Proactive by Design

LIMITED HAZARDOUS MATERIALS INVESTIGATION REPORT KINGSBRIDGE NATIONAL ICE CENTER 29 WEST KINGSBRIDGE ROAD BRONX, NEW YORK 10468

PREPARED FOR:
KNIC Properties, LP
920 Broadway, 12th Floor
New York, New York 10010

PREPARED BY:
GZA GeoEnvironmental of New York
104 West 29th Street, 10th Floor
New York, New York 10001

December 2015

File No. 41.0162348.20

An Equal Opportunity Employer M/F/V/H

Proactive by Design

Table of Contents

1.00 INTRODUCTION AND PURPOSE 1
1.10 PROJECT OBJECTIVE 1
1.20 SCOPE OF WORK 1
2.00 SITE DESCRIPTION 3
2.10 SITE LOCATION 3
2.20 SITE DESCRIPTION 3
2.30 SITE HISTORY 3
3.00 PREVIOUS INVESTIGATIONS 4
3.10 ENVIRONMENTAL SURVEY REPORT - 2000 4
3.20 ASBESTOS INVESTIGATION - 2008 4
4.00 SURVEY METHODOLOGIES AND RESULTS 6
4.10 ASBESTOS SURVEY 6
4.10.1 Asbestos Sampling Procedures 6
4.10.2 Sample Analysis 8
4.10.3 Asbestos Analytical Results 8
4.10.4 Asbestos Abatement Regulations 9
4.20 LEAD PAINT SURVEY 9
4.20.1 Sampling Procedures 9
4.20.2 Paint Sample Analysis 10
4.20.3Paint Analytical Results 10
4.30 ASSESSMENT FOR HAZARDOUS CHEMICALS AND WASTE 10
4.40 UNIVERSAL WASTE 11
4.50 POLYCHLORINATED BIPHENYL (PCB)–CONTAINING EQUIPMENT 11
4.60 CAULKING AND GLAZING 12
5.00 CONCLUSIONS 13

Tables

Table 1 Summary of Findings
Table 2 Asbestos Sample Results Summary
Table 3 Lead Paint Sample Results Summary
Table 4 TCLP Sample Results Summary
Table 5 Universal and Hazardous Materials Waste Inventory Summary
Table 6 PCB Sample Results Summary

Proactive by Design

Figures

Figure 1	Site Location
Figure 2	ACM Bulk Sample Location Basement and Sub-Basement Plan
Figure 3	ACM Bulk Sample Location Basement Mezzanine Plan
Figure 4	ACM Bulk Sample Location First Floor “Drill Floor” Plan
Figure 5	ACM Bulk Sample Location First Floor Mezzanine Plan
Figure 6	ACM Bulk Sample Location Second Floor Plan
Figure 7	ACM Bulk Sample Location Third Floor Plan
Figure 8	PCB/TCLP/Lead Sample Location Basement and Sub-Basement Plan
Figure 9	PCB/TCLP/Lead Sample Location Basement Mezzanine Plan
Figure 10	PCB/TCLP/Lead Sample Location First Floor “Drill Floor” Plan
Figure 11	PCB/TCLP/Lead Sample Location Second Floor Plan
Figure 12	PCB/TCLP/Lead Sample Location Third Floor Plan

Appendices

Appendix A	Limitations
Appendix B	Site Photographs
Appendix C	Company and Inspector Certification
Appendix D	Asbestos Laboratory Accreditations
Appendix E	ACM Laboratory Results
Appendix F	Lead Paint/TCLP Laboratory Results
Appendix G	PCB Laboratory Results

Proactive by Design

1.00 INTRODUCTION AND PURPOSE

This report presents the findings of a Hazardous Materials Investigation (HMI) conducted by GZA GeoEnvironmental of New York (GZA) at the planned at the Kingsbridge Armory property, which is located at 29 West Kingsbridge Road, Bronx, New York (the Site). KNIC Properties, LP (the Client) plans to develop the Armory into the Kingsbridge National Ice Center (KNIC). GZA conducted its HMI activities in accordance with GZA Proposal No. 41.P000342.15 dated January 29, 2015.

