

**Part 1           General**

**1.1               REFERENCES**

- .1           CSA International
  - .1           CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

**1.2               ACTION AND INFORMATIONAL SUBMITTALS**

- .1           Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2           Submit demolition drawings:
  - .1           Submit for review and approval by Contract Administrator shoring drawings stamped and signed by professional engineer registered or licensed in the Province of Manitoba Canada, showing proposed method.

**1.3               SITE CONDITIONS**

- .1           If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Contract Administrator immediately.
  - .1           Proceed only after receipt of written instructions from Contract Administrator.
- .2           Notify Contract Administrator before disrupting building access or services.

**Part 2           Products**

**2.1               NOT USED**

- .1           Not used.

**Part 3           Execution**

**3.1               EXAMINATION**

- .1           Inspect building with Contract Administrator and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2           Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3           Notify and obtain approval of utility companies before starting demolition.
- .4           Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these

and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

- .1 Immediately notify Contract Administrator and utility company concerned in case of damage to any utility or service, designated to remain in place.
- .2 Immediately notify the Contract Administrator should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

### **3.2 PREPARATION**

- .1 Protection of In-Place Conditions:
  - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.
  - .2 Keep noise, dust, and inconvenience to occupants to minimum.
  - .3 Protect building systems, services and equipment.
  - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .2 Demolition/Removal:
  - .1 Remove items as indicated.
  - .2 Remove parts of existing building to permit new construction.
  - .3 Trim edges of partially demolished building elements to tolerances as defined by Contract Administrator to suit future use.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .4 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 09 91 99 – Painting for Minor Works

**1.2 REFERENCES**

- .1 Definitions:
  - .1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
  - .2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
  - .3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .2 Reference Standards:
  - .1 Canadian Environmental Protection Act, 1999 (CEPA 1999)
    - .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
  - .2 Department of Justice Canada (Jus)
    - .1 Transportation of Dangerous Goods Act, 1992 (TDG Act) 1992, (c. 34).
    - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).
  - .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
    - .1 Material Safety Data Sheets (MSDS).
  - .4 National Research Council Canada Institute for Research in Construction (NRC-IRC)
    - .1 National Fire Code of Canada-2010.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS to Contract Administrator for each hazardous material required prior to bringing hazardous material on site.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
  - .1 When exporting hazardous waste to another country, ensure compliance with Export and Import of Hazardous Waste and Hazardous Recyclable Materials Regulations.
- .4 Storage and Handling Requirements:
  - .1 Co-ordinate storage of hazardous materials with Contract Administrator and abide by internal requirements for labelling and storage of materials and wastes.
  - .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
  - .3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.
  - .4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
    - .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
  - .5 Transfer of flammable and combustible liquids is prohibited within buildings.
  - .6 Transfer flammable and combustible liquids away from open flames or heat-producing devices.
  - .7 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.
  - .8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
  - .9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.
  - .10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
    - .1 Store hazardous materials and wastes in closed and sealed containers.
    - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
    - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
    - .4 Segregate incompatible materials and wastes.

- .5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.
- .6 Store hazardous materials and wastes in secure storage area with controlled access.
- .7 Maintain clear egress from storage area.
- .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
- .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
- .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .11 When hazardous waste is generated on site:
  - .1 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
  - .2 Use licensed carrier authorized by provincial authorities to accept subject material.
  - .3 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.
  - .4 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
  - .5 Only trained personnel handle, offer for transport, or transport dangerous goods.
  - .6 Report discharge, emission, or escape of hazardous materials immediately to Contract Administrator and appropriate provincial authority. Take reasonable measures to control release.
- .12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .13 Report spills or accidents immediately to Contract Administrator. Submit a written spill report to Contract Administrator within [24] hours of incident.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Description:
  - .1 Bring on site only quantities hazardous material required to perform Work.
  - .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.
  - .3 Sustainability Characteristics:

- .1 Adhesives and Sealants in accordance manufacturer's recommendations.
- .2 Primers, Paints and Coatings in accordance with manufacturer's recommendations for surface conditions and Section 09 91 99 – Painting for Minor Works

**Part 3 Execution**

**3.1 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management:
  - .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
  - .2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.
  - .3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
  - .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
  - .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
  - .6 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
  - .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
  - .8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
    - .1 Hazardous wastes recycled in manner constituting disposal.
    - .2 Hazardous waste burned for energy recovery.
    - .3 Lead-acid battery recycling.
    - .4 Hazardous wastes with economically recoverable precious metals.

**END OF SECTION**

**Part 1 General**

**1.1 SUMMARY**

- .1 Comply with requirements of this Section when performing following Work:
  - .1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap.
  - .2 Removal of lead-containing coatings or materials using a power tool with an effective dust collection system equipped with a HEPA filter.
  - .3 Removal of lead-containing coatings or materials with non-powered hand tool, other than manual scraping and sanding.

**1.2 REFERENCES**

- .1 Department of Justice Canada
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Health Canada
  - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .3 Human Resources and Social Development Canada (HRSDC)
  - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.
- .4 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .5 U.S. Environmental Protection Agency (EPA)
  - .1 EPA 747-R-95-007-1995, Sampling House Dust for Lead.
- .6 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)
  - .1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).
- .7 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances
  - .1 Lead in Construction Regulation - 29 CFR 1926.62-1993.
- .8 Underwriters' Laboratories of Canada (ULC)

**1.3 DEFINITIONS**

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

- .2 Authorized Visitors: Contract Administrator, the City or designated representatives.
- .3 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects over cuts and tears, and elsewhere as required to provide protection and isolation. For protection of underlying surfaces from damage and to prevent lead dust entering in clean area.
- .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air ( $50 \text{ ug}/\text{m}^3$ ) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic meter of air for removal of lead based paint by methods noted in paragraph 1.1.
- .6 Competent person: individuals capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.
- .7 Lead dust: wipe sampling on vertical surfaces and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.
- .3 Quality Control:
  - .1 Provide Contract Administrator necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.
  - .2 Provide proof satisfactory to Contract Administrator that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

