July 1, 2014 is below USEPA's revised benchmark for faculty and middle school students (500 ng/m^3) and high school students (600 ng/m^3).

[32] In lieu of testing, USEPA policy allows potential PCB-containing building materials that are part of repair and renovations activities be assumed to contain PCBs at regulated levels and disposed of in accordance with 40 CFR part 761, subpart D.

below the USEPA benchmarks as described above with the District's implementation of BMPs, Ramboll Environ concludes that the District's approach using the USEPA's policy on PCBs in building materials is effective at maintaining conditions at MHS and JCES that continue to be protective of public health and meet the TSCA standard for no unreasonable risk as previously concluded by USEPA (USEPA, 2014c) and no further actions are warranted under USEPA's policy. Ramboll Environ recommends that the District continue to follow USEPA's policy on PCBs in building materials (USEPA, 2015a, b).

- The District seeks USEPA's concurrence with this conclusion per consultation recommendations in USEPA's policy on PCBs in building materials (USEPA, 2015a).

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TABLES

Table 1-1. Construction Years for MHS and JCES Buildings[1]
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

School	Building	Year Constructed	Known Past or Planned Renovations
MHS	A (800, Great White Shark)	1963	Plan to replace with a new two-story Classroom/Library/Administration Building housing three new science labs, two new computer labs, and four new general classrooms.
MHS	B/C (900, Whale Shark)	1963	Plan to replace with a new two-story Classroom/Library/Administration Building housing three new science labs, two new computer labs, and four new general classrooms.
MHS	D (100 & 200, Mako Shark)	1963	None
MHS	E (000, Blue Shark)	1963	Plan to renovate interior of Building E to house ten modernized classrooms and two new classrooms.
MHS	F (300, Thresher Shark)	1963	None
MHS	G (500, Angel Shark)	1963	None
MHS	H (Cafeteria/Auditorium)	1963	None
MHS	I (400, Leopard Shark)	1963	None
MHS	J (700, Old Gymnasium)	1963	Plan to upgrade ventilation system in the locker rooms and to upgrade technology infrastructure in building.
MHS	Relocatables Next to Building G (500, Angel Shark)	1998	None
MHS	New Gymnasium	2002	None
MHS	Malibu Boys and Girls Teen Center[a]	2000	None
MHS	Swimming Pool and Equipment Building	1975	Building was repaired in 1994
MHS	City of Malibu Office by the Pool[a]	1997	None
JCES	A	1958	None
JCES	B	1955	None
JCES	C	1957	None
JCES	D	1958	None
JCES	E	1965	None
JCES	F	1961/1965	None
JCES	G	1995	None
JCES	Building at Rear of Playground (Rooms 24 & 25)	1999	None
JCES	Building Next to Kindergarten Yard (Cottages-Buildings H & I)	1992	None

Notes:
1. Blue highlighted buildings were constructed pre-1981 and were included in the sampling program. Buildings not highlighted were constructed post-1981.
[a] Building is not owned by SMMUSD.

Abbreviations:
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
SMMUSD = Santa Monica-Malibu Unified School District

Reference:
Atkins, formerly PBS&J. 2011. *Santa Monica-Malibu Unified School District Malibu Middle and High School Campus Improvement Project Environmental Impact Report.* Volume 1: Draft EIR. July.

Table 3-1. Summary of Pre- and Post-BMP Air Sample Results for MHS and JCES Buildings as Compared to USEPA Exposure Levels for Evaluating PCBs in Indoor School Air[1]
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

School	Number of Indoor Samples	Below Reporting Limit (RL)	Above RL and Below 200 ng/m^3	Above 200 ng/m^3
Pre-BMP				
MHS	4	4	None	None
JCES	3	3	None	None
Post-BMP				
MHS	13	13	None	None
JCES	3	3	None	None

Note:

1. No concentrations were greater than the lowest USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air of 200, 300, 500, 600, and 500 ng/m^3 for children three to less than six years old, elementary school (six to less than 12 years old), middle school, high school, and faculty/adults, respectively (USEPA, 2015c).

Abbreviations:
BMP = Best Management Practices
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
ng/m^3 = nanogram per cubic meter
PCB = polychlorinated biphenyl
RL = Reporting limit
USEPA = United States Environmental Protection Agency

Reference:
USEPA. 2015c. Exposure Levels for Evaluating PCBs in Indoor School Air. July 28. Available online: http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulk/pdf/pcb_bdg_mat_qa.pdf.

Table 3-2. Summary of Pre- and Post-BMP Surface Wipe Sample Results for MHS and JCES Buildings as Compared to the USEPA Region IX Benchmark[1]
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

School	Number of Samples	Below Reporting Limit (RL)	Above RL and Below 1 µg/100 cm^2	Above 1 µg/100 cm^2
Pre-BMP				
MHS	9	9	None	None
JCES	5	5	None	None
Post-BMP				
MHS	43	43	None	None
JCES	12	12	None	None

Note:
1. USEPA Region IX benchmark for surface wipe samples is 1 µg/100 cm^2.

