Project Title COVE ISLAND LIGHT STATION, COVE ISLAND, ONTARIO

LEAD/PCB BASED PAINT ABATEMENT FROM STRUCTURES AND DEBRIS REMOVAL

Project Number R.071694.001

Project Date 2014-07-21

END

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Title and description of Work.

1.2 PRECEDENCE

.1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises of the site preparation, abatement (removal) of lead based paint on the exterior of five (5) structures, repainting of the exterior of seven (7) structures, removal of debris from the site, removal of non-friable asbestos containing transite board debris from the site, replacement or repair of three (3) broken windows on three (3) buildings, and clean-up/restoration at the Cove Island Light Station Site, located on Cove Island northwest of Tobermory, Ontario. The on-site structures, which have no road access, include: a Lighthouse Tower, Limestone Residence, Workshop, Lightkeeper's Residence, Assistant Lightkeeper's Residence, Oil Shed, Boat Shed, Old Fog Alarm Building, Radio Building, Generator Building, Abandoned Garage, and Tool Shed. Project Number R.071694.001.

.2 Contractor must be licensed and have the appropriate Ontario Ministry of the Environment Certificates of Approval to transport hazardous lead and PCB contaminated materials, asbestos materials, and debris over water.

.3 This contract includes:
.1 Obtaining any required permits.
.2 Locating and clearly marking underground and overhead utilities.
.3 Protection of buildings and footings.
.4 Preparation of the site including the construction of access roads where required.
.5 Debris and asbestos debris removal from various locations at the site (see Appendix A for Site Photos).
.6 Abatement of lead based paints from the exterior of five (5) structures on site (see Appendix D for paint types and PCB and Lead concentrations on the exterior structures,

1.3 WORK COVERED BY CONTRACT DOCUMENTS (Cont'd)

.3 This contract includes:(Cont'd)

.6 (Cont'd)

Appendix C for site figures showing locations of Lead & PCB paint, and Appendix A for Site Photos), including:

.1 Lighthouse Tower
.2 Lightkeeper's Residence
.3 Assitant Lightkeeper's Residence
.4 Boat Shed (majority of lead based paint was removed from the Boat Shed as part of previous work)
.5 Old Fog Alarm Building

.7 Repainting lead paint abated surfaces to match original colour on seven (7) structures on site (See Appendix C for site figures showing locations of buildings, and Appendix A for Site Photos), including:

.1 Lighthouse Tower
.2 Workshop
.3 Lightkeeper's Residence
.4 Assitant Lightkeeper's Residence
.5 Boat Shed
.6 Oil Shed
.7 Old Fog Alarm Building

.8 Replacement or repair of three (3) windows on three (3) site structures (See Appendix A for site photos and Appendix C for site figures showing building locations), including:

.1 Oil Shed
.2 Boat House
.3 Workshop

.9 Removal of existing overspray from slow drying sealant (lockdown) as required from all windows on three (3) site structures:

.1 Oil Shed
.2 Boat House
.3 Workshop

.10 Site clean-up/restoration to original condition.

1.4 SITE ACCESS FOR DEPARTMENTAL REPRESENTATIVE

.1 Contractor is responsible for providing transportation to and from the island for the Departmental Representative.

1.5 PERSONNEL IDENTIFICATION

.1 Contractor to provide list of personnel to be onsite, including a copy of Photo ID, prior to commencing Site work.

1.5 PERSONNEL IDENTIFICATION (Cont'd) .2 Personnel present onsite to be carrying valid photo ID to be presented to Departmental Representative upon request.

1.6 CONTRACT FORM .1 "Bid and Acceptance Form - Combined Price" and the Unit Price Table.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END

PART 1 - GENERAL

1.1 MINIMUM STANDARDS

.1 Execute work to meet or exceed:
.1 Rules and regulations of authorities having jurisdiction.
.2 Observe and enforce construction safety measures required by National Building Code 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
.3 Occupational Health and Safety Act and Regulations for Construction Projects, Revised Statutes of Ontario 1990, Chapter 0.1 as amended, O.Reg. 490/09 Designated Substances, O.Reg. 833/90 Control of Exposureto Biological or Chemical Agents, Workplace Safety and Insurance Act and municipal statutes and authorities.
.4 Environmental Protection Act, Revised Statutes of Ontario 1990, Chapter E19 as amended, O. Reg. 102/94, Waste Audits and Waste Reduction Work Plans, O. Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs, O. Reg. 153/04 Record of Site Programs, O. Reg. 153/04 Record of Site Condition, and O.Reg 347/90 General Waste Management.
.5 Canadian Environmental Assessment Act.
.6 Canadian Environmental Protection Act (New Substance Notification Regulations).
.7 Transportation of Dangerous Goods Act.
.8 Fisheries Act.
.9 Migratory Birds Convention Act.
.10 Migratory Birds Regulations.

1.2 AUTHORITIES HAVING JURISDICTION

.1 The Federal Fire Commissioner is the sole authority having jurisdiction over this project with regards fire standards.

1.3 LOAD RESTRICTIONS

.1 Within the Town of Tobermory the year round maximum load restrictions are posted.

.2 Comply with posted restrictions. Acquire and submit to Departmental Representative copies of all necessary permits.

.3 Contractor to supply all necessary equipment for accessing the Island.

1.4 TAXES

.1 Pay applicable Federal, Provincial and Municipal taxes.

1.5 FEES, PERMITS, CERTIFICATES AND LETTERS

.1 Provide authorities having jurisdiction with information requested.

.2 Pay fees and obtain certificates, permits and letters required.

.3 Furnish certificates, permits and letters when requested.

1.6 EXAMINATION

.1 Examine existing conditions and determine conditions affecting work.

.2 Notify Departmental Representative in writing of any discrepancies between contract documents and site conditions.

1.7 DOCUMENTS

.1 Keep one (1) copy of contract documents at the site.

1.8 ELECTRONIC SUBMITTALS

.1 Submit number of hard copies specified for each type and format of submittal and in also submit in electronic format as .pdf files. Forward pdf files on USB, through email, or ftp site.

1.9 PRODUCT DATA SHEETS

.1 Submit product data sheets to Departmental Representative for review at least five (5) days before the start of field activities.

1.10 ADDITIONAL PHOTOGRAPHS

.1 Submit electronic copies of colour digital photography in jpeg format, standard resolution.

.2 Identification: name and number of project and date of exposure indicated.

.3 Number of viewpoints and location of viewpoints determined by Departmental Representative.

.4 Frequency:
.1 In each area of work: before work starts and at the completion of: site preparation,

1.10 ADDITIONAL PHOTOGRAPHS (Cont'd)

.4 Frequency:(Cont'd)
.1 In each area of work:(Cont'd) debris removal, paint abatement (multiple viewpoints per structure), paint encapsulation (multiple viewpoints per structure), repainting (multiple viewpoints per structure), asbestos containing transite board removal, and as directed by Departmental Representative.
.2 In all areas of: storage, site access, building interiors used: before work starts (area is used for work), after area has been restored to original condition upon completion of work.

1.11 SAMPLES

.1 Submit duplicate samples of new materials being installed under this contract.

.2 Identify manufacturer's name and product.

.3 Installed work shall match reviewed sample.

1.12 ADDITIONAL DRAWING/PHOTOGRAPHS

.1 Departmental Representative may furnish additional drawings/aerial photographs to clarify work.

.2 Such drawings/aerial photographs become part of Contract Documents.

1.13 PROTECTION

.1 Protect existing work and on-site structures from damage.

.2 Replace and repair damaged existing work and on-site structures with material and finish to match original.

.3 Protect existing trees and plants on site and adjacent properties.

1.14 EXISTING SERVICES

.1 Establish location, protect and maintain existing utility lines.

.2 Maintain existing services in occupied areas.

.3 Provide sanitary facilities.

.4 Provide water and electrical services at no cost.

1.15 TEMPORARY FACILITIES AND SERVICES

.1 Provide and maintain temporary facilities and services required to carry out work.

.2 Remove temporary facilities and services on completion of work.

1.16 METRIC SIZED MATERIALS

.1 SI metric units of measurement are used exclusively on the drawings and in the specifications for this project.

1.17 MATERIAL AND EQUIPMENT

.1 Use new products unless otherwise specified.

.2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.

.3 When material or equipment is specified by standard or performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.

1.18 CO-ORDINATION AND CO-OPERATION

.1 Site may be occupied during execution of work.

.2 Work areas will not be occupied during execution of work.

.3 Execute work with minimum disturbance to on site buildings.

.4 Maintain access and exits.

1.19 ALTERATIONS TO EXISTING SITE

.1 Remove and dispose of:
.1 Paint chips, paint chip collection tarps and related paint abatement materials and as directed by the Departmental Representative.
.2 Debris and asbestos debris.

1.20 INSPECTION AND TESTING

.1 When initial tests and inspections reveal work not to contract requirements, pay for tests and inspections required by Departmental Representative on corrected work.

1.21 COST BREAKDOWN

.1 Within 48 hours of notification of acceptance of bid furnish a cost breakdown by Section aggregating Contract Amount.

.2 Within 48 hours of acceptance of bid submit a list of subcontractors.

1.22 SCHEDULING

.1 On Award of Contract submit bar chart construction scheduled for work in accordance with Section 01 32 16.

.2 Carry out work during normal working hours.

1.23 CLEANING

.1 Maintain project free of accumulated waste and rubbish.

.2 Final cleaning:
.1 Remove temporary protection.
.2 Remove dust, dirt and foreign matter from surfaces.
.3 Broom clean paved exterior surfaces, rake clean other exterior surfaces.

1.24 DESIGNATED SUBSTANCES

.1 The project site has been surveyed for the presence of designated substances referred to in Regulations for Construction Projects, O.Reg. 213/91 as amended.

.2 Designated substances present on site include:
.1 Lead in paint.
.2 PCBs in interior paints.
.3 Silica within concrete foundations on site.
.4 Asbestos in transite board located in various locations onsite.

.3 Provide site designated substance information to prospective subcontractors prior to entering into a contract with them.

.4 Post prominent notices identifying and warning of the hazardous agent in the part of the workplace in which the agent is found or used. Notices shall be in English and other languages prescribed under the Occupational Health and Safety Act.

1.25 SPECIAL PROTECTION AND PRECAUTIONS

.1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of material safety data sheets acceptable to HRSDC - Labour Program.