#### **1.5 QUALITY ASSURANCE**

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead paint, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
  - .1 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers and visitors in work Area include:



- .1 Respirator NIOSH approved and equipped with replaceable HEPA filter cartridges with an assigned protection factor of 10, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure. Provide sufficient amount of filters.
- .2 Half mask respirator: half-mask particulate respirator with appropriate filter, and 99 % efficiency could be provided.
- .2 Eating, drinking, chewing, and smoking are not permitted in work area.
- .3 Ensure workers wash hands and face when leaving work area.  
Visitor Protection:
  - .1 Provide approved respirators to Authorized Visitors to work areas.
  - .2 Instruct Authorized Visitors procedures to be followed in entering and exiting work area.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .2 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of lead waste in sealed double thickness 6]ml bags or leak proof drums. Label containers with appropriate warning labels.
- .3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

## **1.7 EXISTING CONDITIONS**

- .1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification.
- .2 Notify Contract Administrator of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Contract Administrator.

## **1.8 SCHEDULING**

- .1 Not later than two days before beginning Work on this Project notify following in writing:
  - .1 Provincial Ministry of Labour (as required).
  - .2 Disposal Authority.
- .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .3

## **1.9 PERSONNEL TRAINING**

- .1 Provide Contract Administrator satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in aspects of work procedures, and in use, cleaning, and disposal of respirators.
- .2 Instruction and training related to respirators includes, at minimum:
  - .1 Proper fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.
- .4 Supervisory personnel to complete required training.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Polyethylene 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.
- .2 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
- .3 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual lead paint residue.
- .4 Lead waste containers: metal or fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm thickness sealable polyethylene liners.
  - .1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

## **Part 3 Execution**

### **3.1 SUPERVISION**

- .1 One Supervisor for every ten workers is required.
- .2 Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.

### **3.2 PREPARATION**

- .1 Work Area:
  - .1 Shut off and isolate HVAC system to prevent dust dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.
  - .2 Pre-clean fixed casework and equipment within work area, using HEPA vacuum and cover and seal with polyethylene sheeting and tape.

- .3 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.
  - .4 Seal off openings with polyethylene sheeting and seal with tape.
  - .5 Protect floor surfaces covered from wall to wall with polyethylene sheets.
  - .6 Maintain emergency fire exits or establish alternatives satisfactory to Authority having jurisdiction.
  - .7 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.
  - .8 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.
- .2 Do not start work until:
- .1 Arrangements have been made for disposal of waste.
  - .2 Tools, equipment, and materials waste containers are on site.
  - .3 Arrangements have been made for building security.
  - .4 Notifications have been completed and preparatory steps have been taken.

### **3.3 LEAD ABATEMENT**

- .1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap; or removal equipped with HEPA filters; or removal with using power tools non-powered hand tool, other than manual scraping and sanding.
- .2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.
- .5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean entire work area, and equipment used in process. After inspection by Contract Administrator apply continuous coat of slow drying sealer to surfaces of work area. Do not disturb work area for 8 hours no entry, activity, ventilation, or disturbance during this period.

### **3.4 INSPECTION**

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Contract Administrator will result in work stoppage, at no cost to the City.
- .2 Contract Administrator will inspect work for:
  - .1 Adherence to specific procedures and materials.
  - .2 Final cleanliness and completion.
  - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

### **3.5 LEAD SURFACE SAMPLING - WORK AREAS**

- .1 Final lead surface sampling to be conducted as follows:
  - .1 After work area has passed a visual inspection for cleanliness approved and accepted by Contract Administrator. Apply coat of lock-down agent to surfaces within enclosure, and appropriate setting period of 8 hours has passed, Contract Administrator will perform lead wipe sampling.
    - .1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.
    - .2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at Contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
    - .3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

### **3.6 FINAL CLEANUP**

- .1 Following cleaning and when lead wipe surfaces sampling are below acceptable concentrations, proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.
- .3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

### **3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

- .1 Repair or replace objects damaged in course of work to their original state or better, as directed by Contract Administrator.

**END OF SECTION**

**Part 1      General**

**1.1      SUMMARY**

.1      Comply with requirements of this Section when performing following Work:

- .1      Removal of lead based paint by scraping or sanding using non-powered hand tools.
- .2      Manual demolition of lead-painted plaster walls or building components by striking wall with sledgehammer or similar tool.

**1.2      REFERENCES**

- .1      Department of Justice Canada
- .1      Canadian Environmental Protection Act, 1999 (CEPA).
- .2      Health Canada
- .1      Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .3      Human Resources and Social Development Canada (HRSDC)
- .1      Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.
- .4      Transport Canada (TC)
- .1      Transportation of Dangerous Goods Act, 1992 (TDGA).
- .5      U.S. Environmental Protection Agency (EPA)
- .1      EPA 747-R-95-007-[1995], Sampling House Dust for Lead.
- .6      U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)
- .1      NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).
- .7      U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances
- .1      Lead in Construction Regulation - 29 CFR 1926.62-[1993].
- .8      Underwriters' Laboratories of Canada (ULC)