GZA developed its project understanding based on the Request for Proposal (RFP) for Hazardous Materials Consulting Services, dated January 5, 2014 developed by BBB Architects. GZA also performed a Site walkthrough on January 8, 2015 and on October 26, 2015. This report is subject to the limitations found in **Appendix A**.

1.10 PROJECT OBJECTIVE

The objective of this project was to identify, sample, and quantify asbestos-containing materials (ACM), lead paint (LP), polychlorinated biphenyls (PCB), hazardous building materials, and universal waste properties in preparation for the planned redevelopment of the historic Kingsbridge Armory building.

1.20 SCOPE OF WORK

Our scope of work involved visually identifying and classifying hazardous conditions within the Site, reviewing previous investigations performed by others and integrating these findings into a comprehensive inventory of hazardous materials found at the Site. GZA observed structural components, utility systems (electrical, mechanical, and plumbing), interior spaces, building contents, and the immediate exterior surroundings of the building. GZA collected samples of suspect materials present that might affect future building demolition and renovation activities.

GZA's strategy was to investigate the presence of hazardous materials through direct observations and testing, and to compare those testing results to regulatory benchmarks and the stipulated limitations listed in **Appendix A**.

This limited hazardous materials investigation is intended to supplement investigations performed by others and provide the Client with a current survey of hazardous materials at the Site. The City of New York currently owns the Site, and GZA conducted the HMI survey under the constraints of a Site Access Agreement. Therefore, destructive sampling methods (roofing materials and windows) were not permissible as they might affect the building envelop.

GZA used limited intrusive methods to investigate suspect homogenous materials from several areas in the sub-basement, basement, basement mezzanine, 1st floor, 1st floor mezzanine, 2nd floor, 3rd floor, 4th floor/tower level, and select roof penetrations (performed by others).

Proactive by Design

GZA did not conduct extensive destructive/invasive explorations of the interiors of boilers, wall cavities, charged or concealed electrical systems, and energized mechanical and pneumatic equipment. GZA did not dismantle mechanical equipment or collect samples from areas that were inaccessible.

This report provides a brief description of the environmental conditions present, along supporting documentation from previous investigations performed by others, our scope of work, estimates and types and quantities of potential hazardous materials present, and conclusions based upon observations of items that were visible and accessible by reasonable and ordinary means.

An Equal Opportunity Employer M/F/V/H

Proactive by Design

2.00 SITE DESCRIPTION

2.10 SITE LOCATION

The planned Kingsbridge National Ice Center will occupy the historic Kingsbridge Armory building located at 29 West Kingsbridge Road, in the Fordham Manor neighborhood of the Bronx, New York. The Site is bound by West 195th Street to the north, Jerome Avenue to the east, West Kingsbridge Road to the south and Reservoir Avenue to the west, The Site is in an area zoned mainly for residential and commercial use. Presented on **Figure 1** is a Site Location Plan.

2.20 SITE DESCRIPTION

The Site is identified as Block 3247 Lot 10 in the New York City Tax Map. The historic Kingsbridge Armory, a multi-story red brick edifice covered with a curved sloping metal roof, occupies Lot 10. A corbeled stone stringcourse runs the length of the building below the parapet roof. Above the corbels, and at the corners, are turrets that are spaced at regular intervals. To the south, is the main entrance marked by two semi-attached towers with conical roofs that rises above the main roofline. This entrance leads to a three-story office wing distinguished by angled walls, two low round towers with conical roofs and cupolas and two square towers.

Beyond the office wing is the 180,000 square foot drill hall with a balcony-level seating area covered by a metal and glass roof supported by double-truss arch spans. Found beneath the main drill hall were sub-basement levels and a basement mezzanine. The basement mezzanine level consisted of former offices, bathrooms, storage areas, hallways, a homeless shelter area along West 195th Street, seating above a sub-basement gymnasium and seating above a sub-basement theater. The sub-basement consisted of former office areas, locker rooms, bathrooms, hallways, two gymnasiums, a theater, storage areas, three pistol ranges, two rifle ranges, a boiler room, a crawlspace running the length of the building along West Kingsbridge Road and a large motor pool area that serviced vehicles. Photographs of select Site features are included in **Appendix B**.