1.26 POLLUTION CONTROL

.1 Spills of deleterious substances:
.1 Immediately contain, limit spread and clean up in accordance with provincial regulatory requirements.
.2 Report immediately to Ontario Spills Action Centre: 1-800-268-6060.
.3 Further information on dangerous goods emergency cleanup and precautions including a list of companies performing this work can be obtained from the Transport Canada 24-hour number (613) 996-6666 collect.

1.27 OPSS AND OPSD

.1 OPSS Ontario Provincial Standard Specifications and OPSD Ontario Provincial Standard Drawings quoted in these specifications are available online at http://www.raqsa.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage.

1.28 PROJECT MEETINGS

.1 Administrative:
.1 Schedule and administer project meetings throughout the progress of the work as directed by the Departmental Representative.
.2 Prepare agenda for meetings.
.3 Distribute written notice of each meeting four (4) days in advance of meeting date to Departmental Representative.
.4 Provide physical space and make arrangements for meetings.
.5 Preside at meetings.
.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and affected parties not in attendance.
.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.28 PROJECT MEETINGS (Cont'd)

.2 Preconstruction meeting:
.1 Within five (5) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
.2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
.4 Agenda to include:
.1 Appointment of official representative of participants in the Work.
.2 Schedule of Work: in accordance with Section 01 32 16.
.3 Schedule of submission of Health and Safety and Environmental Protection Plans.
.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities and fences.
.5 Site security.
.6 Proposed changes, change orders, procedures,approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
.7 Owner provided products.
.8 Maintenance manuals.
.9 Take-over procedures, acceptance, warranties.
.10 Progress claims, administrative procedures, photographs, hold backs.
.11 Appointment of inspection and testing agencies or firms.
.12 Insurances and transcript of policies.

.3 Progress meetings:
.1 Project meetings will be requested as required by the Departmental Representative
.2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
.3 Notify parties minimum 3 days prior to meetings.
.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.
.5 Agenda to include the following:
.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.

1.28 PROJECT MEETINGS (Cont'd)

.3 Progress meetings:(Cont'd)

.5 (Cont'd)

.4 Problems which impede construction schedule.

.5 Corrective measures and procedures to regain projected schedule.

.6 Revision to construction schedule.

.7 Progress schedule, during succeeding work period.

.8 Review submittal schedules: expedite as required.

.9 Maintenance of quality standards.

.10 Review proposed changes for affect on construction schedule and on completion date.

.11 Other business.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

PART 1 - GENERAL

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other non-working periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Certificate of Substantial Performance and Certificate of Completion as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 11 06.

.2 Submit to Departmental Representative within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Departmental Representative within three (3) working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

.1 Project milestones form interim targets for Project Schedule.
.1 Site preparation, within ten (10) working days of Award of Contract date.
.2 Exterior abatement of the structures on site within thirty (30) working days of award of Contract.
.3 Debris removal and removal of asbestos containing transite board material, completed within thirty (30) working days of Award of Contract date.
.4 Certificate of Completion within forty-five (45) working days of Award of Contract date.

1.5 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

1.5 MASTER PLAN (Cont'd)

.2 Departmental Representative will review and return revised schedules within five (5) working days.

.3 Revise impractical schedule and resubmit within two(2) working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.3 Award.
- .1 Permits.
- .2 Mobilization.
- .3 Site Preparation.
- .4 Paint Abatement.
- .5 Encapsulation/repainting
- .6 Debris removal and asbestos containing transite board removal.
- .7 Site cleanup/restoration
- .8 Demobilization

.4 Access to the site by water may be restricted at times due to weather and water conditions common to Georgian Bay.

1.7 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 Province of Ontario:
.1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
.2 Workplace Safety and Insurance Act, 1997.
.3 Municipal statutes and authorities.

.2 Canadian Standards Association (CSA): Canada
.1 CSA-S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

.3 National Building Code 2010 (NBC):
.1 NBC 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.

.4 National Fire Code 2010 (NFC):
.1 NFC 2010, Division B, Part 2 Emergency Planning, subsection 2.8.2 Fire Safety Plan.

.5 Federal Fire Commissioner (FFC):
.1 FC-301 Standard for Construction Operations, June 1982.
.2 FC-302 Standard for Welding and Cutting, June 1982.

Human Resources and Social Development Canada
Labour Program
Fire Protection Engineering Services
4900 Yonge Street 8th Floor
Willowdale, Ontario M2N 6A8

and copies may be obtained from:

Human Resources and Social Development Canada
Labour Program
Fire Protection Engineering Services
Ottawa, Ontario K1A 0J2

1.2 SUBMITTALS

.1 Make submittals in accordance with Section 01 11 06.

.2 Submit site-specific Health and Safety Plan: Within five (5) days after date of Notice to Proceed and prior to commencement of onsite Work. Health and Safety Plan must include:
.1 Results of site specific safety hazard assessment.

1.2 SUBMITTALS (Cont'd)

.2 (Cont'd)

.2 Results of safety and health risk or hazard analysis for site tasks and operations found in work plan.

.3 Measures and controls to be implemented to address identified safety hazards and risks.

.4 A Fire Safety Plan, specific to the work location, in accordance with NBC, Division B, Article 8.1.1.3 prior to commencement of work.

.5 Contractor's and subcontractors safety communication plan.

.6 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations.

.3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within three(3) days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within two (2) days after receipt of comments from Departmental Representative.

.4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.5 Submit names of personnel and alternates responsible for site safety and health.

.6 Submit records of Contractor's Health and Safety meetings when requested.

.7 Submit two (2) copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.

.8 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.

.9 Submit copies of incident and accident reports.

.10 Submit Material Safety Data Sheets (MSDS).

.11 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.

1.3 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to commencement of Work.

1.4 WORK PERMIT

.1 Obtain permits related to project prior to commencement of Work.

1.5 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.6 MEETINGS

.1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.7 REGULATORY REQUIREMENTS

.1 Comply with the Acts and regulations of the Province of Ontario.

.2 Comply with specified standards and regulations to ensure safe operations at site.

1.8 PROJECT/SITE CONDITIONS

.1 Work at the site will involve contact with:
.1 Lead and PCB's in paints and metals and PAHs in soils.
.2 Non-friable asbestos in transite boards located onsite.

.2 Access to the site is by water or helicopter only.

.3 Uneven rocky terrain with no established roads.

1.9 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

1.9 GENERAL REQUIREMENTS (Cont'd)

.3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.

1.10 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.

1.11 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act for the Province of Ontario.

1.12 UNFORESEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.

.2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.13 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have working knowledge of occupational safety and health regulations.

.2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing

1.13 HEALTH AND SAFETY CO-ORDINATOR (Cont'd)

.1 (Cont'd)
.2 (Cont'd)
required training are not permitted to enter site to perform Work.
.3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
.4 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.14 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.
.1 Contractor's Safety Policy.
.2 Constructor's Name.
.3 Notice of Project.
.4 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).
.5 Ministry of Labour Orders and reports.
.6 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
.7 Address and phone number of nearest Ministry of Labour office.
.8 Material Safety Data Sheets.
.9 Written Emergency Response Plan.
.10 Site Specific Safety Plan.
.11 Valid certificate of first aider on duty.
.12 WSIB "In Case of Injury At Work" poster.
.13 Location of toilet and cleanup facilities.

1.15 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.16 BLASTING

.1 Blasting or other use of explosives is not permitted at the site.

1.17 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

.2 Assign responsibility and obligation to a Competent Supervisor to stop or start Work at the Competent Supervisor's discretion when it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

PART 1 - GENERAL

1.1 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

.3 Green Remediation: the application of technologies and approaches that enhance a cleanup project's environmental, social, and economic footprints, as defined by the California Department of Toxic Substances Control.

1.2 REFERENCES

.1 O.Reg 347/90 Ministry of Environment Fact Sheet.

.2 Land Disposal Restrictions in O.Reg. 347 - General Waste Disposal under Ontario EPA and MOE Fact Sheet "Summary of Land Disposal Restrictions, Treatment and Notification Requirements for Waste Generators".

1.3 SUBMITTALS

.1 Submittals: in accordance with Section 01 11 06.

.2 Prior to commencing construction activities or delivery of materials to site, submit an Environmental Protection Plan for review and approval by Departmental Representative. The Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction. The Environmental Protection Plan shall take into account the

1.3 SUBMITTALS (Cont'd)

.2 (Cont'd) recommendations of the Environmental Assessment. Refer to Appendix B CEAA Environmental Assessment Mitigation Measures.

.3 Address topics at level of detail commensurate with environmental issue and required remedial tasks.

.4 Environmental protection plan is to include:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for training site personnel.

.3 Descriptions of environmental protection personnel training program.

.4 Erosion and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.5 Drawings showing locations of proposed temporary excavations or embankments, haul and access roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.6 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.

.7 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.8 Hazardous and Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.9 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.

.10 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

1.3 SUBMITTALS (Cont'd)

.4 (Cont'd)

.11 Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as clean-up water, disinfection water.

.12 Historical, archaeological, cultural resources, biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.5 Complete the CEAA Environmental Assessment Mitigation Measures Report Form (Appendix B) during work program and submit to Departmental Representative with closing documents upon completion of the project.

1.4 FIRES

.1 Fires and burning of rubbish on site not permitted.

1.5 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

.3 Dispose of wastewater generated by excavation activities at a licensed disposal facility in accordance with local and/or provincial authorities.

.4 Do not discharge wastes into streams or waterways.

.5 Appropriate procedures shall be implemented for handling, temporary storage, transport and disposal of debris, impacted soils and waste materials during all phases of the project. Refer to Land Disposal Restrictions in O.Reg. 347 - General Waste Disposal under Ontario EPA and MOE Fact Sheet "Summary of Land Disposal Restrictions, Treatment and Notification Requirements for Waste Generators". Off-site disposal will be by licensed haulers to a MOE-approved disposal facility.

.6 Submit proof of licensed waste hauler along with proof of a licensed waste disposal site.

1.5 DISPOSAL OF WASTES (Cont'd)

.7 Disposal/recycling of other waste generated during the project shall be done in compliance with Ontario Waste Regulations and the facilities used will be approved by the Departmental Representative.

1.6 VEHICULAR ACCESS AND PARKING

.1 Maintenance and Use:
.1 Prevent contamination of access roads. Immediately scrape up debris or material on access roads which is suspected to be contaminated as determined by Departmental Representative; transport and place into designated area approved by Departmental Representative. Clean access at a frequency designated by the Departmental Representative.
.2 Departmental Representative may collect soil samples for chemical analyses from traveling surfaces of constructed and existing access routes prior to, during, and upon completion of Work. Excavate and dispose of clean soil contaminated by Contractor's activities at no additional cost to Departmental Representative.