**1.3      DEFINITIONS**

.1      HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

- .2 Authorized Visitors: Contract Administrator or the City or designated representative[s] and representatives of regulatory agencies.
- .3 Occupied Area: areas of building or work site that is outside Work Area.
- .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .5 Airlock: ingress or egress system, without permitting air movement between contaminated area and uncontaminated area. Consisting of two curtained doorways at least 2 m apart.
- .6 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another. Typically constructed as follows:
  - .1 Place two overlapping polyethylene sheets over existing or temporarily framed doorway, securing each along top of doorway, securing vertical edge of one sheet along one vertical side of doorway, and secure other sheet along opposite vertical side of doorway.
  - .2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.
  - .3 Overlap each polyethylene sheet at openings 1.5 m on each side.
- .7 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50 micrograms per cubic meter of air calculated as 8 hour time-weighted average (TWA). Intermediate precautions for lead abatement are based on airborne lead concentrations greater than 0.05 milligrams per cubic meter of air within Work Area.
- .8 Competent person: individuals capable of identifying existing lead hazards in workplace and taking corrective measures to eliminate them.
- .9 Lead in Dust: wipe sampling on vertical and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.
- .3 Provide: requirements for Notice of Project Form.
- .4 Quality Control:

- .1 Provide Contract Administrator necessary permits for transportation and disposal of lead based paint waste and proof that it has been received and properly disposed.
- .2 Provide proof satisfactory to Contract Administrator that employees have had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures.
- .3 Provide proof that supervisory personnel have attended lead abatement course, of not less than two days duration, approved by Contract Administrator. Minimum of one supervisor for every ten workers.
- .5 Product data:
  - .1 Provide documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
    - .1 Encapsulants.
    - .2 Amended water.
    - .3 Slow drying sealer.

## 1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead paint, in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
  - .1 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers and visitors in Work Area includes:
      - .1 Respirator NIOSH approved and equipped with filter cartridges with assigned protection factor of 50, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Provide sufficient filters so workers can install new filters following disposal of used filters and before re-entering contaminated areas.
      - .2 Disposable type protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.
    - .2 Requirements for workers:
      - .1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters, clean coveralls and head covers before entering Equipment and Access Rooms or Work Area. Store street clothes, uncontaminated

- footwear, towels, and similar uncontaminated articles in clean change room.
- .2 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead - contaminated materials. Leave reusable items except respirator in Equipment and Access Room. When not in use in Work Area, store work footwear in Equipment and Access Room. Upon completion of lead abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from Work Area or from Equipment and Access Room.
  - .3 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers not to use this system as means to leave or enter work area.
  - .3 Eating, drinking, chewing, and smoking are not permitted in Work Area.
  - .4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.
  - .5 Ensure workers wash hands and face when leaving Work Area.
  - .6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.
  - .7 Ensure no person required to enter Work Area has facial hair that affects seal between respirator and face.
  - .8 Visitor Protection:
    - .1 Provide protective clothing and approved respirators to Authorized Visitors to Work Areas.
    - .2 Instruct Authorized Visitors in use of protective clothing, respirators and procedures.
    - .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.

## 1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .2 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, and Municipal regulations. Dispose of lead waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.
- .3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.



## 1.7 EXISTING CONDITIONS

- .1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification.
- .2 Notify Contract Administrator of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Contract Administrator.

## 1.8 SCHEDULING

- .1 Not later than two days before beginning Work on this Project notify the following in writing, where appropriate:
  - .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
  - .2 Provincial Ministry of Labour.
  - .3 Disposal Authority.
- .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .3 Provide Contract Administrator copy of notifications prior to start of Work.

## Part 2 Products

### 2.1 MATERIALS

- .1 Polyethylene: 0.15 mm unless otherwise specified; in sheet size to minimize joints.
  - .2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.
  - .3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
  - .4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for trapping residual lead paint residue.
  - .5 Lead waste containers: metal or type acceptable to dump operator with tightly fitting covers and 0.15 mm sealable polyethylene liners.
- .1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

**Part 3 Execution**

**3.1 SUPERVISION**

- .1 Approved Supervisor must remain within Lead Work Area during disturbance, removal, or other handling of lead based paints.

**3.2 PREPARATION**

.1 Work Area:

- .1 Shut off and isolate HVAC system to prevent dust dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.
  - .2 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
  - .3 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.
  - .4 Seal off openings, corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.
  - .5 Cover floor surfaces in work area from wall to wall with FR polyethylene drop sheets to protect existing floor during removal.
  - .6 Build airlocks at entrances and exits from work areas to ensure work areas are always closed off by one curtained doorway when workers enter or exit.
  - .7 At point of access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:
    - .1 CAUTION LEAD HAZARD AREA (25 mm).
    - .2 NO UNAUTHORIZED ENTRY (19 mm).
    - .3 WEAR ASSIGNED PROTECTIVE EQUIPMENT AND RESPIRATOR (19 mm).
    - .4 BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS BODILY HARM (7 mm).
  - .8 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority having jurisdiction.
  - .9 Where water application is required for wetting lead containing materials, provide temporary water supply by use of appropriately sized hoses for application of water as required.
  - .10 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
- .2 Worker Decontamination Enclosure System:
- .1 Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:

- .1 Equipment and Access Room: construct between exit and work areas, with two curtained doorways, one to the rest of suite, and one to work area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one worker allowing sufficient space to change comfortably.
- .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .3 Construction of Decontamination Enclosures:
  - .1 Construct framing for enclosures or use existing rooms. Line enclosure with polyethylene sheeting and seal with tape, apply two layers of FR polyethylene on floor.
  - .2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.
- .4 Separation of Work Areas from Occupied Areas
  - .1 Barriers between Work Area and occupied area to be constructed as follows:
    - .1 Construct floor to ceiling lumber stud framing, cover with polyethylene sheeting and seal with duct tape. Apply plywood over polyethylene sheeting. Seal plywood joints and between adjacent materials with surface film forming sealer, to create airtight barrier.
    - .2 Cover plywood with polyethylene sheeting and sealed with duct tape.
  - .5 Maintenance of Enclosures:
    - .1 Maintain enclosures in clean condition.
    - .2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately.
    - .3 Visually inspect enclosures at beginning of each work day.
    - .4 Use smoke test method to test effectiveness of barriers as directed by Contract Administrator.

### 3.3 LEAD - BASE PAINT ABATEMENT

- .1 Removal of lead based paint to be performed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted plaster walls or building components by striking a wall with sledgehammer or similar tool.