2.30 SITE HISTORY

Pilcher & Tulchau designed and built the Kingsbridge Armory between 1912 and 1917. The armory was built on top of the then proposed eastern basin of the Jerome Avenue Reservoir to house the National Guard's Eighth Coastal Artillery Regiment unit which relocated from Manhattan. The property was later used as a registration facility for immigrants from enemy nations during the Second World War. After the war, the property was used as a temporary meeting place for the United Nations General Assembly. Then in 1974, the Armory was designated as a city landmark by the Landmarks Preservation Commission.

By the 1980s, portions of the property were used as a homeless shelter while the main armory building was neglected. By the 1990s, a majority of the Site was in disrepair. The Army National Guard eventually moved their operations offsite to the two buildings to the north. At the time of GZA's surveys, the Site was unoccupied and the entire perimeter is surrounded by a chain-linked fence.

Proactive by Design

3.00 PREVIOUS INVESTIGATIONS

Prior to performing this Limited Hazardous Materials Investigations, two environmental survey reports were provided by the client and reviewed by GZA.

3.10 ENVIRONMENTAL SURVEY REPORT - 2000

ATC Associates Inc. (ATC) was contracted by ET Environmental Corporation to perform an environmental survey of the Armory in August 2000. ATC collected 225 bulk samples of suspect ACM, tested 1,290 building surfaces with portable X-ray fluorescence (XRF) analyzer for lead content, and evaluated several fluorescent and high-intensity discharge lighting (HID) ballasts. ATC also inspected the property for the presence of underground storage tanks (UST).

The survey identified an estimated 14,260 linear feet of thermal system insulation (piping, cementitious joints), 33,660 square feet of flooring materials (floor tiles, linoleum) and 235,000 square feet of roofing materials (2-tab shingles, built-up roofing, and mastics). Glazing associated with the windows and exterior joints, seams and cracks was identified as ACM. Plaster surfaces, primarily walls and ceilings were determined to be non-ACM.

The survey also confirmed lead at detectable levels and above for each painted surfaces on the each substrate as follows: 59% of brick surface, 45% of concrete surface, 73% metal surface, 89% plaster surface, and 56% wood surface.

All ballasts were found to be not labeled and/or in poor condition, and therefore ATC considered all as PCB or di-2 ethylhexyl phthalate (DEHP) containing materials. An estimated 660 light fixtures, 1,250 bulbs/tubes, 700 ballasts, and 190 metal halide lights were observed. However, no mercury containing switches were observed.

ATC indicated that evidences (e.g. vent pipes and fill ports) for at least four USTs were observed during the Assessment. An electromagnetic survey of suspect areas identified two possible USTs in the garage parking area. Additionally, ATC identified seven additional 275-gallon aboveground storage tanks (AST).

Other localized items observed by ATC include; various paints, solvents, and maintenance products; abandoned refrigeration/air conditioning units (that may contain chlorofluorocarbon compounds); several animal/bird carcasses and small quantities of avian excreta.

A summary of the ATC's observations and findings is provided in **Table 1**.

3.20 ASBESTOS INVESTIGATION - 2008

Following the ATC report, New York City Department of Design and Construction performed a large abatement of the main floor drill hall and roof. As part of a previous redevelopment project, Langan performed a supplemental asbestos investigation in September 2008. In

Proactive by Design

total, 66 bulk samples of suspect ACM were collected during the investigation. The supplemental investigation found significantly less quantities of ACM (possibly due to the intervening abatement) as follows:

- 9,048 linear feet of pipe and joint insulation
- 26,500 linear feet of wire wrap insulation
- 45 square feet of electric transite switch panel
- 1,800 square feet of floor joint material
- 1,600 square feet of wall panel glue
- 20 square feet of mirror glue
- various types of floor tiles/mastics
- 208 masonry openings of exterior and interior door caulking
- 50 square feet of original built-up roofing and flashing materials
- 58,700 square feet and additional 40 cubic yards of pipe insulation and debris with mixed plaster, wood, and other construction debris.

A summary of Langan's observations and findings is provided in **Table 1**.