Abbreviations:
BMP = Best Management Practices
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
RL = Reporting limit
USEPA = United States Environmental Protection Agency
µg/100 cm^2 = microgram per 100 square centimeter

Table 3-3. Summary of Air Sample Results for the Additional 21 Regularly Occupied Rooms in MHS and JCES Buildings as Compared to USEPA Exposure Levels for Evaluating PCBs in Indoor School Air[1]
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

Building	Room Placard ID	Floor Plan Room ID	Below Reporting Limit (RL)	Above RL and Below 200 ng/m^3	Above 200 ng/m^3
MHS					
A (800, Great White Shark)	802	207	1	None	None
	820	107	2	None	None
B/C (900, Whale Shark)	904	138	1	None	None
	907	125	1	None	None
	908F	114	1	None	None
	912B	104, 105, 106	1	None	None
	912F	111	1	None	None
D (100/200, Mako Shark)	202	202	1	None	None
	203	203	1	None	None
	204	204	1	None	None
	208	208	1	None	None
	210	210	1	None	None
	213	213	1	None	None
G (500, Angel Shark)	500	406S	2	None	None
	500B	406A	1	None	None
J (700, Old Gymnasium)	703	114	1	None	None
	Boys' Locker Room	130, 140	1	None	None
	Boys' Team Room	142	1	None	None
JCES					
A	Teachers' Lounge	100A	1	None	None
B	R4	4	2	None	None
D	R15	15	1	None	None

Note:
1. No concentrations were greater than the lowest USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air of 200, 300, 500, 600, and 500 ng/m^3 for children three to less than six years old, elementary school (six to less than 12 years old), middle school, high school, and faculty/adults, respectively (USEPA, 2015c).

Abbreviations:
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
ng/m^3 = nanogram per cubic meter
PCB = polychlorinated biphenyl
RL = Reporting limit
USEPA = United States Environmental Protection Agency

Reference:
USEPA. 2015c. Exposure Levels for Evaluating PCBs in Indoor School Air. July 28. Available online: http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulk/pdf/pcb_bdg_mat_qa.pdf.

Table 3-4. Summary of Surface Wipe Sample Results for the Additional 21 Regularly Occupied Rooms in MHS and JCES Buildings as Compared to the USEPA Region IX Benchmark[1]
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

Building	Room Placard ID	Floor Plan Room ID	Below Reporting Limit (RL)	Above RL and Below 1 µg/100 cm^2	Above 1 µg/100 cm^2
MHS					
A (800, Great White Shark)	802	207	3	None	None
	820	107	3	None	None
B/C (900, Whale Shark)	904	138	4	None	None
	907	125	3	None	None
	908F	114	4	None	None
	912B	104, 105, 106	3	None	None
	912F	111	3	None	None
D (100/200, Mako Shark)	202	202	4	None	None
	203	203	4	None	None
	204	204	4	None	None
	208	208	4	None	None
	210	210	4	None	None
	213	213	3	None	None
G (500, Angel Shark)	500	406S	4	None	None
	500B	406A	4	None	None
J (700, Old Gymnasium)	703	114	3	None	None
	Boys' Locker Room	130, 140	2	1 (0.22 µg/100 cm^2)	None
	Boys' Team Room	142	4	None	None
JCES					
A	Teachers' Lounge	100A	3	None	None
B	R4	4	4	None	None
D	R15	15	4	None	None

Note:
1. USEPA Region IX benchmark for surface wipe samples is 1 µg/100 cm^2.

Abbreviations:
BMP = Best Management Practices
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
RL = Reporting limit
USEPA = United States Environmental Protection Agency
µg/100 cm^2 = microgram per 100 square centimeter

Table 4-1. Summary of Final Post-Decontamination Surface Wipe Sample Results for MHS and JCES Summer Break 2015 Sampling as Compared to the USEPA Region IX Benchmark[1]
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

Building	Room Placard ID	Floor Plan Room ID	Sampling Date	Below Reporting Limit (RL)	Above RL and Below 1 µg/100 cm^2	Above 1 µg/100 cm^2
MHS						
E (000, Blue Shark)	1	116	6/12/2015	None	7 (max: 0.89 µg/100 cm^2)	None
	3	118	6/15/2015	2	5 (max: 0.66 µg/100 cm^2)	None
	5	120	6/14/2015	1	6 (max: 0.42 µg/100 cm^2)	1[2] (1.5 µg/100 cm^2)
	7	122	6/15/2015	2	5 (max: 0.93 µg/100 cm^2)	None
	8	102	6/14/2015; 6/22/2015	7	3 (max: 0.92 µg/100 cm^2)	None
JCES						
F	R18	18	7/28/2015	1	7 (max: 0.64 µg/100 cm^2)	None
	R19	19	7/28/2015	None	8 (max: 0.32 µg/100 cm^2)	None
	R22	22	7/19/2015	2	4 (max: 0.28 µg/100 cm^2)	None
	R23	23	7/19/2015	None	7 (max: 0.52 µg/100 cm^2)	None

Notes:
1. USEPA Region IX benchmark for surface wipe samples is 1 µg/100 cm^2.
2. The 95% UCL PCB concentration was 0.922 µg/100 cm^2, which is below the USEPA's benchmark of 1 µg/100 cm^2.