- .2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.
- .5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean work area including equipment and access room, and equipment used in process. After inspection by Contract Administrator, apply continuous coat of slow drying sealer to surfaces. Do not disturb work for 8 hours with no entry, activity, ventilation or disturbance during this period.
- .6 After enclosing lead painted surfaces, wet clean work area and equipment and access room. During settling period no entry, activity, or ventilation will be permitted.

### **3.4 INSPECTION**

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Contract Administrator will result in work stoppage, at no cost to the City.
- .2 Contract Administrator will inspect work for:
  - .1 Adherence to specific procedures and materials.
  - .2 Final cleanliness and completion.
  - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .3 When lead dust leakage from Work Area occurs Contract Administrator may order Work shutdown.
- .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

### **3.5 LEAD SURFACE SAMPLING - WORK AREAS**

- .1 Final lead surface sampling to be conducted as follows:

- .1 After Work Area has passed a visual inspection for cleanliness approved by Contract Administrator and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of 8 hours has passed. Contract Administrator will perform lead wipe sampling in Work Area.
  - .1 Final lead wipe sampling results from horizontal and vertical surfaces where lead based paints have been removed must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples must be collected and analyzed in accordance with EPA 747-R-95-007.
  - .2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at Contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
  - .3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

### **3.6 FINAL CLEANUP**

- .1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum equipment.
- .3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Clean-up Work Areas, Equipment and Access Room, and other contaminated enclosures.
- .5 Clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .6 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

### **3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

- .1 Repair or replace objects damaged in course of work to their original state or better, as directed by Contract Administrator.

**END OF SECTION**

**Part 1 General**

**1.1 SUMMARY**

- .1 Comply with requirements of this Section when performing following Work:
  - .1 Removal of lead based paint using power tools with an effective dust collection system equipped with HEPA filter.
  - .2 Abrasive blasting of lead based paint.
  - .3 Removal of lead-containing dust using air mist extraction system.

**1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-Z180.1-[00(R2005)], Compressed Breathing Air and Systems.
- .2 Department of Justice Canada
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .3 Health Canada
  - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .4 Human Resources and Social Development Canada (HRSDC)
  - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.
- .5 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6 U.S. Environmental Protection Agency (EPA)
  - .1 EPA 747-R-95-007-1995, Sampling House Dust for Lead.
- .7 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)
  - .1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).
- .8 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances
  - .1 Lead in Construction Regulation - 29 CFR 1926.62-1993.
- .9 Underwriters' Laboratories of Canada (ULC)

**1.3 DEFINITIONS**

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

- .2 Authorized Visitors: The City or Contract Administrator or designated representatives of regulatory agencies.
- .3 Occupied Area: area of building or work site outside Work Area.
- .4 Dioctyl Phthalate (DOP) Test: testing method used to evaluate particle penetration and air flow resistance properties of filtration materials - HEPA filter leak test.
- .5 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Appropriate capacity for scope of work.
- .6 Airlock: ingress or egress system without permitting air movement between contaminated area and uncontaminated area. Consisting of two curtained doorways at least 2 m apart.
- .7 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:
  - .1 Place two overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.
  - .2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.
  - .3 Overlap each polyethylene sheet at openings 1.5 m on each side.
- .8 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50 micrograms per cubic metre of air calculated as an 8-hour time-weighted average (TWA). Maximum precautions for lead abatement are based on airborne lead concentrations greater than 1.25 milligrams per cubic meter of air within Work Area.
- .9 Competent person: individuals capable of identifying existing lead hazards in workplace and taking corrective measures to eliminate them.
- .10 Lead in Dust: wipe sampling on the vertical and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.
- .11 Negative Air Pressure Machine: extracts air directly from work area and filters extracted air through a HEPA filter, discharge air to exterior of building.
  - .1 Maintain pressure differential of 5 to 7 Pa relative to adjacent areas outside of work areas. Machine to be equipped with alarm to warn of system breakdown, and equipped with instrument to continuously monitor and automatically record pressure differences.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory Contract Administrator that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.

- .3 Provide: Provincial and local requirements for Notice of Project Form.
- .4 Provide proof of Contractor's General and Environmental Liability Insurance.
- .5 Quality Control:
  - .1 Provide Contract Administrator necessary permits for transportation and disposal of lead based paint waste and proof it has been received and properly disposed.
  - .2 Provide proof satisfactory to Contract Administrator that employees had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures.
  - .3 Provide proof that supervisory personnel have attended lead abatement course, of not less than two days duration, approved by Contract Administrator. Minimum of one supervisor for every ten workers.
- .6 Product data:
  - .1 Provide documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
    - .1 Encapsulants.
    - .2 Amended water.
    - .3 Slow drying sealer.

## 1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead, in case of conflict among those requirements or with these specifications the more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
  - .1 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers while in Lead Work Area includes:
      - .1 Leads removal using power tool: respirator NIOSH approved and equipped with filter cartridges with assigned protection factor of 50, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Provide sufficient filters so workers can install new filters following disposal of used filters and before re-entering contaminated areas.
      - .2 Abrasive blasting of lead paint: NIOSH approved and equipped with filter cartridges with assigned protection factor of 1000, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Respirator to be equivalent Type CE abrasive blast supplied air respirator operated in a pressure demand or positive pressure mode with a tight-



- fitting half-mask or full-face-piece. Compressed air used to supply supplied air respirators to meet breathing air purity requirements of CAN/CSA-Z180.1. Where an oil-lubricated compressor is used to supply breathing air, a continuous carbon monoxide monitor/alarm to be provided.
- .3 Disposable protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.
- .2 Requirements for workers:
- .1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters, clean coveralls and head covers before entering Equipment and Access Rooms or Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.
  - .2 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead contaminated materials. Leave reusable items except respirator in Equipment and Access Room. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of lead abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.
  - .3 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers not use this system as means to leave or enter Work Area.
- .3 Eating, drinking, chewing, and smoking are not permitted in Work Area.
- .4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.
- .5 Ensure workers wash hands and face when leaving Lead Work Area.
- .6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.
- .7 Ensure no person required to enter Work Area has facial hair that affects seal between respirator and face.
- .8 Visitor Protection:
- .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

- .2 Instruct Authorized Visitors in use of protective clothing, respirators and procedures.
- .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .2 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, and Municipal regulations. Dispose of lead waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.
- .3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

## **1.7 EXISTING CONDITIONS**

- .1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification.
- .2 Notify Contract Administrator of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Contract Administrator.