Proactive by Design

4.00 SURVEY METHODOLOGIES AND RESULTS

4.10 ASBESTOS SURVEY

The asbestos survey was conducted on October 25, October 30, November 2 through November 6 and November 9, 2015 by GZA representatives, Christopher Pierce and Adam Spaulding. Mr. Pierce is an accredited New York City Department of Environmental Protection (NYCDEP) licensed Asbestos Investigator (Certificate # 116424) and New York State Department of Labor (NYSDOL) licensed Asbestos Inspector (Certificate # 89-07515) Mr. Spaulding is an accredited New York State Department of Labor (NYSDOL) licensed Asbestos Inspector (Certificate # 13-04031) who worked under the direct supervision of Mr. Pierce. Copies of licenses and certifications of GZA and its representatives are provided in **Appendix C**.

The survey was conducted in accordance with the USEPA publication, "Asbestos in Buildings". Due to inaccessibility of some areas, assumptions have been made regarding the types and quantities of certain suspect ACM.

4.10.1 Asbestos Sampling Procedures

The survey included an assessment of accessible interior and exterior spaces at the Site. The Assessment process consisted of the following steps:

- Investigation of accessible areas for materials or products that were likely to contain asbestos;
- Delineation of homogeneous areas and determination of the locations for the collection of bulk samples;
- Collection of information about the location of ACM in the building and physical characteristics that may affect the potential for ACM to be disturbed and release asbestos fibers; and
- Preparation of a tabulated inventory of suspect ACM including the location, and analytical results from bulk samples.

Procedures for locating and identifying ACM were based on guidelines published by the USEPA. The USEPA defines any material that contains greater than 1% by weight of actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite (40 CFR 61, Subpart M) as an ACM. GZA assumes that suspect ACM materials were adequately uniform in composition in order to conduct random sampling. Therefore, ACM sample locations are considered representative of the entire sampled material in each location where it is present.

There are three types of suspect ACM: Thermal System Insulation (TSI), Surfacing Materials (SM), and Miscellaneous Materials (MM). TSI are materials that resist heat flow, such as boiler, duct, and pipe insulation. SM is either sprayed or troweled-on material applied to a surface and includes fireproofing and plaster. MM are those that are not TSI or SM. Examples of MM include, but are not limited to, various forms of ceiling and floor tiles,

Proactive by Design

drywall, and roofing. These three types may be found in either friable or non-friable condition. Friability refers to the propensity of a material to release fibers.

GZA executed the fieldwork under a Site-specific Health and Safety Plan (HASP). Several spaces were deemed unsafe during the Site Assessment, which limited the efforts of the survey, as set forth below.

GZA collected the bulk samples wearing appropriate Personal Protection Equipment (PPE). Collected samples were placed in individual re-sealable plastic bags, wet wiped of visible debris, uniquely identified, recorded, and delivered to an accredited laboratory for analysis under chain-of-custody protocol. Personal decontamination was performed with the removal of PPE and hand washing.

GZA investigated and sampled materials, which were observable and accessible and included some limited destructive assessment and sampling (e.g., collecting samples from behind walls, above ceilings, beneath floor tiles, etc.). Due to safety issues and areas not readily accessible, the potential materials not inspected at the Site included:

- Possible weatherproofing materials between the exterior brick façade and interior walls;
- Interior of entrance/exit (possibly fire-rated) doors;
- Complete assessment of rolled-out roofing material (partially sampled);
- Inside of pipe chases;
- Crawlspaces;
- Head house ceiling pipe chase;
- Interior boiler equipment; and
- Concealed interior breeching and chimney lining insulation.

The report prepared in 2000 by ATC identified ACM on the roofs. A follow-up report prepared by Langan Engineering in 2008 indicated that the roof appeared to have newly built-up roofing. The NYC Building Department Records indicated that the older roof was replaced in 2002 as part of an exterior restoration project. Note that GZA avoided extensive intrusive survey of the roofs so as not void any existing warranty. The limited survey performed by GZA could not provide sufficient evidence to evaluate if the original asbestos containing roofing materials were removed to the substrate. In order to conclude that the original roofing was removed to the substrate, documentation of a past asbestos abatement of the roof areas are needed. Additionally, documentation, such as material safety data sheets for the roof materials, should be gathered from the roofing contractor.

Additional sampling might be necessary during any future building-renovation activities in order to reach materials that were inaccessible during this survey. Any uncovered materials that have not been tested and/or found positive for asbestos must be assumed ACM. **Figures 2 through 7** depict the locations of the ACM bulk samples collected by GZA.