Abbreviations:
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
RL = Reporting limit
USEPA = United States Environmental Protection Agency
µg/100 cm^2 = microgram per 100 square centimeter

Table 4-2. Summary of Post-Encapsulation Surface Wipe Sample Results for MHS and JCES Summer Break 2015 Sampling as Compared to the USEPA Region IX Benchmark[1]

Malibu High School and Juan Cabrillo Elementary School

Malibu, California

Building	Room Placard ID	Floor Plan Room ID	Below Reporting Limit (RL)	Above RL and Below 1 µg/100 cm^2	Above 1 µg/100 cm^2
MHS					
A (800, Great White)	801	208	7	None	None
E (000, Blue Shark)	1	116	3	None	None
	3	118	3	None	None
G (500, Angel Shark)	505	404N	6	None	None
	506	403	8	None	None
I (400, Leopard Shark)	401	401	11	None	None
J (700, Old Gymnasium)	704/704 Hallway	117/115A	11	None	None
	705	115	3	None	None
JCES					
F	R18	18	1	None	None
	R19	19	1	None	None
	R22	22	1	None	None
	R23	23	1	None	None

Note:

1. USEPA Region IX benchmark for surface wipe samples is 1 µg/100 cm^2.

Abbreviations:

JCES = Juan Cabrillo Elementary School

MHS = Malibu High School

PCB = polychlorinated biphenyl

RL = Reporting limit

USEPA = United States Environmental Protection Agency

µg/100 cm^2 = microgram per 100 square centimeter

Table 4-3. Summary of Post-Removal Air Sample Results for MHS and JCES Summer Break 2015 Sampling as Compared to USEPA Exposure Levels for Evaluating PCBs in Indoor School Air[1]

Malibu High School and Juan Cabrillo Elementary School
Malibu, California

Building	Room Placard ID	Floor Plan Room ID	Below Reporting Limit (RL)	Above RL and Below 200 ng/m^3	Above 200 ng/m^3
MHS					
A (800, Great White)	801	208	1	None	None
E (000, Blue Shark)	1	116	1	None	None
	3	118	1	None	None
	5	120	1	None	None
	7	122	1	None	None
	8	102	2	None	None
G (500, Angel Shark)	505	404N	1	None	None
	506	403	1	None	None
I (400, Leopard Shark)	401	401	2	None	None
J (700, Old Gymnasium)	704/704 Hallway	117/115A	1	None	None
	705	115	1	None	None
JCES					
F	R18	18	1	None	None
	R19	19	1	None	None
	R22	22	1	None	None
	R23	23	1	None	None

Note:

1. No concentrations were greater than the lowest USEPA's Exposure Levels for Evaluating PCBs in Indoor School Air of 200, 300, 500, 600, and 500 ng/m^3 for children three to less than six years old, elementary school (six to less than 12 years old), middle school, high school, and faculty/adults, respectively (USEPA, 2015c).

Abbreviations:

JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
ng/m^3 = nanogram per cubic meter
PCB = polychlorinated biphenyl
RL = Reporting limit
USEPA = United States Environmental Protection Agency

Reference:

USEPA. 2015c. Exposure Levels for Evaluating PCBs in Indoor School Air. July 28. Available online: http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulk/pdf/pcb_bdg_mat_qa.pdf.

Table 4-4. Summary of Final Post-Removal Surface Wipe Sample Results for MHS and JCES Summer Break 2015 Sampling as Compared to the USEPA Region IX Benchmark[1]
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

Building	Room Placard ID	Floor Plan Room ID	Sampling Date	Below Reporting Limit (RL)	Above RL and Below 1 µg/100 cm^2	Above 1 µg/100 cm^2
MHS						
A (800, Great White Shark)	801	208	7/5/2015	7	None	None
E (000, Blue Shark)	1	116	7/17/2015	3	None	None
	3	118	7/17/2015	2	2 (max: 0.25 µg/100 cm^2)	None
	5	120	6/30/2015	4	1 (0.26 µg/100 cm^2)	None
	7	122	6/30/2015	1	1 (0.44 µg/100 cm^2)	None
	8	102	7/8/2015	None	4 (0.46 µg/100 cm^2)	1[2] (1.1 µg/100 cm^2)
G (500, Angel Shark)	505	404N	8/7/2015	None	2 (max: 0.29 µg/100 cm^2)	None
	506	403	7/5/2015	6	None	1[2] (1.4 µg/100 cm^2)
I (400, Leopard Shark)	401	401	6/28/2015	8	None	None
J (700, Old Gymnasium)	704/704 Hallway	117/115A	6/28/2015	9	None	None
	705	115	6/28/2015	2	1 (0.34 µg/100 cm^2)	None
JCES						
F	R18	18	8/9/2015	1	1 (0.21 µg/100 cm^2)	None
	R19	19	8/5/2015	4	2 (max: 0.26 µg/100 cm^2)	1[2] (1.0 µg/100 cm^2)
	R22	22	7/28/2015	7	None	None
	R23	23	7/28/2015	5	2 (max: 0.16 µg/100 cm^2)	None