## **1.8 SCHEDULING**

- .1 Not later than two days before beginning Work on this Project notify the following in writing; where appropriate.
  - .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
  - .2 Provincial Ministry of Labour.
  - .3 Disposal Authority.
- .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .3 Provide Contract Administrator copy of notifications prior to start of Work.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Polyethylene 0.15 mm unless otherwise specified; in sheet size to minimize joints.
- .2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.

- .4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for trapping residual lead paint residue.
- .5 Lead waste containers: metal or fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm sealable polyethylene liners.
  - .1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

### **Part 3 Execution**

#### **3.1 SUPERVISION**

- .1 Approved Supervisor must remain within Work Area during disturbance, removal, or handling of lead based paints.

#### **3.2 PREPARATION**

- .1 Work Area:
  - .1 Shut off and isolate HVAC system to prevent lead dust and particulate dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.
  - .2 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
  - .3 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.
  - .4 Install negative pressure machine system and operate continuously from installation of polyethylene sheeting until completion of final cleanup. Provide automatic continuous monitoring and recording instrument of pressure difference.
  - .5 Seal off openings, corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.
  - .6 Cover floor surfaces in work area from wall to wall with FR polyethylene drop sheets to protect existing floor during removal.
  - .7 Build airlocks at entrances and exits from work areas to ensure work areas are always closed off by one curtained doorway when workers enter or exit.
  - .8 At point of access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:
    - .1 CAUTION LEAD HAZARD AREA (25 mm).
    - .2 NO UNAUTHORIZED ENTRY (19 mm)
    - .3 WEAR ASSIGNED PROTECTIVE EQUIPMENT AND RESPIRATOR (19 mm).
    - .4 BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS BODILY HARM (7 mm).

- .9 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority having jurisdiction.
  - .10 Where water application is required for wetting lead containing materials, provide temporary water supply by use of appropriately sized hoses for application of water as required.
  - .11 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
- .2 Worker Decontamination Enclosure System:
- .1 Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:
    - .1 Equipment and Access Room: construct between exit and work areas, with two curtained doorways, one to the rest of the suite, and one to work area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one worker allowing sufficient space to change comfortably.
    - .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .3 Construction of Decontamination Enclosures:
- .1 Construct framing for enclosures or use existing rooms. Line enclosure with polyethylene sheeting and seal with tape, apply two layers of FR polyethylene on floor.
  - .2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closure comprising doorway always remains closed.
  - .3 Shower room in decontamination facility to be provided with the following:
    - .1 Hot and cold water or water of constant temperature not less than 40 degrees Celsius or more than 50 degrees Celsius.
    - .2 Individual controls inside to regulate water flow and temperature.
  - .4 Prior to each shift in which a decontamination facility is being used, a competent person should inspect the facility to ensure that there are no defects that would allow lead-containing dust to escape. Defects should be repaired before the facility is used. The decontamination facility should be maintained in a clean and sanitary condition.
- .4 Separation of Work Areas from Occupied Areas:
- .1 Barriers between Work Area and occupied area to be constructed as follows:

- .1 Construct floor to ceiling lumber or metal stud framing, cover with polyethylene sheeting and seal with duct tape. Apply plywood over polyethylene sheeting. Seal plywood joints and between adjacent materials with surface film forming sealer, to create airtight barrier.
  - .2 Cover plywood with polyethylene sheeting and sealed with duct tape.
- .5 Maintenance of Enclosures:
- .1 Maintain enclosures in tidy condition.
  - .2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately.
  - .3 Visually inspect enclosures at beginning of each working day.
  - .4 Use smoke test method to test effectiveness of barriers as directed by Contract Administrator.

### **3.3 LEAD - BASE PAINT ABATEMENT**

- .1 Removal of lead based paint to be performed using power tools that are attached to dust-collecting vacuums with HEPA filters.
- .2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.
- .3 Wet method to be used to reduce dust generation. Examples of wet methods include wetting surfaces, wet scraping, and wet shovelling. Wet method not be used if it creates a hazard or cause damage to equipment or to project. Power tools to be equipped with a shroud, and to be kept flush with surface.
- .4 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove immediate from working area to staging area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .5 After completion of stripping work, wire brush and wet sponge surface to remove visible material. During this work keep surfaces wet. After wire brushing and wet sponging, wet clean and HEPA vacuum entire work area including Equipment and Access Room. Compressed air or dry sweeping not be used to clean up lead-containing dust or waste. After inspection and approval by Contract Administrator apply continuous coat of slow drying sealer to surfaces. Do not disturb work area for 8 hours, no entry, activity, or ventilation other than operation negative air machine during this period.
- .6 After enclosing lead painted surfaces, wet clean work area and equipment and access room. During settling period no entry, activity, or ventilation will be permitted.