.2 Vehicles/equipment shall be in good working order and not be leaking any fuel or fluids.

.3 Restrict access of vehicles from creek banks to protect slope stability.

.4 During remedial activities designated fuelling area(s) will be established.

.5 Refuelling of vehicles and equipment shall not be conducted near watercourses or water bodies.

1.7 EQUIPMENT DECONTAMINATION

.1 Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.

.2 Perform equipment decontamination in a manner to prevent cross contaminating un-impacted areas.

.3 At minimum, perform following steps during equipment decontamination: mechanically remove packed dirt, grit, and debris by scraping and brushing without using steam or high-pressure water to reduce amount of water needed and to reduce amount of contaminated rinsate generated. Contractor to pay particular attention to tire

1.7 EQUIPMENT DECONTAMINATION (Cont'd)

.3 (Cont'd) treads, equipment tracks, springs, joints, and sprockets.

.4 Use of high-pressure low volume, hot water or steam supplemented by detergents or solvents only as approved by Departmental Representative.

.5 Each piece of equipment will be inspected by Departmental Representative after decontamination and prior to removal from site and/or travel on clean areas. Departmental Representative will have right to require additional decontamination to be completed if deemed necessary.

.6 Transfer sediments to a designated area approved by the Departmental Representative.

.7 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.

1.8 DRAINAGE

.1 Provide erosion and sediment control plan.
.1 Plan to include the type and location of erosion and sediment controls to be provided. Include monitoring and reporting requirements to assure that control measures are in compliance with mitigation measures in the Environmental Assessment Screening Report, Federal, Provincial and Municipal laws and regulations.

.2 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.3 Do not allow water containing suspended materials to enter into waterways, sewer or drainage systems.

.4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.5 Do not direct water flow in a manner which would cause erosion to existing areas

1.9 SURFACE WATER AND GROUNDWATER QUALITY

.1 Materials and equipment shall be operated and stored in a manner that prevents deleterious substances (e.g., petroleum products, silt, etc.) as defined by the Fisheries Act from entering surface water.

.2 Groundwater or surface water entering excavations shall be collected and disposed of at an MOE-approved facility.

1.10 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties where indicated or as directed by the Departmental Representative.

.2 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.3 Restrict tree removal to areas indicated or designated by Departmental Representative.

.4 Trees removed that are greater than 5 centimetres in diameter at a height of 1.2 m above ground will be replaced following a policy of 'for every tree removed two are planted.' Replanting will occur on relatively flat areas only as close to the original site as possible.

.5 Planted tree species will include:
.1 Staghorn Sumac (Rhus typhina)
.2 Red Alder (Alnus rubra)

1.11 VEGETATION

.1 Protect vegetation that does not have to be removed.

.2 Operated construction machinery in a manner that minimizes damage to adjacent vegetation.

1.12 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material without Departmental Representative's approval.

.3 Do not dump excavated fill, waste material or debris in waterways.

1.12 WORK ADJACENT TO WATERWAYS (Cont'd)

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not use water from waterways.

.8 Special care shall be exercised while working near water's edge including site-specific erosion and sediment control measures. Silt fences shall be used to minimize sediment transport as well as limit access to watercourses by site personnel.

1.13 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this contract.

.2 Vehicles and equipment must be maintained in good working condition, equipped with emission controls as applicable to local authorities emission requirements.

.3 Implement dust abatement measures, as required to control dust.

.4 Control emissions from equipment to local authorities emission requirements.

.5 Prevent lead based paints from contaminating air and waterways beyond the removal area. Lay an impervious polyethylene 6 mm thick tarp around the base of the structures to collect any paint chips and debris during exterior paint abatement. Carefully wrap up tarp to contain paint chips and other small debris without spillage and dispose of off site.

.6 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

.7 Ensure hazardous substances (including fuel) are stored, handled and applied in a manner to prevent release to the environment and in a legal manner in accordance with hazardous waste regulations.

.8 Secure all materials at non-productive times (night and shut-down).

1.13 POLLUTION CONTROL (Cont'd)

.9 Vehicles shall be shut off when not in use. No vehicle idling on-site.

.10 Store hazardous or toxic substances in a designated area.

.11 Comply with requirements of WHMIS regarding use, handling, storage and disposal of hazardous materials; and regarding labelling and provision of MSDS acceptable to Labour Canada.

1.14 SPILLS OR RELEASE OF DELETERIOUS SUBSTANCES

.1 Immediately contain, limit spread and clean up in accordance with provincial regulatory requirements.

.2 All workers shall be fully aware of the spill prevention and response procedures including notification of Departmental Representative.

.3 The Ontario Ministry of Environment Spills Action Centre must be notified immediately by law at 1-800-268-6060.

.4 The Departmental Representative shall be immediately informed of all spills that occur onsite.

.5 Further information on dangerous goods emergency cleanup and precautions including a list of companies performing this work can be obtained from the Transport Canada 24-hour number (613) 996-6666 collect.

.6 Spill kits will be kept on-site during all project phases.

.7 Contractor shall take due care to ensure no deleterious materials including sediment-laden runoff leave the worksite, or enter any: surface water, storm water, or sanitary sewers at or near the worksite.

.8 Equipment fuelling or lubricating shall occur in a designated area with proper controls to prevent the release of deleterious substances, and shall be conducted away from any surface water drains or collection points.

.9 Any equipment remaining on site overnight shall have appropriately placed drip pans.

.10 The rinse, cleaning water or solvents for glues, wood preservatives and other potentially

1.14 SPILLS OR RELEASE OF DELETERIOUS SUBSTANCES (Cont'd)

.10 (Cont'd) harmful or toxic substances should be controlled so as to prevent leakage, loss or discharge into the storm drain system or into the marine environment.

.11 Protect the roadways from tracking of mud, soil, and debris throughout the work.

.12 Prevent discharges containing waste materials from reaching storm drains or the marine environment.

1.15 NOISE CONTROL

.1 All construction equipment shall be operated with exhaust systems in good repair to minimize noise.

.2 Construction activities that could create excessive noise shall be restricted to daylight hours and adhere to the municipal noise by-law.

.3 Ensure that noise control devices (i.e. mufflers, silencers) on construction equipment are properly maintained.

1.16 HISTORICAL/ ARCHAEOLOGICAL CONTROL

.1 Provide historical, archaeological, cultural resources, biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.

.2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

.3 If archaeological deposits are discovered during the project work shall stop immediately and the Departmental Representative shall immediately be notified.

.4 Archaeologically significant material, if found on the property, remains the property of the Crown and shall not be removed from the site.

1.16 HISTORICAL/ ARCHAEOLOGICAL CONTROL (Cont'd)

.5 Management of the archaeological materials will be coordinated through Departmental Representative.

1.17 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

1.18 SPECIES AT RISK

.1 Should a species at risk or its critical habitat be encountered, measures are to be implemented to avoid destruction, injury or interference with the species, its residence and/or its habitat (e.g. through sitting, timing or design changes). If the foregoing cannot be avoided Contractor should cease work and contact Departmental Representative for advice regarding mitigation measures.

.2 In the event that it is determined that the project likely may have unexpected adverse effects on species at risk (SAR), the Contractor shall notify the Department Representative immediately.

.3 Refer to the Environmental Assessment Mitigation Measures (Appendix B)and the Massasauga Rattle Snake Mitigation Measures Report (Appendix E) for species at risk and related mitigation issues.

1.19 MIGRATORY BIRDS/WILDLIFE HABITAT

.1 Disturbance and destruction of habitat should be timed outside of breeding season of mid-April to end of July.

.2 Ensure all works are in compliance with the Migratory Birds Convention Act.

.3 Restrict vehicle movements to construction areas and access roads and avoid harassment of animals.

1.20 FISH/ FISH HABITAT

.1 All materials and equipment used will be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) as defined by the Fisheries Act from entering surface water.

1.21 GREEN REMEDIATION

.1 The following section provides Green Remediation techniques that are to be used where practical during remedial activities.

.2 Energy

.1 Select suitably sized power machinery and equipment that operate using clean alternative fuels, are energy efficient or hybrid, and maintain equipment at peak performance to maximize efficiency.

.2 Substitute a fuel-based energy source with one that uses on-site renewable energy systems, wind, solar, biomass, biofuels, methane gas, or hydrogen fuel cells to replace or offset energy requirements.

.3 Purchase green power through local utility programs and Renewable Energy Credits and Certificates.

.4 Use optimized passive-energy technologies (with little or no demand for external utility power).

.5 Purchase materials from one (1) supplier of locally produced products and select local providers for field operations.

.6 Coordinate outside services and service providers to minimize transport of equipment.

.7 Employ auxiliary power units to power cab heating and air conditioning when a machine is unengaged.

.8 Use treatment systems with optimum efficiency.

.9 Evaluate and optimize energy efficiency of equipment with high energy demands periodically and adjust operations accordingly.

1.21 GREEN REMEDIATION (Cont'd)

.2 (Cont'd)

.10 Offset carbon emissions through renewable energy credits, green pricing programs, and power purchase agreements.

.11 Replace, repower, or retrofit older engines with advanced emission control devices to reduce harmful pollutants.

.12 Control nuisance odours associated with diesel emissions from construction equipment.

.13 Maintain engines to meet original standards and train operators to run equipment efficiently.

.3 Water

.1 Minimize fresh water and potable water consumption and maximize use of non-potable water and water reuse during daily operations and treatment processes.

.2 Use native vegetation requiring little or no irrigation.

.3 Reclaim treated water for beneficial use such as irrigation.

.4 Prevent nutrient loading in nearby water bodies.

.5 Return treated groundwater to its original aquifer to maintain the original groundwater resource, and return unused water to surface water bodies.

.6 Minimize runoff using open-space preservation methods such as duster development, reduced pavement widths, and shared transportation access.

.7 Utilize engineered structures or landscape features such as basins, trenches, porous pavement, disconnected downspouts, and rain gardens to capture and infiltrate runoff.

.8 Store captured runoff in rain barrels, cisterns, green roofs, and natural depressions and reuse operational greywater.

.9 Utilize biodegradable tarps and mats to contain dust rather than spraying with water.

.4 Air Emissions

.1 Reduce atmospheric release of toxic or priority pollutants and minimize dust export of contaminants.

.2 Consolidate onsite and offsite vehicular trips to reduce fuel consumption.