Notes:
1. USEPA Region IX benchmark for surface wipe samples is 1 µg/100 cm^2.
2. The 95% UCL PCB concentration for MHS Building E (000, Blue Shark) Room 8 was 0.994 µg/100 cm^2, MHS Building G (500, Angel Shark) Room 506 was 0.868 µg/100 cm^2, and JCES Building F Room 19 was 0.697 µg/100 cm^2. All of which are below the USEPA's benchmark of 1 µg/100 cm^2.

Abbreviations:
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
PCB = polychlorinated biphenyl
RL = Reporting limit
USEPA = United States Environmental Protection Agency
µg/100 cm^2 = microgram per 100 square centimeter

Table 5-1. Duplicate Air Sample Summary
Malibu High School and Juan Cabrillo Elementary School
Malibu, California

School	Building	Placard Room ID	Floor Plan Room ID	Room Description	Total PCB Air Concentration (ng/m^3)		
					Primary	Duplicate	Percent Difference
Pre-BMP Cleaning							
JCES	B	R1	1	Special Education Classroom	ND (<69)	ND (<70)	0% (both ND)
Post-BMP Cleaning							
MHS	D (100 & 200, Mako Shark)	211	211	Classroom	ND (<69)	ND (<68)	0% (both ND)
Additional 21 Regularly Occupied Rooms[1]							
MHS	A (800, Great White Shark)	820	107	Workspace	ND (<69)	ND (<69)	0% (both ND)
	G (500, Angel Shark)	500	406S	Special Education Room	ND (<70)	ND (<69)	0% (both ND)
JCES	B	R4	4	Student Support Services	ND (<70)	ND (<70)	0% (both ND)
Post-Removal Confirmation							
MHS	E (000, Blue Shark)	8	102	Classroom	ND (<70)	ND (<69)	0% (both ND)
	I (400, Leopard Shark)	401	401	Classroom	ND (<70)	ND (<69)	0% (both ND)

Note:
1. Regularly occupied rooms are defined as typically occupied by an individual on a daily basis, excluding weekends, for at least 4 hours per day.

Abbreviations:
BMP = Best Management Practices
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
ND = Compound was analyzed for but not detected above the laboratory reporting limit
PCB = polychlorinated biphenyl
ng/m^3 = nanograms per cubic meter (1,000 ng/m^3 = 1 $\mu g/m^3$)

Table 5-2. Duplicate Surface Wipe Sample Summary
Malibu High School and Juan Cabrillo Elementary Schoo
Malibu, California

School	Building	Placard Room ID	Floor Plan Room ID	Room Description	Surface Description	Material Sampled Description	Total PCB Surface Wipe Concentration (µg/100 cm^2)		
							Primary	Duplicate	Percent Difference
Pre-BMP Cleaning									
MHS	H (Cafeteria/Auditorium)	601	113	Dressing Room	counter top	laminate	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
Post-BMP Cleaning									
MHS	A (800, Great White Shark)	800	203	Library	table	wood laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
	B/C (900, Whale Shark)	908D	112	Counselor's Office	desk	wood laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
	G (500, Angel Shark)	504	404S	Art Classroom	counter top	laminate	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
JCES	B	R2	2	Special Education Room	counter top, sink adjacent	laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
	E	163A	163A	Workroom	cabinet	wood laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
Additional 21 Regularly Occupied Rooms[1]									
MHS	B/C (900, Whale Shark)	904	138	Conference Room	cabinet	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
		908F	114	Counselor's Office	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
	D (100/200, Mako Shark)	204	204	Classroom	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
		208	208	Classroom	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
	G (500, Angel Shark)	500	406S	Special Education Room	desk	wood laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
JCES	B	R4	4	Student Support Services	counter top, sink adjacent	laminate	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
Post-Decontamination									
MHS	E (000, Blue Shark)	3	118	Classroom	window jamb	metal	ND (<0.10) UJ	0.19 J	62%
		5	120	Classroom	window sill	metal and plaster	0.19 J	0.35 J	59%
		7	122	Classroom	window jamb	metal	0.93 J	0.66 J	34%
JCES	F	R18	18	PTA Room	window sill	metal	**3.2 J**	**3.4 J**	6%
					window sill	metal	0.25	0.39	44%
		R19	19	Music Room	window sill	metal	**33**	**27**	20%
					window sill	metal	ND (<0.10)	0.15	40%
					window sill	metal	0.21	0.18	15%
		R22	22	Art Classroom	window sill	metal	**1.0 J**	**1.7 J**	52%
		R23	23	Overflow Room/Music Room	window sill	metal	**2.0 J**	**2.8 J**	33%
					window jamb	metal	0.42	0.14	100%
Post-Encapsulation									
MHS	A (800, Great White Shark)	801	208	Computer Lab/Library	window sill	encapsulated plaster	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
	E (000, Blue Shark)	3	118	Classroom	wall	encapsulated stucco	ND (<0.10)	ND (<0.10)	0% (both ND)
	G (500, Angel Shark)	505	404N	Art Classroom	wall	encapsulated wood	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
		506	403	Wood Shop	wall	encapsulated wood	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
	J (700, Old Gymnasium)	704/704 Hallway	117/115A	Faculty Office/Hallway	wall	encapsulated brick	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
Post-Removal Confirmation									
MHS	E (000, Blue Shark)	1	116	Classroom	window jamb	metal and plaster	0.11 J	0.31 J	95%
					wall	plaster	ND (<0.10)	ND (<0.10)	0% (both ND)
		3	118	Classroom	window jamb	metal	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
					wall	Plaster	**1.9**	0.92	70%
		5	120	Classroom	window sill	metal and plaster	**1.4 J**	0.94 J	39%
		8	102	Classroom	floor	vinyl tile	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
					window sill	metal and plaster	0.22	0.46	71%
	G (500, Angel Shark)	506	403	Wood Shop	desk	wood laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
	I (400, Leopard Shark)	401	401	Classroom	wall	encapsulated plaster	ND (<0.10) UJ	ND (<0.10) UJ	0% (both ND)
	J (700, Old Gymnasium)	704/704 Hallway	117/115A	Faculty Office/Hallway	floor	vinyl tile	ND (<0.10)	ND (<0.10)	0% (both ND)