Proactive by Design

4.10.2 Sample Analysis

Cardno ATC Laboratories (Cardno) located at 104 East 25th Street, New York, New York and J&S Environmental Laboratories LLC (J&S) located at 2333 Route 22 West Union, New Jersey analyzed the bulk samples using Polarized Light Microscopy with Dispersion Staining (PLM/DS). Cardno and J&S are participants in, and are accredited by, the National Voluntary Laboratory Accreditation Program. In conformance with the New York State Department of Health, resilient non-friable organic bound (NOB) materials (e.g., floor tiles, asphaltic materials, etc.) or materials with cellulose content, were further analyzed by Transmission Electron Microscopy (TEM) to confirm negative and inconclusive results. Copies of Cardno's and J&S' laboratory certifications are provided in **Appendix D**.

4.10.3 Asbestos Analytical Results

In total, 242 samples of suspect ACM were collected from 108 homogenous areas at the Site. A summary of asbestos analytical results is provided in **Table 2**. The laboratory reports are provided in **Appendix E**. The materials identified as ACM include the following summary:

Location	Material	Estimated Quantity
Various areas on façade	Façade mastic	500 SF
Basement Mezzanine homeless shelter area room 18	Mastic associated w/tan 12-inch floor tile	500 SF
1st Floor (Main - Drill Floor) Rm. 1W-6	Wood grain like 12' f/t	200 SF
1st Floor Mezzanine Rm. 1WM-1 (Men's Bathroom)	Linoleum 9" f/t w/small circles	130 SF
Basement East Side Loading Deck/Storage Area on Wood Table	Gray 9" f/t and associated mastic	400 SF
2nd Floor 2SE-3 Closet	Cloth wrap material on pipe	20 LF
Sub-Basement across Gym and Pistol Range	Vibration joint cloth (off white)	10 SF
3rd Floor S. Bulkhead	Wall mastic behind wall plaster	500 SF
2nd Floor 2SW-1B	Felt/mastic associated w/ha-80	500 SF
Sm Roof Above 1st Floor	Tank mastic	50 SF
Throughout building interior	Plaster material brown (2nd layer)	219,000 SF
2nd Floor center Bathroom Adjacent To Room 2SWT-1 and Basement Mezzanine Homeless Shelter Wing Room 8 Women's Room	Terrazzo flooring	250 SF

Location	Material	Estimated Quantity
Throughout the building	Block and air-cell pipe insulation	3,000 LF
Entrance door along the West Kingsbridge roof	Fire exit door insulation	84 SF
Throughout the building	Pipe insulation debris mixed with plaster on floor and floor covering	5,000 SF

SF = Square Feet
LF = Linear Feet

4.10.4 Asbestos Abatement Regulations

Actions taken regarding the ACMs identified must comply with any applicable federal, state, and local regulations that apply to the removal, handling, and disposal of ACM. Presently, general demolition and disposal operations at facilities that are privately owned and operated in the State of New York are regulated by the following:

- the federal USEPA's National Emission Standard for Hazardous Air Pollutants (NESHAP) Asbestos Standard (40 CFR 61, Subpart M);
- the New York State Department of Labor (NYSDOL) Industrial Code Rule 56; and
- the New York City Department of Environmental Protection (NYCDEP) Title 15.

Furthermore, the State of New York requires that only contractors licensed by the Department of Labor can perform asbestos abatement work. Additionally, the oversight of the removal of ACM must be performed by an independent third-party project-monitoring firm. Private contractors, which may be retained for the building demolition, are additionally under jurisdiction of the Occupational Safety and Health Administration (OSHA) asbestos regulations (29 CFR 1910.1001 and 29 CFR 1926.1101, for the general and construction industries, respectively).

NESHAP does not regulate management of certain ACMs of a persistent non-friable nature (e.g., asphalt roofing materials and asbestos-cement materials that could remain non-friable during demolition activities) from its general demolition and demolition requirements. However, present interpretation of the NYSDOL and NYCDEP regulations cited above are more stringent, and includes provisions for non-friable materials.

4.20 LEAD PAINT SURVEY

4.20.1 Sampling Procedures

GZA conducted a lead paint survey by collecting and analyzing paint chip samples to detect the presence of lead that may cause lead exposure to demolition workers in the course of any future building-renovation activities. The lead paint samples were collected by scraping

Proactive by Design

down to the substrate to remove all layers of paint on interior surfaces. The paint inspected ranged from good to poor condition.