.3 Secure and cover loose, excavated material in open trucks, with reuseable covers.

.4 Re-vegetate excavated areas as quickly as possible.

.5 Retrofit machinery and heavy equipment for diesel-engine emission control and exhaust

1.21 GREEN REMEDIATION (Cont'd)

.4 (Cont'd)

.5 (Cont'd)

treatment technologies such as particulate filters and oxidation catalysts.

.6 Maintain engines of vehicles and machinery in accordance with manufacturer recommendations.

.7 Modify field operations through combined activity schedules, an idle reduction plan, and using machinery with automatic idle-shutdown devices.

.8 Replace conventional engines of existing vehicles and purchase new vehicles equipped for hybrid systems or alternative fuel.

.9 Use rail for the transportation of materials to minimize greenhouse gas emissions.

.10 Minimize the use of heavy equipment that consumes high volumes of fuel and use cleaner fuels such as ultra-low sulphur diesel.

.5 Waste

.1 Minimize waste generation and re-use materials whenever possible.

.2 Segregate materials such as metals, concrete, and lumber for reuse or recycling.

.3 Select the closest waste receiver.

.4 Use products with recycled and bio-based content and recycling potential.

.5 Salvage uncontaminated and pest- or disease-free organic debris for use as on-site or off-site infill, mulch, or compost.

.6 Salvage uncontaminated objects with potential recycle, resale, donation, or onsite infrastructure value such as steel, concrete, granite, and storage containers.

.7 Reuse or recycle recovered product from remedial activities.

.8 Salvage wood scraps for onsite landscaping use, mulch, and erosion control.

.6 Land and Ecosystems

.1 Establish efficient traffic patterns to minimize soil compaction in work areas.

.2 Install silt basins to capture sediment runoff along slopes.

.3 Ensure all equipment is clean prior to arrival on site to minimize potential of transporting invasive species.

.4 Minimize soil and habitat disturbance and reduce noise and lighting disturbance.

.5 Increase wildlife habitat.

.6 Create new greenspaces or corridors.

.7 Prevent topsoil compaction and increase subsurface water infiltration.

.8 Plant native vegetation.

1.21 GREEN REMEDIATION (Cont'd)

.6 (Cont'd)

.9 Provide uncompacted soil that is conducive to plant growth.

.10 Utilize environmentally friendly landscaping solutions to minimize environmental impacts at the site.

.11 Use environmentally friendly lubricants for engine maintenance.

.12 Decontaminate equipment away from environmentally sensitive areas.

.13 Use secondary containment to avoid cross-contamination.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 ABBREVIATIONS AND ACRONYMS

.1 The abbreviations and acronyms are commonly found in the Project Manual and represent the associated organizations or terms.

1.2 MATERIALS, EQUIPMENT AND METHODS

.1 A:
- .1 AL: aluminum.
- .2 AB: anchor bolt.

.2 B:
- .1 B: base.
- .2 BEAST: benthic assessment of sediment.
- .3 BH: bore hole.
- .4 BL: bottom layer.
- .5 BLK: block.
- .6 BOT: bottom.
- .7 BMP: best management practice.
- .8 B PL: base plate.
- .9 BRG: bearing.
- .10 BSMT: basement.
- .11 BTEX: benzene, toluene, ethylbenzene, and xylenes.

.3 C:
- .1 CB: catch basin.
- .2 CC: centre to centre.
- .3 CCN: contemplated change notice.
- .4 CDF: controlled density fill.
- .5 CEC: Canadian electical code.
- .6 CHS: Canadian hydrographic service.
- .7 CL: centreline.
- .8 CLR: clear.
- .9 COL: column.
- .10 CONC: concrete.
- .11 CONC BLK: concrete block.
- .12 CONT: continuous.
- .13 COMPL: complete.
- .14 CPM: critical path method.
- .15 C/W: complete with.

.4 D:
- .1 D: deep.
- .2 DEG: degree.
- .3 DIA: diameter.
- .4 DIM: dimension.
- .5 DL: dead load.
- .6 DSS: designated substance survey

1.2 MATERIALS, EQUIPMENT AND METHODS (Cont'd)

.5 E:
- .1 EA: each.
- .2 ECF: engineered containment facility.
- .3 EE: each end.
- .4 EF: each face.
- .5 EL: elevation.
- .6 ELEC: electric.
- .7 ENCL: enclosure.
- .8 EQ: equal.
- .9 EXIST: existing.
- .10 EW: each way.

.6 F:
- .1 FC: fuel contributed.
- .2 FDN: foundation.
- .3 FEXT: fire extinguisher.
- .4 FIN: finish.
- .5 FIP: federal identity program.
- .6 FLD: field.
- .7 FRR: fire resistance rating.
- .8 FTG: footing.

.7 G:
- .1 GALV: galvanized steel.
- .2 GC: General Conditions.
- .3 GCL: geosynthetic clay liner.

.8 H:
- .1 HOR: horizontal.
- .2 HOR EF: horizontal each face.
- .3 HP: hydro pole.
- .4 HPA: Hamilton Port Authority.
- .5 HT: height.
- .6 HYD: hydrant.

.9 I:
- .1 ID: inside diameter.

.10 J:
- .1 JT: joint.

.11 L:
- .1 LG: long.
- .2 LL: live load.

.12 M:
- .1 MAS: masonry.
- .2 MAX: maximum.
- .3 MET: metal.
- .4 MH: maintenance hole.
- .5 MIN: minimum.

.13 N:
- .1 NBC: national building code.
- .2 NF: near face.

1.2 MATERIALS, EQUIPMENT AND METHODS (Cont'd)

.13 N:(Cont'd)
- .3 NFC: national fire code.
- .4 NIC: not in contract.
- .5 NTS: not to scale.

.14 O:
- .1 OBC: Ontario building code.
- .2 OC: on centre.
- .3 OD: outside diameter.
- .4 OPNG: opening.

.15 P:
- .1 PAH: polynuclear aromatic hydrocarbons.
- .2 PCB: polychlorinated biphenyl.
- .3 PCC: precast concrete.
- .4 PL: plate.
- .5 PLYWD: plywood.
- .6 PR: pair.
- .7 PREFAB: prefabricated.
- .8 PRFL: profile.
- .9 PT: paint.
- .10 PVC: polyvinyl cholide.

.16 R:
- .1 R: radius.
- .2 RC: reinforced concrete.
- .3 REINF: reinforced/reinforcing.
- .4 REQD: required.
- .5 REQT: requirement.
- .6 RO: rough opening.
- .7 RWL: rain water leader.

.17 S:
- .1 SAN SEW: sanitary sewer.
- .2 SCHED: schedule.
- .3 SD: smoke developed.
- .4 SECT: section.
- .5 SPEC: specification.
- .6 SS: stainless steel.
- .7 STD: standard.
- .8 STL: steel.
- .9 STC: sound tranmission class.
- .10 STL PL: steel plate.
- .11 STN: stone.
- .12 STR: structure or structural.
- .13 ST SEW: storm sewer.

.18 T:
- .1 T: top.
- .2 T&B: top and bottom.
- .3 TCB: turbidity control plan.
- .4 TCLP:Toxicity characteristic leaching procedure
- .5 TEL: telephone.
- .6 THKNS: thickness.

1.2 MATERIALS, EQUIPMENT AND METHODS (Cont'd)

.18 T:(Cont'd)
.7 TRANSV: transverse.
.8 TYP: typical.

.19 U:
.1 UGRD: underground.
.2 UOS: unless otherwise specified.
.3 U/S: underside.

.20 V:
.1 VERT: vertical.
.2 VERT EF: vertical each face.

.21 W:
.1 WD: wood.
.2 WHMIS: workplace hazardous materials information system.
.3 WSIB: workplace safety and insurnace board.
.4 WT: weight.
.5 WTP: water treatment plant.

1.3 STANDARDS ORGANIZATIONS

.1 Standards writing organizations:
.1 AA - Aluminum Association.
.2 ACPA - American Concrete Pipe Association.
.3 ANSI - American National Standards Institute.
.4 ASHRAE - American Society of Heating and Refrigerating and Air-Conditioning Engineers.
.5 ASTM - American Society for Testing and Materials.
.6 AWPA - American Wood Preservers' Association.
.7 AWWA - American Water Works Association.
.8 CCDC - Canadian Construction Documents Committee.
.9 CCMPA - Canadian Concrete Masonry Producers Association.
.10 CGSB - Canadian General Standards Board.
.11 CNTA - Canadian Nursery Trades Association.
.12 CPCA - Canadian Painting Contractors Association.
.13 CSA - Canadian Standards Association.
.14 CSC - Construction Specifications Canada.
.15 CSI - Construction Specifications Institute.
.16 CSSBI - Canadian Sheet Steel Building Institute.
.17 EEMAC - Electrical and Electronic Manufacturer's Association of Canada.
.18 ESA - Electrical Safety Authority.
.19 FFC - Federal Fire Commissioner.

1.3 STANDARDS ORGANIZATIONS (Cont'd)

.1 (Cont'd)

.20 FSC - Forest Stewardship Council.
.21 IEEE - Institute of Electrical and Electronics Engineers Inc.
.22 ISO - International Organization for Standardization.
.23 LEED - LEED Canada, Leadership in Energy and Environmental Design.
.24 MPI - Master Painters Insitute.
.25 NAAMM - National Association of Architectural Metal Manufacturers.
.26 NCPI - National Clay Pipe Institute.
.27 NEMA - National Electrical Manufacturers Association.
.28 NFPA - National Fire Protection Association.
.29 OPSD - Ontario Provincial Standard Drawings.
.30 OPSS - Ontario Provincial Standard Specifications.
.31 PPI - Plasctics Pipe Institute.
.32 SCAQMD - South Coast Air Quality Management District.
.33 TIA - Telecommunications Industry Association.
.34 UL - Underwriters Laboratories.
.35 ULC - Underwriters Laboratories of Canada.
.36 US EPA - United States Environmental Protection Agency.
.37 WH - Warnock Hersey.

1.4 FEDERAL GOVERNMENT DEPARTMENTS AND AGENGIES

.1 Departments, agencies and crown corporations.

.1 CEAA - Canadian Environmental Assessment Agency.
.2 CSC - Correctional Service Canada.
.3 CRA - Canada Revenue Agency.
.4 DFO - Fisheries and Oceans Canada.
.5 DND - Department of National Defence.
.6 EC - Environment Canada.
.7 FHBRO - Federal Heritage Buildings Review Office.
.8 HCD - Heritage Conservation Directorate.
.9 LC - Labour Canada.
.10 PC - Parks Canada.
.11 PWGSC - Public Works and Government Services Canada.
.12 RCMP - Royal Canadian Mounted Police.
.13 TBS - Treasury Board Secretariat.
.14 TC - Transport Canada.