Table 5-2. Duplicate Surface Wipe Sample Summary
Malibu High School and Juan Cabrillo Elementary Schoo
Malibu, California

School	Building	Placard Room ID	Floor Plan Room ID	Room Description	Surface Description	Material Sampled Description	Total PCB Surface Wipe Concentration (µg/100 cm^2)		
							Primary	Duplicate	Percent Difference
JCES	F	R18	18	PTA Room	window sill	metal and caulk	**11**	**3.8**	97%
		R19	19	Art Classroom	counter top	laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
		R22	22	Music Room	desk	wood laminate	ND (<0.10)	ND (<0.10)	0% (both ND)
		R23	23	Overflow Room/Music Room	table	wood laminate	ND (<0.10)	ND (<0.10)	0% (both ND)

Notes:
1. Regularly occupied rooms are defined as typically occupied by an individual on a daily basis, excluding weekends, for at least 4 hours per day.
2. Yellow colored cells and bold font indicate concentrations were greater than USEPA's Region IX Benchmark of 1 µg/100 cm^2.

Abbreviations:
BMP = Best Management Practices
J = indicates and estimated value
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
ND = Compound was analyzed for but not detected above the laboratory reporting limit
PCB = polychlorinated biphenyl
PTA = Parent Teacher Association
UJ = indicates the compound or analyte was analyzed for but not detected; the sample detection limit is an estimated value
µg/100 cm^2 = microgram per 100 square centimeters

Table 5-3. Replicate Surface Wipe Sample Summary
Malibu High School and Juan Cabrillo Elementary Schoo
Malibu, California