### **3.4 INSPECTION**

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from requirements not been approved in writing by Contract Administrator will result in Work shutdown, at no cost to .
- .2 Contract Administrator will inspect work for:
  - .1 Adherence to specific procedures and materials.
  - .2 Final cleanliness and completion.
  - .3 No additional costs will be allowed for additional labour or materials required to provide specified performance level.
- .3 When lead dust leakage from Work Area occurs Contract Administrator will order Work shutdown.
  - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

### **3.5 LEAD SURFACE SAMPLING - WORK AREAS**

- .1 Final lead surface sampling conducted as follows:
  - .1 After Work Area has passed a visual inspection for cleanliness approved by Contract Administrator and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of 8 hours has passed, Contract Administrator will perform lead wipe sampling in Work Area.
    - .1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.
    - .2 If wipe sampling results show levels of lead dust in excess of 40 micrograms per square foot, re-clean work area at Contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
    - .3 Repeat as necessary until lead dust levels are less than 40 micrograms per square foot.

### **3.6 FINAL CLEANUP**

- .1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.
- .3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Clean up Work areas, Equipment and Access Room, and other contaminated enclosures.

- .5 Remove sealed waste containers and equipment used in Work and remove from work areas at appropriate time in cleaning sequence.
- .6 Conduct final check to ensure no dust or debris remain on surfaces as result of dismantling operations.

**3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

- .1 Repair or replace objects damaged in course of work to their original state or better, as directed by Contract Administrator.

**END OF SECTION**

Your Project #: 14-0107-021  
Site#: SHERBROOK POOL

KGS Group  
3rd Floor  
865 Waverly St  
Winnipeg, MB  
Canada R3T 5T4

**Report Date: 2014/10/20**  
Report #: R1667297  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B493766**  
**Received: 2014/10/17, 09:25**

Sample Matrix: Paint  
# Samples Received: 6

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Elements by ICP-AES (acid extr. solid) (1)	6	2014/10/20	2014/10/20	BBY7SOP-00018	EPA 6010c R3 m

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.  
(1) This test was performed by Maxxam Vancouver

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Janelle Kochan, B.Sc., Project Manager  
Email: JKochan@maxxam.ca  
Phone# (204)772-7276 Ext:2209

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B493766  
Report Date: 2014/10/20

KGS Group  
Client Project #: 14-0107-021

**ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)**

Maxxam ID		KW7392	KW7392	KW7393	KW7394	KW7395	KW7396	KW7397		
Sampling Date		2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15		
	Units	SP-LP-01	SP-LP-01 Lab-Dup	SP-LP-02	SP-LP-03	SP-LP-04	SP-LP-05	SP-LP-06	RDL	QC Batch
<b>Total Metals by ICP</b>										
Total Lead (Pb)	mg/kg	2320	2410	534	102000	60400	33200	1090	3.0	7684453
RDL = Reportable Detection Limit										
Lab-Dup = Laboratory Initiated Duplicate										

Maxxam Job #: B493766  
Report Date: 2014/10/20

KGS Group  
Client Project #: 14-0107-021

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	21.0°C
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**Results relate only to the items tested.**

Maxxam Job #: B493766  
Report Date: 2014/10/20

**QUALITY ASSURANCE REPORT**

KGS Group  
Client Project #: 14-0107-021

QC Batch	Parameter	Date	Method Blank		RPD		QC Standard	
			Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7684453	Total Lead (Pb)	2014/10/20	<3.0	mg/kg	3.9	35	92	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

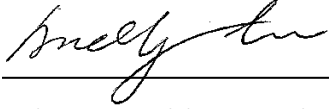
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Maxxam Job #: B493766  
Report Date: 2014/10/20

KGS Group  
Client Project #: 14-0107-021

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Unit D, 675 Berry St., Winnipeg, MB R3H 1A7  
 Phone: 204-772-7276 Fax: 204-772-2386 Toll Free: (866) 800-6208

**CHAIN OF CUSTODY RECORD**

Page 1 of 1

<b>INVOICE INFORMATION</b>		<b>REPORT INFORMATION (if different from invoice)</b>		<b>PROJECT INFORMATION</b>		<b>MAXXAM JOB NUMBER</b>	
Company Name: <u>KGS Group</u>		Company Name: <u>KGS Group</u>		Quotation #: _____		<u>B493766</u>	
Contact Name: <u>Accounts Payable</u>		Contact Name: <u>Dan Leitch</u>		P.O. #: _____		<b>CHAIN OF CUSTODY #</b>	
Address: <u>3rd Floor 885 Waverley St.</u>		Address: _____		Project #: <u>14-0107-021</u>		<b>N 002316</b>	
<u>Winnipeg, MB R3T 5P4</u>		Phone: <u>204-896-1209</u> Fax: <u>204-896-0754</u>		Project Name: <u>Sherbrook Pool</u>			
Phone: <u>204-896-1209</u> Fax: <u>204-896-0754</u>		Email: <u>d.leitch@kgsgrp.com</u>		Location: _____			
Email: <u>W MacQuarrie@kgsgrp.com</u>				Sampled By: <u>D.L.</u>			