The paint samples required no preservation or stabilization. Samples were individually collected in re-sealable bags, which were consolidated into sample delivery groups. Samples were double bagged prior to shipment via courier for off-Site laboratory analysis accompanied by the chain of custody documents. Lead paint sample locations are depicted on **Figures 8 through 12**.

4.20.2 Paint Sample Analysis

Cardno analyzed the paint samples for lead content using atomic absorption spectroscopy (AAS) using EPA analytical method 3050/7420. Cardno is accredited for lead content analysis under the New York State Department of Health Environmental Laboratory Accreditation Program (ELAP).

4.20.3 Paint Analytical Results

In total, twenty-one samples were collected from various locations at the Site. Paint films with detectable levels of lead were identified in all of the samples collected. Lead paint sample results are provided in **Table 3** and the laboratory report is provided in **Appendix F**.

Any disturbance of lead-containing paint during construction activities is subject to the OSHA Lead in Construction Standard (29 CFR 1926.62). Federal, state and city regulations do not require that materials coated with detectable levels of lead be removed prior to any future building-demolition or renovation activities. However, since lead may constitute a lead hazard to demolition and construction workers, it is prudent to test for the presence of lead in the breathable air when building components that are coated with detectable levels lead in the paint are disturbed by construction. Workers performing demolition and renovation activities on building materials coated with detectable levels of lead must be appropriate trained and are subject to medical surveillance as defined by OSHA.

All waste generated should be tested in order to determine the classification of the waste. The USEPA defines Hazardous Waste as waste containing the minimum concentration of a particular contaminant identified by the Toxicity Characteristic Leaching Procedure (TCLP). The USEPA regulatory level for lead (EPA Code: D008) is 5 parts per million (ppm).

4.30 ASSESSMENT FOR HAZARDOUS CHEMICALS AND WASTE

GZA completed an Assessment to identify significant quantities of chemicals or waste materials within the accessible interior spaces of the building.

GZA collected samples from the observed waste piles and analyzed for TCLP sample under USEPA Resource Conservation Recovery Act (RCRA) regulations for determination of hazardous waste for lead for each pile. The composite samples were collected at the

Proactive by Design

assumption that the piles will be considered part of the waste stream leaving the Site and will require special handling. Of the eight waste piles analyzed, only two were considered as non-hazardous for lead. A summary of TCLP results are provided in **Table 4** and the laboratory report is provided in **Appendix F**.

GZA's assessment of waste materials included a visual Assessment for stored chemical products, refrigerants, oil-filled equipment and containers, fire extinguishers, smoke detectors, and ozone-depleting substances. The ozone-depleting chemicals of concern include chlorofluorocarbons (CFC), carbon tetrachloride and methyl chloroform (which are industrial solvents and chemical feedstocks), and halons (brominated compounds).

GZA did not attempt to identify chemicals that were present in de minimis quantities, such as spray cans and other containers that were less than one gallon in volume. GZA did not open, stage or consolidate any containers that were cataloged. No samples were collected as part of this work. Potential hazardous materials identified inside the 29 West Kingsbridge Building included propane tanks, two 275-gallon aboveground storage tanks of unknown contents, fire extinguishers, five gallon paint and paint removal buckets and exterior high intensity discharge lights. A summary of potential hazardous wastes identified by GZA at the Site can be found in **Table 5.**

4.40 UNIVERSAL WASTE

GZA completed an assessment to identify the presence of universal waste in accessible interior spaces within the building. Universal waste is a subset of hazardous waste that is ubiquitous throughout commercial and industrial buildings. No samples were collected as part of this work.

Universal waste identified inside the 29 West Kingsbridge Building included fluorescent bulbs inside overhead lighting fixtures, emergency exit lights, compact fluorescent light tubes and some round overhead lights were present which may contain mercury vapor. Universal waste identified by GZA at the Site is summarized in **Table 5.** In accordance with USEPA requirements, identified universal waste must be either recycled where appropriate or disposed of as universal waste.