1.5 PROVINCIAL GOVERNMENT DEPARTMENTS AND AGENGIES

.1 MOE - Ontario Ministry of Environment.

.2 MOL - Ontario Ministry of Labour.

.3 MTO and MOT - Ontario Ministry of Transportation.

1.6 INTERNATIONAL GOVERNMENT DEPARTMENTS AND AGENCIES

.1 DOHMH - New York City Department of Health and Mental Hygiene, USA.

.2 GSA - Government Services Administration, USA.

1.7 UNITS OF MEASURE METRIC

.1 The following abbreviations of units of measure are commonly found in the Project Manual:

.1 C: Celsius.
.2 cm: centimetre.
.3 kg: kilogram.
.4 kg/m^3: kilogram per cubic metre.
.5 kN: kilonewton.
.6 kPa: kilopascals.
.7 kw: kilowatts.
.8 l/s: litre per second.
.9 m: metre.
.10 m^3: cubic metre.
.11 mg/kg: milligrams per kilogram.
.12 mg/L: milligrams per litre.
.13 mm: millimetres.
.14 mt: metric tonnes.
.15 MPa: megapascal.
.16 NTU: nephelometric turbidity unit.
.17 ppm: parts per million.
.18 ug/L: micrograms per litre.
.19 ug/m^3: micrograms per cubic metre.

1.8 UNITS OF MEASURE IMPERIAL

.1 The following abbreviations of units of measure are commonly found in the Project Manual:

.1 F: Fahrenheit.
.2 ft: foot/feet.
.3 ga: guage.
.4 gpm: gallons per minute.
.5 in: inches.
.6 lbs: pounds.
.7 NTU: nephelometric turbidity unit.
.8 psi: pounds-force per square inch.
.9 ppm: parts per million.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 This section covers the requirements for the installation of access to permit work to be carried out.

.2 Access to permit work to be carried out shall be by means of standard scaffolding.

.3 Provide shop drawings of all methods and locations

1.2 RELATED WORK

.1 Section 02 83 10 - Lead-Base Paint Abatement - Minimum Precautions.

.2 Section 09 99 13.01 - Exterior Re-painting.

.3 Section 07 92 00 - Joint Sealants.

.4 Section 08 50 00 - Windows.

1.3 DEFINITION

.1 Scaffolding: any method used for access to carry out the work such as rigid framed scaffoding, ladders, etc.

PART 2 - PRODUCTS

2.1 SCAFFOLDS

.1 Scaffolding materials shall be new, or used materials in good condition.

.2 Provide five sets of shop drawings to the Departmental Representative for review and comments

PART 3 - EXECUTION

3.1 SCAFFOLDING AND BARRIERS

.1 Provide all scaffolding, ladders, access, lifting equipment, etc. both inside the structures and outside as necessary to carry out the work of all trades and as per the requirements of the work. All work to be in accordance with Occupational Health and Safety Act. Field measure to ensure proper fit of all works.

.2 Scaffolding shall be erected on wood sills which are placed on continuous sheets of plywood under the scaffolding to protect the existing ground area from damage and, tarps in other areas to prevent discolouration or contamination of surfaces.

.3 Provide suitable ladders to scaffolding at each face of the structure or per each section of scaffold isolated from other sections, for full height of scaffold. Access from the ladder(s) to the scaffolding shall be clear of obstructions and cross bracing so men and materials can easily enter.

.4 Scaffolding shall be designed, drawn and inspected by a registered professional engineer experienced in this work. Provide shop drawings for review. All drawings shall be stamped and signed by a registered professional engineer. Make all changes required by Ministry of Labour officials. Prior to using the scaffolding for carrying out the work, the design engineer for the scaffolding shall complete an inspection of the installation and shall provide the Departmental Representative with a letter stating that the installation conforms with his/her design and is suitable for the Contractor's use. Provide for periodic inspections monthly as scaffolding and work progresses.

.5 Install, maintain and remove all barriers around the site to prevent access by the Public to the immediate work areas. All barriers to be in accordance with the Occupational Health and Safety Act.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Barriers.

.2 Environmental Controls.

.3 Fire Routes

1.2 MEASUREMENT PROCEDURES

.1 Supply and installation of erosion and sediment control measures for environmental protection for all work, maintenance of sediment control measures during work, and removal of erosion and sediment control measures after all work is completed will be measured within the lump sum.

.2 Supply and installation of secure barriers will be measured within the lump sum.

.3 Construct all other work of this section under lump sum price.

1.3 REFERENCES

.1 Canadian General Standards Board (CGSB):
.1 CAN/CGSB-1.189-2000, Exterior Alkyd Primer for Wood.
.2 CAN/CGSB-1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA):
.1 CAN/CSA-O121-M1978(R2003), Douglas Fir Plywood.

1.4 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.5 EROSION AND SEDIMENT CONTROL

.1 Plan and execute construction by methods to control surface drainage from cuts and fills, from waste disposal areas, from stockpiles, staging areas, and other work areas. Prevent erosion and sedimentation.

.2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, regrade, or

1.5 EROSION AND SEDIMENT CONTROL (Cont'd)

.2 (Cont'd) otherwise develop to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by Departmental Representative.

.3 Provide and maintain temporary measures which may include, silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, vegetative cover, and other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Regulations. Make sediment control measures available during construction. Place silt fences and/or hay or straw bales in ditches to prevent sediments from escaping from ditch terminations.

.4 Plan construction procedures to avoid damage to work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.

1.6 GUARD RAILS AND BARRICADES

.1 Provide secure barricades at top of deep slopes.

.2 Provide as required by governing authorities on land and marine vessels.

1.7 ACCESS TO SITE

.1 Provide and maintain haul and access roads, ramps and construction runways as may be required for access to Work.

.2 Construct haul and access roads necessary to complete work.

.3 Haul Roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic should be avoided.

.4 Location, grade, width and alignment of access and hauling roads subject to approval by Departmental Representative.

1.7 ACCESS TO SITE (Cont'd)

.5 Remove upon completion of work, haul and access roads, ramps and construction runways designated by Departmental Representative

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.9 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.10 PROTECTION OF FINISHES

.1 Provide protection for building finishes, site furnishings and equipment during performance of Work.

.2 Provide necessary screens, covers and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Hay or Straw Bale: wire bound or string tied; securely anchored by at least 2 stakes or rebars driven through bale 300 mm to 450 mm into ground; chinked (filled by wedging) with hay or straw to prevent water from escaping between bales; and entrenched a minimum of 100 mm into ground.

.2 Silt Fence: assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile: uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.

2.1 MATERIALS (Cont'd)

.3 Net Backing: industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.

.4 Posts: sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Securely fasten each post to geotextile and net backing using suitable staples.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Construct temporary erosion control items as required. Actual alignment and/or location of various items as directed by Departmental Representative.

.2 Do not construct bale barriers and silt fence in flowing streams or in swales.

.3 Check erosion and sediment control measures weekly or after each rainfall; during prolonged rainfall check daily.

.4 Bales and/or silt fence may be removed at beginning of work day, replace at end of work day at the discretion of Departmental Representative.

.5 Whenever sedimentation is caused by stripping vegetation, regrading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.

.6 Prior to or during construction, Departmental Representative may require installation or construction of improvements to prevent or correct temporary conditions on site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, and other measures appropriate to specific condition. Temporary improvements must remain in place and in operation as necessary or until otherwise directed by Departmental Representative.

.7 Repair damaged bales, end runs, and undercutting beneath bales.

3.1 INSTALLATION (Cont'd)

.8 Unless otherwise directed by Departmental Representative, remove temporary erosion and sediment control devices upon completion of Work. Dispose of accumulated sediments and shape area to permit natural drainage to satisfaction of Departmental Representative. Materials once removed become property of Contractor.

.9 Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

.10 Do not disturb existing embankments or embankment protection.

.11 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

.12 If soil and debris from site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where in Departmental Representative's determination it is undesirable, remove accumulation and restore area to original condition.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section includes the removal of debris and offsite disposal.

.2 Site Debris removal work includes:

.1 Provide equipment required for debris removal.

.2 Transportation of all equipment, staff, debris, to and from site as required.

.3 Co-ordination, supervision and preparation for removal of debris. Departmental Representative requires 2 weeks notice previous to the commencement of site work for provision of site supervision.

.4 Specification of final debris removal design and facilities required.

.5 Provision and installation of materials and equipment necessary for debris removal.

.6 Implementation of safety work zones, temporary barriers, site Health and Safety Plans and Emergency Response Plans.

.7 Removal of debris as directed by Departmental Representative.

.8 Management of debris and small amounts of contaminated soil associated with debris removal.

1.2 MEASUREMENT PROCEDURES

.1 Removal of debris materials from site shall be measured in metric tonnes of actual weight of materials removed. Measurement shall be based on the net weight of materials removed from the site and substantiated by certified weigh bills from the landfill sites.

.1 Remove and dispose of debris materials to the extent and limits as directed by Departmental Representative.

.2 Price shall include: preparatory work including obtaining the required permits and certificates; quality control/quality assurance; other required equipment; implementation of safety work zones; removal; loading; required storage and delivery of wastes to an approved landfill or recycling facility.

.3 Waste present at the site includes metals, brick, wood, and general waste for disposal.

.4 Loose rock intermixed with waste is to be sorted out and remain onsite.

.5 Soil mixed with waste is to be sorted out and remain onsite to extent possible, at direction of Departmental Representative.

1.2 MEASUREMENT PROCEDURES (Cont'd)

.2 Bedrock shoreline and shallow water may prevent direct access to the shore by barge. Additional equipment required to transport equipment to and from the site will be measured as part of the lump sump price.

.3 Mobilization to and demobilization from the site will be measured as part of the lump sum price.

.4 Locating and protecting buried and aboveground utilities, structures, and features will be measured as part of the lump sum price.

.5 Construct all other work of this section under lump sum price.

1.3 SUBMITTALS

.1 Provide quality assurance and quality control submittals in accordance with Section 01 11 06 as follows:
.1 Description of emergency plans in case of breakdown, spill or other problem.
.2 Complete the CEAA Environmental Assessment Mitigation Measures Report Form included as Appendix B.
.3 Waste management plan and complete list of wastes, including waste registration numbers as required by provincial regulations, that will be generated by activities.
.4 Copies of transport manifests, trip tickets, and landfill weigh bill receipts for waste materials removed from work area.