School	Building	Placard Room ID	Floor Plan Room ID	Room Description	Surface Description	Material Sampled Description	Total PCB Surface Wipe Concentration (µg/100 cm^2)	
							Primary	Replicate
Pre-BMP Cleaning								
JCES	B	R1	1	Special Education Classroom	counter top	laminate	ND (<0.10) UJ	ND (<0.10) UJ
Post-BMP Cleaning								
MHS	A (800, Great White Shark)	801A	209, 210	Office/Storage Room	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ
	B/C (900, Whale Shark)	908C	120	Counselor's Office	desk	wood laminate	ND (<0.10)	ND (<0.10)
	D (100/200, Mako Shark)	211	211	Classroom	book shelf	wood laminate	ND (<0.10)	ND (<0.10)
	H (Cafeteria/Auditorium)	605A	120	Office	desk	wood laminate	ND (<0.10)	ND (<0.10)
JCES	C	R10	10	2nd Grade Classroom	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ
Additional 21 Regularly Occupied Rooms[1]								
MHS	D (100/200, Mako Shark)	202	202	Classroom	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ
		203	203	Classroom	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ
		210	210	Classroom	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ
	G (500, Angel Shark)	500B	406A	Community Resource Center	table	wood laminate	ND (<0.10)	ND (<0.10)
	J (700, Old Gymnasium)	Boys' Team Room	142	Team Room	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ
JCES	D	R15	15	Classroom	desk	wood laminate	ND (<0.10) UJ	ND (<0.10) UJ
Post-Decontamination								
MHS	E (000, Blue Shark)	1	116	Classroom	window sill	metal and plaster	0.61 J	0.49 J
		5	120	Classroom	window sill	metal and plaster	0.16 J	ND (<0.10) UJ
		8	102	Classroom	window jamb	metal	ND (<0.10) UJ	ND (<0.10) UJ
					window jamb	metal	ND (<0.10) UJ	ND (<0.10) UJ
JCES	F	R18	18	PTA Room	window sill	metal	0.97	**2.8**
					window sill	metal	**1.3**	ND (<0.10)
					window sill	metal	0.64	0.17
		R19	19	Music Room	window sill	metal	**5.4**	**2.4 J**
					window sill	metal	0.12	0.11
		R22	22	Art Classroom	window sill	metal	**22**	**5.7**
		R23	23	Overflow Room/Music Room	window sill	metal	**2.8 J**	0.59 J
Post-Encapsulation								
MHS	E (000, Blue Shark)	1	116	Classroom	wall	encapsulated stucco	ND (<0.10)	ND (<0.10)
	G (500, Angel Shark)	506	403	Wood Shop	wall	encapsulated wood	ND (<0.10) UJ	ND (<0.10) UJ
	I (400, Leopard Shark)	401	401	Classroom	wall	encapsulated plaster	ND (<0.10) UJ	ND (<0.10) UJ
					wall	encapsulated plaster	ND (<0.10) UJ	ND (<0.10) UJ
	J (700, Old Gymnasium)	704/704 Hallway	117/115A	Faculty Office/Hallway	window sill	encapsulated ceramic tile	ND (<0.10) UJ	ND (<0.10) UJ
Post-Removal Confirmation								
MHS	A (800, Great White Shark)	801	208	Computer Lab/Library	table	wood laminate	ND (<0.10)	ND (<0.10)
	E (000, Blue Shark)	1	116	Classroom	wall	plaster	0.31 J	0.17
		3	118	Classroom	window sill	metal and plaster	**6.3 J**	**7.1 J**
					window sill	metal and plaster	0.48	0.19
				Classroom	wall	plaster	ND (<0.10)	ND (<0.10)
		5	120	Classroom	window jamb	metal	ND (<0.10) UJ	ND (<0.10) UJ
		7	122	Classroom	window sill	metal and plaster	**4.8 J**	**2.8 J**
	G (500, Angel Shark)	505	404N	Art Classroom	table	wood laminate	ND (<0.10)	ND (<0.10)
		506	403	Wood Shop	table	wood	ND (<0.10)	ND (<0.10)
	J (700, Old Gymnasium)	704/704 Hallway	117/115A	Faculty Office/Hallway	window sill	encapsulated brick and metal	ND (<0.10)	ND (<0.10)

Table 5-3. Replicate Surface Wipe Sample Summary
Malibu High School and Juan Cabrillo Elementary Schoo
Malibu, California

School	Building	Placard Room ID	Floor Plan Room ID	Room Description	Surface Description	Material Sampled Description	Total PCB Surface Wipe Concentration (µg/100 cm^2)	
							Primary	Replicate
JCES	F	R18	18	PTA Room	counter top	laminate	ND (<0.10)	ND (<0.10)
		R19	19	Art Classroom	window sill	metal and caulk	0.26	0.15
		R22	22	Music Room	window sill	metal and caulk	ND (<0.10)	ND (<0.10)
		R23	23	Overflow Room/Music Room	window sill	metal and caulk	0.10	ND (<0.10)

Notes:
1. Regularly occupied rooms are defined as typically occupied by an individual on a daily basis, excluding weekends, for at least 4 hours per day.
2. Yellow colored cells and bold font indicate concentrations were greater than USEPA's Region IX Benchmark of 1 µg/100 cm^2.

Abbreviations:
BMP = Best Management Practices
J = indicates and estimated value
JCES = Juan Cabrillo Elementary School
MHS = Malibu High School
ND = Compound was analyzed for but not detected above the laboratory reporting limit
PCB = polychlorinated biphenyl
UJ = indicates the compound or analyte was analyzed for but not detected; the sample detection limit is an estimated value
µg/100 cm^2 = microgram per 100 square centimeters

FIGURES

Building D (200, Mako Shark)

Building A
(800, Great White Shark, Basement)

Legend

Regularly Occupied Rooms (i.e., occupied by an individual for at least 4 hours per work day) not Previously Sampled Prior to August 2015

Number of Sample Events

Air	Surface Wipe	Caulking
1	1	1
2	2	
3	3	
4	4	
5	5	
6	6	
7		

Number of Samples Taken	Winter 2013-2014 Events (Phylmar Group)		Summer 2014 Events		Winter 2014-2015 Event	Summer 2015 Events			Total
	Pre-BMP*	Post-BMP	Pre-BMP	Initial Post-BMP		Pre-BMP	Post-BMP	Initial Post-Removal	
Air	21	18	51	72	26	4	33	13	238
Surface Wipe	30	8	114	249	152	9	107	70	739