REGULATORY REQUIREMENTS SERVICE REQUESTED:						ANALYSIS REQUESTED (Please be specific)										TURNAROUND TIME (TAT) REQUIRED	
<input type="checkbox"/> CCME <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> Other: _____						<b>Drinking Water? (Y/N)</b> Coliforms: Total <input type="checkbox"/> Fecal <input type="checkbox"/> E. coli <input type="checkbox"/> MF <input type="checkbox"/> MPN <input type="checkbox"/> OT <input type="checkbox"/> Dissolved Metals: Field Filtered? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Field Acidified? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Total Metal: Field Acidified? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> BTEX: BTEX / F1 _____ F2 - F4 _____ PCB _____ Biochemical Oxygen Demand _____ <u>Total Lead</u>										<b>PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS.</b> Regular (Standard) TAT: <input checked="" type="checkbox"/> 5 to 7 Working Days Rush TAT: <input type="checkbox"/> 1 day <input type="checkbox"/> 2 days <input type="checkbox"/> 3 days DATE Required: _____ TIME Required: _____ <small>TATs for certain tests are &gt; 5 days. Please contact your Project Manager for details</small>	
Special Instructions: <u>HOLD FOR LEACHATE LEAD PENDING RESULTS</u>						<b>HOLD - DO NOT ANALYZE</b>										# of Cont. _____ COMMENTS / TAT COMMENTS _____	
<b>SAMPLES MUST BE KEPT COOL (&lt;10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM.</b>																# of Cont. _____ COMMENTS / TAT COMMENTS _____	
Lab Use	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil etc.)													
1	<u>KW7392</u>	<u>SP-LP-01</u>	<u>15-OCT-2017</u>	<u>Paint</u>													
2	<u>93</u>	<u>SP-LP-02</u>															
3	<u>94</u>	<u>SP-LP-03</u>															
4	<u>95</u>	<u>SP-LP-04</u>															
5	<u>96</u>	<u>SP-LP-05</u>															
6	<u>97</u>	<u>SP-LP-06</u>															
7																	
8																	
9																	
10																	
11																	
12																	
RELINQUISHED BY (Signature/Print)			RECEIVED BY (Signature/Print)			Date		Time		#JARS USED AND NOT SUBMITTED		Laboratory Use Only					
<u>Dan Leitch</u>			<u>Denise Vega</u>			<u>2017/10/17</u>		<u>9:25</u>				Temperature (°C) on Receipt <u>21.0°C x3</u>					

**\*MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.**

**ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)**

Maxxam ID		KW7392	KW7392	KW7393	KW7394	KW7395	KW7396	KW7397		
Sampling Date		2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15		
	Units	SP-LP-01	SP-LP-01Lab	SP-LP-02	SP-LP-03	SP-LP-04	SP-LP-05	SP-LP-06	RDL	QC Batch
<b>Total Metals by ICP</b>										
Total Lead (Pb)	mg/kg	2320	2410	534	102000	60400	33200	1090	3.0	7684453

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

**Results relate only to the items tested.**

Your Project #: 14-0107-021  
Site Location: SHERBROOK POOL  
Your C.O.C. #: N002316

**Attention: DAN LEITCH**

KGS Group  
3rd Floor  
865 Waverly St  
Winnipeg, MB  
Canada R3T 5T4

**Report Date: 2014/11/04**  
Report #: R1677064  
Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B493766**

**Received: 2014/10/17, 09:25**

Sample Matrix: PAINT  
# Samples Received: 6

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Metals - TCLP (1)	3	2014/10/31	2014/11/03	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICP-AES (acid extr. solid) (1)	6	2014/10/20	2014/10/20	BBY7SOP-00018	EPA 6010c R3 m
TCLP pH Measurements (1)	3	N/A	2014/11/03	BBY7SOP-00005	EPA 1311 R1992

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Vancouver

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Janelle Kochan, B.Sc., Project Manager

Email: JKochan@maxxam.ca

Phone# (204)772-7276 Ext:2209

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B493766  
Report Date: 2014/11/04

KGS Group  
Client Project #: 14-0107-021  
Site Location: SHERBROOK POOL

**ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)**

<b>Maxxam ID</b>		KW7392	KW7392	KW7393	KW7394	KW7395	KW7396		
<b>Sampling Date</b>		2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15		
<b>COC Number</b>		N002316	N002316	N002316	N002316	N002316	N002316		
	<b>Units</b>	<b>SP-LP-01</b>	<b>SP-LP-01 Lab-Dup</b>	<b>SP-LP-02</b>	<b>SP-LP-03</b>	<b>SP-LP-04</b>	<b>SP-LP-05</b>	<b>RDL</b>	<b>QC Batch</b>

<b>TCLP Extraction Procedure</b>									
Initial pH of Sample	pH				SEE NOTE (1)	SEE NOTE (1)	SEE NOTE (1)	N/A	7701783
pH after HCl	pH				SEE NOTE (1)	SEE NOTE (1)	SEE NOTE (1)	N/A	7701783
Final pH of Leachate	pH				5.69	5.70	5.65	N/A	7701783
pH of Leaching Fluid	pH				4.96	4.96	4.96	N/A	7701783
<b>Total Metals by ICP</b>									
Total Lead (Pb)	mg/kg	2320	2410	534	102000	60400	33200	3.0	7684453
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									
N/A = Not Applicable									
(1) Insufficient sample received to determine pH. Fluid 1 used for extraction.									

<b>Maxxam ID</b>		KW7397		
<b>Sampling Date</b>		2014/10/15		
<b>COC Number</b>		N002316		
	<b>Units</b>	<b>SP-LP-06</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Total Metals by ICP</b>				
Total Lead (Pb)	mg/kg	1090	3.0	7684453
RDL = Reportable Detection Limit				



Maxxam Job #: B493766  
Report Date: 2014/11/04

KGS Group  
Client Project #: 14-0107-021  
Site Location: SHERBROOK POOL

**TCLP METALS (PAINT)**

Maxxam ID		KW7394	KW7395	KW7396		
Sampling Date		2014/10/15	2014/10/15	2014/10/15		
COC Number		N002316	N002316	N002316		
	Units	SP-LP-03	SP-LP-04	SP-LP-05	RDL	QC Batch
<b>Metals</b>						
LEACHATE Lead (Pb)	mg/L	287	254	235	0.10	7705342
RDL = Reportable Detection Limit						

Maxxam Job #: B493766  
Report Date: 2014/11/04

KGS Group  
Client Project #: 14-0107-021  
Site Location: SHERBROOK POOL

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	21.0°C
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Samples KW7394, KW7395, KW7396: Insufficient sample received to use standard sample weight (100g) for TCLP. The uncertainty of the analysis may be increased.