.2 Provide closeout submittals as follows:.
.1 Provide written proof that waste and debris have been sent to site authorized by MOE for Province of Ontario.

1.4 QUALITY ASSURANCE

.1 Regulatory requirements: perform work in accordance with:
.1 Acts, Regulations, Laws, guidelines codes of practice, directives and policies of government authorities pertaining to: environment; noise; water supply; waste water; air quality; health and safety; transportation; and waste management.
.2 WHMIS.
.3 Canadian Environmental Assessment Act.
.4 Canadian Environmental Protection Act (New Substance Notification Regulations).
.5 Transportation of Dangerous Goods Act.

1.4 QUALITY ASSURANCE (Cont'd)

.1 (Cont'd)
.6 National Building Code of Canada.
.7 National Fire Code of Canada.
.8 The Fisheries Act.
.9 Migratory Birds Convention Act.
.10 Migratory Birds Regulations.
.11 Environmental Protection Act (Ontario) O. Reg. 153/04 (as amended), 0. Reg. 347 (as amended).
.12 Species at Risk Act (SARA).

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Debris:
.1 Store excavated debris as determined by Departmental Representative. Debris may be excavated from areas that have existing soil contamination, movement of debris mixed with contaminated soils to be directed by Departmental Representative. Prevent cross contamination of clean soils due to movement of contaminated soils. Limit movement of contaminated soils.
.2 Store excavated debris mixed with contaminated soil in drums or water-tight temporary storage cells. Cover debris mixed with contaminated soil with cap to minimize volatilization and underlay contaminated soil with flexible membrane to minimize or prevent leaching losses. Analyze, transport and dispose of contaminated soil according to current provincial regulations.

.2 New materials and equipment:
.1 Ship, store and preserve in original packaging with manufacturer's seal and label remain intact.
.2 Ensure materials and equipment are not damaged, altered or soiled during shipment, handling and storage.
.3 Transport rejected equipment and materials from work site immediately.
.4 Store materials and equipment according to manufacturer's and supplier's instructions.
.5 Establish quality management system for materials and equipment.

1.6 PROJECT/SITE CONDITIONS

.1 Existing Conditions: removal of debris;

.1 Set area aside for temporary storage of debris.

1.6 PROJECT/SITE CONDITIONS (Cont'd)

.1 (Cont'd)

.2 Protect non-contaminated material and soils from contaminated soils associated with debris.

.3 TCLP Analysis of soils associated with the site included in Appendix F (TCLP analysis completed more than 1 year ago). Site soils are non-hazardous.

1.7 SEQUENCING

.1 Decontaminate equipment used in debris removal procedures before removing equipment from job site.

1.8 MAINTENANCE OF ACCESS ROADS

.1 Unless otherwise directed, maintain access roads/paths as follows:

.1 Maintain and clean roads/paths for duration of Work.

.2 Repair damage incurred from use of roads/paths.

.3 Provide photographic documentation of roads/paths used by construction vehicles before, during and after Work.

PART 2 - PRODUCTS

2.1 EQUIPMENT

.1 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.

.2 Trucks and Marine Equipment: use watertight containment for transporting debris.

.3 Environmental emergency response equipment.

.4 Safety equipment.

PART 3 - EXECUTION

3.1 EQUIPMENT

.1 Trucks:
.1 Clean meticulously at end of Work.
.2 Cover truck boxes with tarpaulins during transportation.

.2 Marine Equipment: Prevent any spillage of debris materials during all transfers over water or land.

.3 Equipment to be decontaminated in accordance with Section 01 35 43.

3.2 PREPARATION

.1 Protection:
.1 Provide safety measures to ensure worker and public safety.
.2 Protect buried services that are required to remain undisturbed.
.3 Contractor to conduct toxicity characteristic leaching procedure (TCLP) analysis on soils associated with debris to determine waste classification disposal procedures if contaminated soils can not be segregated from debris. A copy of laboratory analysis is to be provided to Departmental Representative.

3.3 APPLICATION

.1 Debris management:
.1 Store, transport, and dispose off-site in accordance with applicable provincial standards, requirements and regulations.

3.4 METHOD OF REMEDIATION

.1 Contaminated/volatile waste: store in covered metal containers.

.2 Hazardous waste: dispose of in accordance with regulations.

.3 Site Debris Removal.
.1 Remove refuse debris as directed by Departmental Representative. Recyclable items (i.e. metal, unpainted wood, glass) shall be separated from non-recyclable materials where possible. Refuse removal and off-site disposal

3.4 METHOD OF REMEDIATION (Cont'd)

.3 (Cont'd)

.1 (Cont'd)

shall be completed by Contractor and supervised by Departmental Representative. Removal and off-site disposal of refuse in accordance with applicable federal and provincial regulations.

.2 Remove soils mixed with refuse below and around debris sites at the discretion of the Departmental Representative. These soils are to be handled as contaminated soils.

3.5 EQUIPMENT DECONTAMINATION

.1 Decontaminate equipment used in debris removal process and remove from site at end of remediation activities.

3.6 ENVIRONMENTAL PROTECTION

.1 While executing the project, implement the mitigation measures identified in the CEAA Environmental Assessment Mitigation Measures Report (Appendix B) prepared in accordance with the Canadian Environmental Assessment Act (CEAA) for this project. Complete the Mitigation Measures Report Form contained herein and submit it to the Departmental Representative upon completion of the project.

.2 Work to be done in accordance with Contractor Environmental Protection Plan. Refer to Section 01 35 43.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Comply with requirements of this Section when performing following work:
.1 Removing or distrubance of transite tiles that are asbestos-containing material if the tiles are removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
.2 Break, cut, grind, sand, drill, scrape, vibrate or abrade non-friable asbestos containing materials using non-powered hand-held tools, and the material is wetted to control the spread of dust or fibres.

1.2 SECTION INCLUDES

.1 Requirements and procedures for asbestos abatement of non-friable asbestos-containing materials.

1.3 REFERENCES

.1 Department of Justice Canada (JUS)
.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Transport Canada (TC)
.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.3 O. Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations.

.4 O. Reg. 490/09, Designated Substances.

.5 A Guide to the Regulations respecting Asbestos on Construction Projects and in Buildings and Repair Operations released in November 2007, http://www.labour.gov.on.ca/english/hs/asbestos/index.html.

1.4 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 Amended Water: water with nonionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

1.4 DEFINITIONS (Cont'd)

.3 Asbestos-Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.

.4 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.

.5 Authorized Visitors: Engineers, Consultants or designated representatives, and representatives of regulatory agencies.

.6 Competent worker person: in relation to specific work, means a worker who:
.1 Is qualified because of knowledge, training and experience to perform the work.
.2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.
.3 Has knowledge of all potential or actual danger to health or safety in the work.

.7 Friable material: means material that:
.1 When dry, can be crumbled, pulverized or powdered by hand pressure, or
.2 is crumbled, pulverized or powdered.

.8 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.9 Occupied Area: any area of the building or work site that is outside Asbestos Work Area.

.10 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.

.11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.5 MEASUREMENT PROCEDURES

.1 All work required to remove and dispose of the non-friable transite asbestos board will be paid by the tonne of material removed.

.2 Construct all other work of this section under lump sum price.

1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 11 06.

.2 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction before removing asbestos from the Site.

.3 Submit Provincial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's Asbestos Liability Insurance.

.5 Submit to Departmental Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

.6 Submit proof that all asbestos workers and/or supervisor have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.

.7 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

.2 Health and Safety:
.1 Perform construction occupational health and safety in accordance with Section 01 35 29.
.2 Safety Requirements: worker protection.
.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
.1 Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued

1.7 QUALITY ASSURANCE (Cont'd)

.2 Health and Safety:(Cont'd)

.2 Safety Requirements:(Cont'd)

.1 (Cont'd)

to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing shall consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing to include suitable footwear, and to be repaired or replaced if torn.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Before leaving Asbestos Work Area, the worker can decontaminate his or her

1.7 QUALITY ASSURANCE (Cont'd)

.2 Health and Safety:(Cont'd)

.2 Safety Requirements:(Cont'd)

.3 (Cont'd)

protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.4 Facilities for washing hands and face shall be provided within or close to the Asbestos Work Area.

.5 Ensure workers wash hands and face when leaving Asbestos Work Area.

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Separate for reuse and recycling and place in designated containers metal waste in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 Fold up metal banding, flatten and place in designated area for recycling.

.7 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, and Municipal regulations. Dispose of asbestos waste in sealed double thickness 0.15 mm thick (6 mil) bags or leak proof drums. Label containers with appropriate warning labels.

1.8 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

.8 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.9 EXISTING CONDITIONS

.1 ACMs to be removed include asbestos transite board, located at various locations around the site.

.2 Notify Departmental Representative of friable material discovered during Work and not apparent from specifications, or report pertaining to Work. Do not disturb such material pending instructions from Departmental Representative.

1.10 SCHEDULING

.1 Hours of work:
.1 Perform work involving asbestos removal during normal working hours.

1.11 OWNER'S INSTRUCTIONS

.1 Before beginning Work, provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, following minimum requirements:
.1 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 a competent, qualified person.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Drop Sheets:
.1 Polyethylene: 0.15 mm thick.
.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.

.3 Waste Containers: contain waste in two separate containers.
.1 Inner container: 0.15 mm thick sealable polyethylene waste bag.
.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.
.3 Labelling requirements: affix pre-printed cautionary asbestos warning in both official languages that is visible when ready for removal to disposal site.

.4 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 asbestos fibres.

.5 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.

PART 3 - EXECUTION

3.1 PROCEDURES

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

.2 Before beginning Work, isolate Asbestos Work Area using, minimum, preprinted cautionary asbestos warning signs in both official languages that are visible at access routes to Asbestos Work Area.
.1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.

3.1 PROCEDURES (Cont'd)

.2 (Cont'd)

.2 Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.

.3 Do not use compressed air to clean up or remove dust from any surface.

.3 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.4 Wet materials containing asbestos to be cut, ground, abraded, scraped, drilled, or otherwise disturbed unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity fine - mist sprayer.

.2 Perform Work to reduce dust creation to lowest levels practicable.

.3 Work will be subject to visual inspection and air monitoring.

.4 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.5 Frequently and at regular intervals during Work and immediately on completion of work:

.1 Dust and waste to be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a waste container, and

.2 Drop sheets to be wetted and placed in a waste container as soon as practicable.