*BMP = Best Management Practice Annual Cleaning

N

0 30 60

Feet

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RAMBOLL ENVIRON

DRAFTED BY: RRH | Date: 9/22/2015

Air, Surface Wipe, and Caulking Sampling Counts at Malibu High School

Malibu High School
30215 Morning View Drive, Malibu, California

Figure
ES-1

PROJECT: 0438524A

Legend

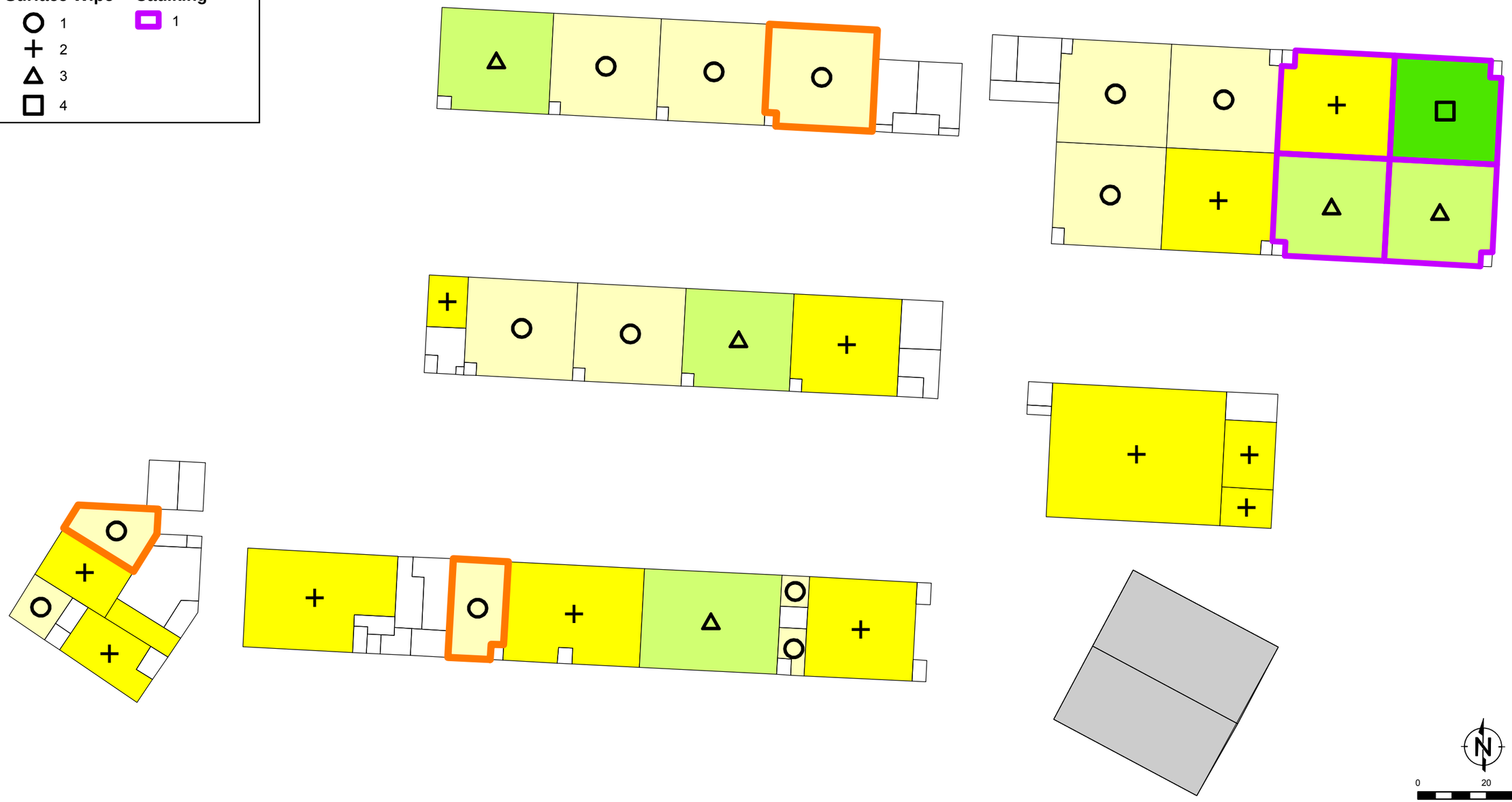
Regularly Occupied Rooms (i.e., occupied by an individual for at least 4 hours per work day) not Previously Sampled Prior to August 2015

Number of Sample Events

Air	Surface Wipe	Caulking
1	1	1
2	2	
3	3	
4	4	

Number of Samples Taken	Winter 2013-2014 Events (Phylmar Group)		Summer 2014 Events		Winter 2014-2015 Event	Summer 2015 Events			Total
	Pre-BMP*	Post-BMP	Pre-BMP	Initial Post-BMP		Pre-BMP	Post-BMP	Initial Post-Removal	
Air	0	0	11	29	8	3	7	4	62
Surface Wipe	0	0	22	84	42	5	23	24	200