**Results relate only to the items tested.**

Maxxam Job #: B493766  
Report Date: 2014/11/04

### QUALITY ASSURANCE REPORT

KGS Group  
Client Project #: 14-0107-021  
Site Location: SHERBROOK POOL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7684453	Total Lead (Pb)	2014/10/20					<3.0	mg/kg	3.9	35	92	80 - 120
7701783	Final pH of Leachate	2014/11/03					4.96	pH				
7701783	Initial pH of Sample	2014/11/03					4.96	pH				
7701783	pH of Leaching Fluid	2014/11/03					4.96	pH				
7705342	LEACHATE Lead (Pb)	2014/11/03	N/C*****	75 - 125	99	75 - 125	<0.10	mg/L				

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Maxxam Job #: B493766  
Report Date: 2014/11/04

KGS Group  
Client Project #: 14-0107-021  
Site Location: SHERBROOK POOL

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Unit D, 675 Berry St., Winnipeg, MB R3H 1A7  
 Phone: 204-772-7276 Fax: 204-772-2386 Toll Free: (866) 800-6208

**CHAIN OF CUSTODY RECORD**

Page 1 of 1

<b>INVOICE INFORMATION</b>		<b>REPORT INFORMATION (if different from invoice)</b>		<b>PROJECT INFORMATION</b>		<b>MAXXAM JOB NUMBER</b>	
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Contact Name: <u>Accounts Payable</u>		Contact Name: <u>Dan Leitch</u>		P.O. #: _____		<b>CHAIN OF CUSTODY #</b>	
Address: <u>3rd Floor 885 Waverley St.</u>		Address: _____		Project #: <u>14-0107-021</u>		<b>N 002316</b>	
<u>Winnipeg, MB R3T 5P4</u>		Phone: <u>204-896-1209</u> Fax: <u>204-896-0754</u>		Project Name: <u>Sherbrook Pool</u>			
Phone: <u>204-896-1209</u> Fax: <u>204-896-0754</u>		Email: <u>d.leitch@kgsgrp.com</u>		Location: _____			
Email: <u>W MacQuarrie@kgsgrp.com</u>				Sampled By: <u>D.L.</u>			

<b>REGULATORY REQUIREMENTS SERVICE REQUESTED:</b>				<b>ANALYSIS REQUESTED (Please be specific)</b>										<b>TURNAROUND TIME (TAT) REQUIRED</b>			
<input type="checkbox"/> CCME <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> Other: _____				Drinking Water? (Y/N)										<b>PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS.</b> Regular (Standard) TAT: <input checked="" type="checkbox"/> 5 to 7 Working Days Rush TAT: <input type="checkbox"/> 1 day <input type="checkbox"/> 2 days <input type="checkbox"/> 3 days DATE Required: _____ TIME Required: _____ <small>TATs for certain tests are &gt; 5 days. Please contact your Project Manager for details</small>			
Special Instructions: <u>HOLD FOR LEACHATE LEAD PENDING RESULTS</u>				Coliforms: <input type="checkbox"/> Total <input type="checkbox"/> Fecal <input type="checkbox"/> E. coli <input type="checkbox"/> MF <input type="checkbox"/> MPN <input type="checkbox"/> OT Dissolved Metals: Field Filtered? <input type="checkbox"/> Y <input type="checkbox"/> N Field Acidified? <input type="checkbox"/> Y <input type="checkbox"/> N Total Metal: Field Acidified? <input type="checkbox"/> Y <input type="checkbox"/> N BTEX: BTEX / F1 F2 - F4 PCB Biochemical Oxygen Demand <u>Total Lead</u>										<b>HOLD - DO NOT ANALYZE</b> # of Cont. _____ COMMENTS / TAT COMMENTS _____			
<b>SAMPLES MUST BE KEPT COOL (&lt;10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM.</b>																	
	Lab Use	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil etc.)												
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4	<u>95</u>	<u>SP-LP-04</u>															
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6	<u>97</u>	<u>SP-LP-06</u>															
7																	
8																	
9																	
10																	
11																	
12																	
RELINQUISHED BY (Signature/Print)			RECEIVED BY (Signature/Print)			Date		Time		#JARS USED AND NOT SUBMITTED		Laboratory Use Only					
<u>Dan Leitch</u>			<u>Denise Vega</u>			<u>2017/10/17</u>		<u>9:25</u>				Temperature (°C) on Receipt <u>21.0°C x3</u>					

**\*MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.**  
 CoC-1028 - WINFCD-00161/1 Maxxam International Corporation o/a Maxxam White: Maxxam Yellow: Client Copy

Maxxam Job Number: B493766  
 Report Date: 2014/11/04

KGS Group  
 Client Project #: 14-0107-021  
 Site Location: SHERBROOK POOL

**ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)**

Maxxam ID		KW7392	KW7392	KW7393	KW7394	KW7395	KW7396	KW7397		
Sampling Date		2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15	2014/10/15		
COC Number		N002316	N002316	N002316	N002316	N002316	N002316	N002316		
	Units	SP-LP-01	SP-LP-01 Lab	SP-LP-02	SP-LP-03	SP-LP-04	SP-LP-05	SP-LP-06	RDL	QC Batch
<b>TCLP Extraction Procedure</b>										
Initial pH of Sample	pH				SEE NOTE (1)	SEE NOTE (1)	SEE NOTE (1)		N/A	7701783
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(1) Insufficient sample received to determine pH. Fluid 1 used for extraction

**Results relate only to the items tested.**

Maxxam Job Number: B493766  
Report Date: 2014/11/04

KGS Group  
Client Project #: 14-0107-021  
Site Location: SHERBROOK POOL

**TCLP METALS (PAINT)**

Maxxam ID		KW7394	KW7395	KW7396		
Sampling Date		2014/10/15	2014/10/15	2014/10/15		
COC Number		N002316	N002316	N002316		
	<b>Units</b>	<b>SP-LP-03</b>	<b>SP-LP-04</b>	<b>SP-LP-05</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Metals</b>						
LEACHATE Lead (Pb)	mg/L	287	254	235	0.10	7705342

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