.6 Cleanup:

.1 Place dust and asbestos containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.

.2 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.

.3 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial and Federal Authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that the appropriate guidelines and regulations for asbestos disposal are followed.

.4 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Comply with requirements of this Section when performing following Work: Type 1 Operation.
.1 Removal of lead-based and PCB containing coatings with a chemical gel or paste and fibrous laminated cloth wrap on exterior and interior surfaces.
.2 Removal of lead-based and PCB containing coatings or materials using a power tool with an effective dust collection system equipped with a HEPA filter on exterior and interior surfaces.
.3 Removal of lead-based and PCB containing coatings or materials with non-powered hand tool, other than manual scraping and sanding on exterior and interior surfaces.
.4 Repainting of abated surfaces to match original paint colour scheme or as directed by the Departmental Representative as per Section 09 91 13 EXTERIOR RE-PAINTING.
.5 If surfaces are damaged during paint removal, replacement with salvaged or new surface materials to match original work.
.6 Salvaged surface materials to be reused must be of acceptable condition to the Departamental Representative.
.7 Repainting of replaced or salvaged surface materials to match original paint colour scheme.

1.2 REFERENCES

.1 Province of Ontario - Ontario Ministry of Labour.
.1 Occupational Health and Safety Branch, Guideline Lead On Construction Projects, September 2004, and O. Reg. 490/09 respecting Designated Substances - Lead made under the Occupational Health and Safety Act as amended by O. Reg. 148/12 and O. Reg. 149/12; and O.Reg 833/90 respecting the Control and Exposure to Biological or Chemical Agents as amended.

.2 Ontario Ministry of Environment (MOE)
.1 Protocol for Sampling and Testing at PCB Storage Sites in Ontario, 2000 (ISBN 0-7794-0020/PIBS 4049e).

.3 Department of Justice Canada
.1 Canadian Environmental Protection Act, 1999 (CEPA).

1.2 REFERENCES (Cont'd)

.4 Health Canada
.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.5 Human Resources and Social Development Canada (HRSDC)
.1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.

.6 Transport Canada (TC)
.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.7 U.S. Environmental Protection Agency (EPA)
.1 EPA 747-R-95-007-1995, Sampling House Dust for Lead.

.8 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).

.9 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.

.10 Underwriters' Laboratories of Canada (ULC)

.11 American National Standards Institute (ANSI). American Society of Mechanical Engineers (ASME)
.1 ANSI/ASME B18.6.3-2010, Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch).

.12 American Society for Testing and Materials International, (ASTM).
.1 ASTM D2369 10, Test Method for Volatile Content of Coatings.
.2 ASTM D2832-92(2005), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
.3 EnASTM D5116-10, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.

.13 Canadian General Standards Board (CGSB).
.1 CAN/CGSB 51 1.32 M77, Sheathing, Membrane, Breather Type.

1.2 REFERENCES (Cont'd)

.13 (Cont'd)
.2 CAN/CGSB 93.2 M91, Prefinished Aluminum Siding, Soffits and Fascia, for Residential Use.
.3 CAN/CGSB 93.3 M91, Prefinished Galvanized and Aluminum Zinc Alloy Steel Sheet for Residential Use.
.4 CAN/CGSB 93.4 92, Galvanized and Aluminum Zinc Alloy Coated Steel Siding Soffits and Fascia, Prefinished, Residential.
.5 CGSB 93.5 92, Installation of Metal Residential Siding, Soffits and Fascia.

.14 Canadian Standards Association (CSA International).
.1 CSA B111 1974(R2003), Wire Nails, Spikes and Staples.

.15 Environmental Choice Program (ECP).
.1 CCD 045 95, Sealants and Caulking Compounds.

.16 Underwriters' Laboratories of Canada (ULC).
.1 CAN/ULC18-S706-02, Wood Fibre Thermal Insulation for Buildings.

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: Departmental Representative 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 ug/m^3) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead

1.3 DEFINITIONS (Cont'd)

.5 Action level:(Cont'd) concentrations less than 0.05 milligrams per cubic metre 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 MEASUREMENT PROCEDURES

.1 All work required to remove and dispose of the lead based and PCB containing coating by Type 1 operations will be paid by the square metre of area.

.2 Application of slow drying sealer will be paid by the square meter of area.

.3 Repainting will be paid by the square meter of area.

.4 All work for the removal and reinstallation of salvaged or new surface materials will be paid for as part of the lump sum price.

.5 Construct all other work of this section under lump sum price.

1.5 SUBMITTALS

.1 Provide submittals in accordance with Section 01 11 06.

.2 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.

.3 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of paint with PCB concentrations.
.1 Landfill operator to be notified of PCB concentration and confirmation obtained for acceptance of waste.

1.5 SUBMITTALS (Cont'd)

.4 Provide proof of Contractor's General and Environmental Liability Insurance.

.5 Quality Control:
.1 Provide Departmental Representative 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 Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to lead materials, 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 Do construction occupational health and safety in accordance with Section 01 35 29.
.2 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 N, R, or P - series filter, and 95, 99 or 100% efficiency could be provided.
.3 Eating, drinking, chewing, and smoking are not permitted in work area.
.4 Ensure workers wash hands and face when leaving work area. Facilities for washing are to be provided by contractor.
.2 Visitor Protection:
.1 Provide approved respirators to Authorized Visitors to work areas.

1.6 QUALITY ASSURANCE (Cont'd)

.2 Health and Safety:(Cont'd)
.2 Safety Requirements:(Cont'd)
.2 Visitor Protection:(Cont'd)
.2 Instruct Authorized Visitors on procedures to be followed in entering and exiting work area.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Provincial and Municipal regulations.

.2 Separate waste materials for reuse and recycling where possible.

.3 Disposal of lead waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of lead waste in sealed double thickness 0.152 mm thick bags or leak proof drums. Label containers with appropriate warning labels.
.1 Paint containing PCBs to be disposed of in separate sealed double thickness 0.152 mm thick bags or leak proof drums. Label containers with warning labels indicating lead and PCB content with PCB concentration stated on the label.

.4 Contractor to conduct toxicity characteristic leaching procedure (TCLP) analysis on lead based paint waste to determine waste classification disposal procedures. A copy of laboratory analysis is to be provided to Departmental Representative.

.5 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

.6 Divert unused caulking, sealants, and adhesive materials from landfill through disposal at hazardous material depot.

.7 Divert used metal cut offs from landfill by disposal at the nearest metal recycling facility.

1.8 EXISTING CONDITIONS

.1 Information pertaining to paints containing lead, paints containing PCBs and paints containing both lead and PCBs, to be handled, removed, or otherwise disturbed and disposed of during this Project:

1.8 EXISTING CONDITIONS (Cont'd)

.1 (Cont'd)
.1 Site Figures showing the locations of lead and PCB containing paints are shown in Appendix C.
.2 Tables showing concentrations of lead and PCBs in paint are included in appendix D.

.2 Notify Departmental Representative of lead or PCB based paint discovered during Work and not apparent from specifications, or reports pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.9 SCHEDULING

.1 Not later than two days before beginning Work on this Project notify following in writing:
.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 and PCB containing materials identified in Existing Conditions.

.3 Provide Departmental Representative copy of notifications prior to start of Work.

.4 Hours of Work: perform work during normal working hours.

1.10 OWNER'S INSTRUCTIONS

.1 Provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in all 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 Polyethylene 6 mm thick unless otherwise specified; in sheet size to minimize joints.

.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 purpose of trapping residual lead paint residue.

.5 Lead, Lead/PCB, PCB waste containers: metal or fibre type acceptable to landfill 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.
.2 Label containers with pre-printed bilingual cautionary "Warning Lead/PCB" or "Warning PCB" (provide PCB concentration in mg/kg on label) clearly visible when ready for removal to disposal site.

.6 Replacement Boards: to match existing grade, quality and thickness.

.7 Strip siding: to CAN/CGSB 93.2 to match. existing.
.1 Colour: to match existing.
.2 Gloss: to match existing.
.3 Profile: to match existing.
.4 Thickness: to match existing.
.5 Backing: wood fibre composite board Type II to CAN/ULC S706 12.5 mm thick underlain by spun-bonded polyolefin(Tyvek)paper.

.8 Exposed trim: inside corners, outside corners, cap strip, drip cap, undersill trim, starter strip and window/door trim of same material, colour and gloss as original siding, with fastener holes pre punched.

.9 Nails: CSA B111. Screws: ANSI B18.6.4. Purpose made aluminum alloy.

2.1 MATERIALS (Cont'd)

.10 Caulking Sealant: Tested for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832.

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 Remove and store items to be salvaged or reused.
.1 Protect and wrap items and transport and store in area specified by Departmental Representative.

.2 Work Area:
.1 Shut off and isolate HVAC system to prevent dust dispersal into building/other buildings. Ensure windows and doors are closed and sealed to prevent dust from entering into buildings.
.2 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.
.3 Seal off openings with polyethylene sheeting and seal with tape.
.4 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.
.5 Provide electrical power and shut off for operation of powered tools and equipment. Provide ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.
.6 Lay an impervious polyethylene 6 mm thick tarp around the base of the buildings to collect any paint chips and debris resulting from loose paint removal.
.7 All work shall be performed to applicable codes, bylaws and standards governing this project.

.3 Do not start work until:
.1 Arrangements have been made for disposal of waste.

3.2 PREPARATION (Cont'd)

.3 Do not start work until:(Cont'd)

.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-based and PCB containing coatings with a chemical gel or paste and fibrous laminated cloth wrap; or removal using power tools equipped with HEPA filters, or non-powered hand tool, other than manual scraping and sanding.

.2 Remove lead based and PCB paint in sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.

.3 Replace rotting or damaged boards on walls or trim to match original as required.

.4 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.

.5 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.

.6 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 Departmental Representative 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 Departmental Representative will result in work stoppage, at no cost to Owner.

.2 Departmental Representative 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 and PCB surface sampling to be conducted as follows:

.1 After work area has passed a visual inspection for cleanliness approved and accepted by Departmental Representative and following application of lock-down agent to surfaces and the appropriate settling period of 8 hours has passed, Departmental Representative 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 Final PCB wipe sampling results from horizontal and vertical surfaces must show PCB levels of less than 10 micrograms of PCB in dust per 100 centimetres squared. Samples collected and analyzed in accordance with MOE PIBS 4049E.

.3 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot or PCBs in excess of 100 micrograms per 100 square centimetres, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.