*BMP = Best Management Practice Annual Cleaning



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Feet

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RAMBOLL ENVIRON

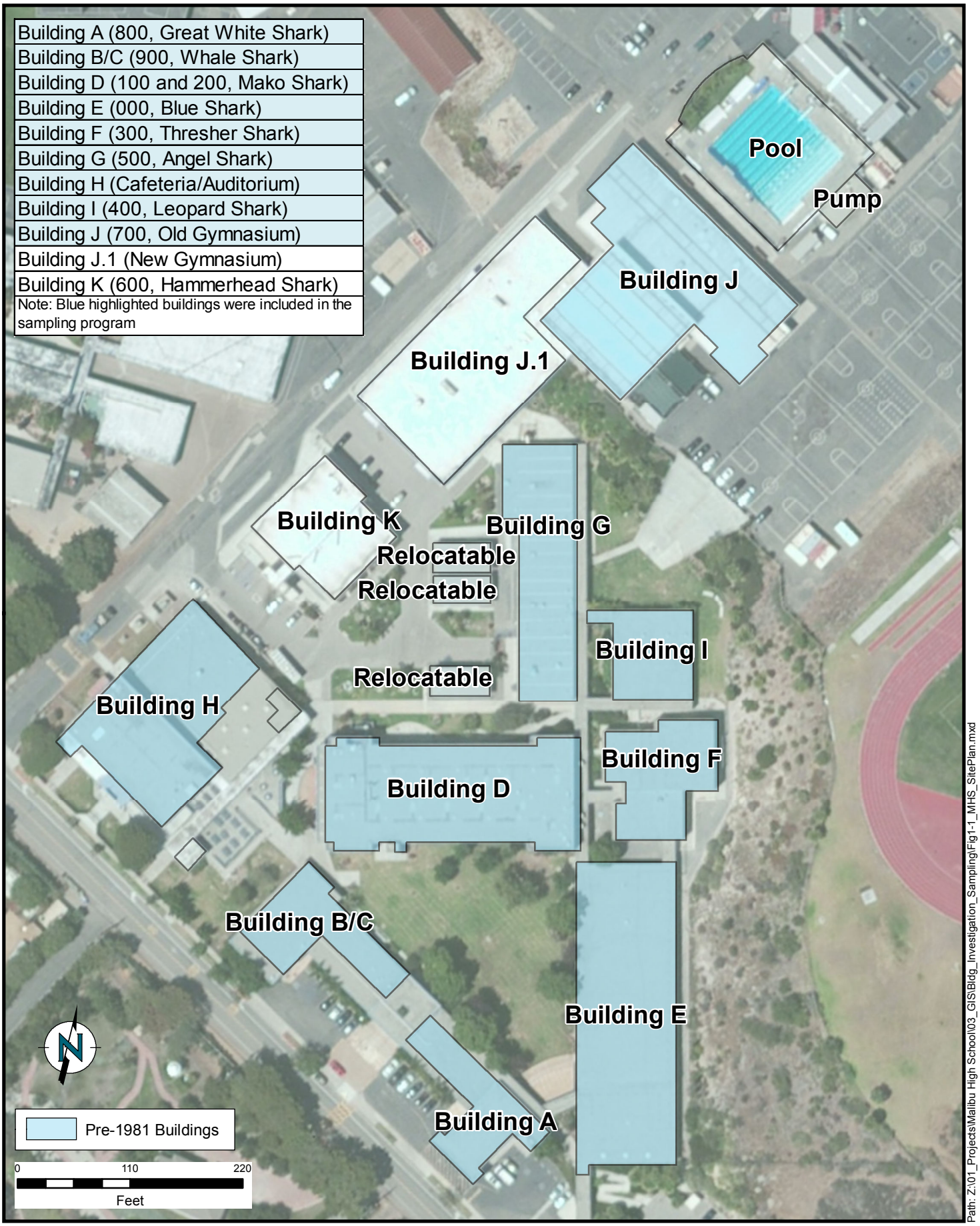
DRAFTED BY: RRH | Date: 9/22/2015

Air, Surface Wipe, and Caulking Sampling Counts at Juan Cabrillo Elementary School

Juan Cabrillo Elementary School
30237 Morning View Drive, Malibu, California

Figure
ES-2

PROJECT: 0438524A



RAMBOLL ENVIRON

Site Plan for Malibu High School

Malibu High School
30215 Morning View Drive, Malibu, California

Figure
1-1

DRAFTED BY: MMG | Date: 9/17/2015 | PROJECT: 0433980Q

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RAMBOLL ENVIRON

Site Plan for Juan Cabrillo Elementary School

Juan Cabrillo Elementary School
30237 Morning View Drive, Malibu, California

Figure
1-2

DRAFTED BY: MMG | Date: 9/17/2015 | PROJECT: 0433980Q