4.50 POLYCHLORINATED BIPHENYL (PCB)–CONTAINING EQUIPMENT

Most fluorescent light ballasts manufactured before 1979 contained PCBs sealed inside the capacitor. The capacitor is usually surrounded by a tar-like potting material and is enclosed in the ballast box of the light fixture. Ballasts that do not contain PCBs must be clearly marked, "No PCBs". Ballasts not possessing a "No PCBs" label are assumed to contain PCBs at concentrations greater than 50 ppm.

Nine hundred and eighty seven potential PCB-containing fluorescent lighting fixtures were identified at the 29 West Kingsbridge Building. PCB-containing light fixture ballasts must be properly packaged and disposed of in accordance with USEPA requirements. PCB sample results are provided in **Table 6**.

Proactive by Design

4.60 CAULKING AND GLAZING

GZA completed an assessment for PCB-containing caulking material at the Site, specifically on windows, doors, floors, and the building façade. The survey was performed by collecting and quantifying caulking samples to provide an indication of the presence of PCBs that may potentially create a hazard to demolition workers in the course of any future building-demolition activities.

Caulking materials were collected from windows, window frames, sinks, wallboards, and wall panels at the Site. Six samples were collected from the 29 West Kingsbridge Building. Samples were collected in re-sealable bags that were consolidated into a sample delivery group. The samples were submitted to Alpha Laboratory of Mahwah, New Jersey (Alpha), an American Industrial Hygiene Association (AIHA)-accredited analytical laboratory, by courier services using standard chain-of-custody procedures.

Alpha, analyzed the caulking samples using EPA Method 608/8082 utilizing Soxhlet™ extraction via EPA Method 3540C. Caulking sample locations are depicted on **Figures 8 through 12**. A summary of the analytical results are provided in **Table 7**. The analytical laboratory report is presented in **Appendix G**.

Laboratory results determined that PCBs were not detected in five of the six caulking samples collected. One sample contained 30,700 ppm of PCB content. According to 40 CFR 761, materials having PCB content greater than 50 ppm are considered PCB bulk waste and must be disposed of as hazardous waste under the Toxic Substances Control Act (TSCA). Caulking material less than 50 ppm, but greater than 1 ppm, is not regulated. However, the accepting disposal facility must be permitted to accept PCBs at the concentrations that have been detected. If entire building sections are being removed (windows, caulking, drywall, brick, etc.), then a representative sample(s) of the entire waste stream can be obtained, and if the representative sample(s) were less than 1 ppm PCB, then the waste stream would be considered non-PCB.

Proactive by Design

5.00 CONCLUSIONS

GZA conducted a HMI Assessment for the Site located at 29 West Kingsbridge Road, Bronx, New York. Findings of this survey are included in **Table 1,** and summarized below.

Asbestos containing materials have been located throughout the Kingsbridge Armory. ACM identified by the survey or revealed by subsequent demolition to be asbestos containing should be removed and disposed of prior to initiation of construction activities. The removal of these materials should be conducted by a State of New York licensed asbestos abatement contractor in accordance with all applicable federal, state, and local regulations (including, NYSDOL Industrial Code Rule 56, and NYCDEP Title 15).

All painted surfaces and building components should be assumed to contain lead and be handled in accordance with the requirements of the OSHA Lead Exposure in Construction Standard (29 CFR 1926.62) and any other local requirements. Painted components within the Site building are in generally poor condition throughout and should be considered "lead containing" for purposes of OSHA compliance, waste stream management, and environmental dust control.

The demolition contractor will be responsible complying with the applicable regulations:

- The OSHA Construction Industry requirements;
- The NYSDOL and NYCDEP rules for asbestos abatement; and
- The RCRA requirements for testing and disposal of lead-contaminated materials.

The results indicate that the PCB caulking materials did contain concentrations of PCBs at or above 50 ppm, and therefore, the caulking is considered a PCB waste regulated under TSCA. However, caulking material with less than 50 ppm, but greater than 1 ppm, is not regulated but the disposal facility must be permitted to accept PCBs at the concentrations that have been detected. Caulking material with 500 ppm or greater will incur special disposal requirements. If the entire building sections are being removed (windows, caulking, drywall, brick, etc.), then representative samples of the entire waste stream can be obtained, and if the representative samples were less than 1 ppm PCBs, then the waste stream would be considered a non-PCB waste.