.4 Repeat as necessary until lead levels are less than 40 micrograms per square foot and PCBs are less than 100 micrograms per 100 square centimeters.

3.6 FINAL CLEANUP

.1 Following specified cleaning procedures, and when lead and PCB wipe sampling is below acceptable concentrations proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from edges 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 PAINT

.1 Protect adjacent surfaces from damage and overspray of both paint and slow drying sealant (lock-down).

.2 Following application of lockdown and acceptance by Departmental Representative, paint abated surfaces to match original paint colour scheme as per the requirements of Section 09 91 13 EXTERIOR RE-PAINTING.

.3 Place paint defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

3.8 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 Departmental Representative.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

.2 Text to complete other various Sections containing sealant or caulking specifications, including Section 08 50 00.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM C919-12, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 ASTM C920-11, Standard Specification for Elastomeric Joint Sealants.

.2 Canadian General Standards Board (CGSB)
- .1 CGSB 19-GP-5M-[1984], Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
- .2 CAN/CGSB-19.13-[M87], Sealing Compound, One-component, Elastomeric, Chemical Curing.
- .3 CGSB 19-GP-14M-[1984], Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
- .4 CAN/CGSB-19.17-[M90], One-Component Acrylic Emulsion Base Sealing Compound.
- .5 CAN/CGSB-19.24-[M90], Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus)
- .1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 General Services Administration (GSA) - Federal Specifications (FS)
- .1 FS-SS-S-200-[E(2)1993], Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

.6 Transport Canada (TC)
- .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.3 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00.

.2 Manufacturer's product to describe.
.1 Caulking compound.
.2 Primers.
.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit samples in accordance with Section 01 33 00.

.4 Submit duplicate samples of each type of material and colour.

.5 Cured samples of exposed sealants for each color where required to match adjacent material.

.6 Submit manufacturer's instructions in accordance with Section 01 11 06.
.1 Instructions to include installation instructions for each product used.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto

1.5 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

.6 (Cont'd)
ground or in other location where it will pose health or environmental hazard.

.7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Departmental Representative.

.8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.9 Fold up metal banding, flatten, and place in designated area for recycling.

1.6 PROJECT CONDITIONS

.1 Environmental Limitations:
.1 Do not proceed with installation of joint sealants under following conditions:
.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4°C.
.2 When joint substrates are wet.

.2 Joint-Width Conditions:
.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:
.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.

.3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Polysulfide Two Part.
.1 Self-Leveling to CAN/CGSB-19.24, Type 1, Class B, colour white.

.2 Polysulfide Two Part.
.1 Non-Sag to CAN/CGSB-19.24, Type 2, Class B, colour white.

.3 Polysulfide One Part.
.1 Self-Leveling to CAN/CGSB-19.13, MC-1-40-B-N or MC-1-25-B-N, colour white.

.4 Polysulfide One Part.
.1 Non-Sag to CAN/CGSB-19.13, MC-2-40-B-N or MC-2-25-B-N, colour white.

.5 Urethanes Two Part.
.1 Self-Leveling to CAN/CGSB-19.24, Type 1, Class B, colour white.

.6 Urethanes Two Part.
.1 Non-Sag to CAN/CGSB-19.24, Type 2, Class B, colour white.

.7 Urethanes One Part.
.1 Self-Leveling to CAN/CGSB-19.13, Type 1, colour white.

.8 Urethanes One Part.
.1 Non-Sag to CAN/CGSB-19.13, Type 2, MCG-2-25 or MCG-2-40, colour white..

2.2 SEALANT MATERIAL DESIGNATIONS (Cont'd)

.9 Silicones One Part.
.1 To CAN/CGSB-19.13, primerless, Type S, Grade NS, Class 25, 50 or 100, SWRI validated.
.2 Mildew resistant.

.10 Acrylics One Part.
.1 To CGSB 19-GP-5M.

.11 Acrylic Latex One Part.
.1 To CAN/CGSB-19.17.

.12 Acoustical Sealant.
.1 To ASTM C919, primerless, Type S, Grade NS, Class 25, 50 or 100, SWRI validated.

.13 Preformed Compressible and Non-Compressible back-up materials compatible with selected sealant and of type recommended by manufacturer.
.1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
.1 Extruded open or closed cell foam backer rod.
.2 Size: oversize 30 to 50%.
.2 Neoprene or Butyl Rubber.
.1 Round solid rod, Shore A hardness 70.
.3 High Density Foam.
.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.
.4 Bond Breaker Tape.
.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

.1 Protect existings structure and installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

.1 Sealant.

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup.

.1 Clean adjacent surfaces immediately and leave Work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

END

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 Joint Sealants.

1.2 MEASUREMENT PROCEDURES

.1 Replacement of window panels to match existing window panels and fit existing framework. New windows to match existing. Construct all work of this section under lump sum price.

.2 Removal of existing overspray from slow drying sealant (lockdown) as required from all windows on three (3) site structures (Oil Shed, Boathouse, Workshop) to be completed as part of lump sum price.

1.3 REFERENCES

.1 Aluminum Association (AA)
.1 Designation System for Aluminum Finishes DAF 45-2003(R2009).

.2 American Society for Testing and Materials (ASTM):
.1 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.3 Canada Green Building Council (CaGBC)
.1 LEED Canada-CI Version 1.0-2007, LEED.1 LEED Canada For New Construction and Major Renovations 2009.
.2 LEED Canada For Core and Shell 2009.
.3 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.

.4 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-79.1-M9, Insect Screens.

.5 CSA International
.1 AAMA/WDMA/CSA-101/I.S.2/A440-11, NAFS - North American Fenestration Standard/ Specification for Windows, Doors and Skylights.
.2 AAMA/WDMA/CSA-101/I.S.2/A440S1-09, Canadian Supplement to AAMA/WDMA/CSA-101/I.S.2/ A440-08, NAFS - North American Fenestration

1.3 REFERENCES (Cont'd)

.5 (Cont'd)
.2 (Cont'd)
Standard/Specification for Windows, Doors and Skylights.
.3 CSA-A440.2-09/A440.3-09, Fenestration Energy Performance/User Guide to CSA A440.2-09 Fenestration Energy Performance.
.4 CAN/CSA-Z91-02(R2008), Health and Safety Code for Suspended Equipment Operations.

.6 Forest Stewardship Council (FSC)
.1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
.2 FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1.
.3 FSC Accredited Certified Bodies.

.7 Green Seal Environmental Standards (GS)
.1 GS-11-2008, 2nd Edition, Paints and Coatings.

.8 The Master Painters Institute (MPI) / Architectural Painting Specification Manual - February 2004.
.1 MPI# 79 - Primer, Alkyd, Anti-Corrosive for Metal.

.9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
.1 SCAQMD Rule 1113-A2007, Architectural Coatings.
.2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 11 06.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for windows and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Test and Evaluation Reports:
.1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, as requested by Departmental Representative for:
.1 Insect screens.
.2 Air tightness.
.3 Water tightness.

1.4 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.3 Test and Evaluation Reports:(Cont'd)
.1 (Cont'd)
.4 Wind load resistance.
.5 Condensation resistance.
.6 Safety drop - vertical sliding windows only.
.7 Block operation - sliding windows only.

1.5 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: submit operation and maintenance data for windows.

1.6 QUALITY ASSURANCE

.1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.7 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 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect windows from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Materials: to AAMA/WDMA/CSA-101/I.S.2/A440 and AAMA/WDMA/CSA-101/I.S.2/A440S1, supplemented as follows:

.1 All new windows by same manufacturer.

.2 Screens: to CAN/CGSB-79.1.

.1 Fasteners: tamper proof.

.2 Screen frames: colour to match window frames.

.3 Mount screen frames for interior replacement.

2.2 WINDOW TYPE AND CLASSIFICATION

.1 Type: To match existing.

2.3 FABRICATION

.1 Fabricate in accordance with AAMA/WDMA/CSA-101/I.S.2/A440 and AAMA/WDMA/CSA-101/I.S.2/A440S1 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Brace frames to maintain squareness and rigidity during shipment and installation.

2.4 ISOLATION COATING

.1 Coatings: in accordance with manufacturer's recommendations for surface conditions.

2.5 HARDWARE

.1 Hardware: to match existing.

.2 Locks: to match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed are acceptable for product installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate in presence of Departmental Representative.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

.2 Verify extent of overspray of slow drying sealant (lockdown) on windows from previous applications of lockdown on the oil shed, boat shed and workshop structures, previous to starting new work on the structures.
.1 Visually inpsect windows in presence of Departmental Representative.
.2 Document extent of overspray on windows.

3.2 INSTALLATION

.1 Window installation:
.1 Install in accordance with AAMA/WDMA/CSA-101/I.S.2/A440 and AAMA/WDMA/CSA-101/I.S.2/A440S1.
.2 Arrange components to prevent abrupt variation in colour.

.2 Caulking:
.1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.
.2 Apply sealant in accordance with Section 07 92 00. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 11 06.
.1 Leave Work area clean at end of each day.

3.3 CLEANING (Cont'd)

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 11 06.

.3 Waste Management: separate waste materials for reuse and recycling.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

.4 Remove overspray of slow drying sealant (lockdown) from window surfaces on the Workshop, Boat Shed and Oil Shed buildings.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by window installation and removal of slow drying sealant (lockdown).

END

PART 1 - GENERAL

1.1 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

.2 The Master Painters Institute (MPI)
- .1 Maintenance Repainting Manual 2004, Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.

.3 National Fire Code of Canada, 2010 (NFC).

.4 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

1.2 QUALITY ASSURANCE

.1 Conform to latest MPI requirements for exterior repainting work including cleaning, preparation and priming.

.2 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, and solvents) to be in accordance with the latest edition of the MPI Approved Product List and to be from a single manufacturer for each system used.

.3 Paint materials such as linseed oil, shellac, and turpentine, to be the highest quality product of an approved manufacturer listed in MPI Maintenance Repainting Manual and shall be compatible with other coating materials as required.

.4 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

1.3 SCHEDULING

.1 Submit work schedule for various stages of painting to Departmental Representative for review.

.2 Obtain written authorization from Departmental Representative for changes in work schedule.

1.3 SCHEDULING (Cont'd)

.3 Schedule repainting operations to prevent disruption by other trades if applicable.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 11 06.

.2 Provide samples in accordance with Section 01 11 06.
.1 Submit full range of colour sample chips for review and selection. Indicate where colour availability is restricted.
.2 Submit two 18 cm by 25 cm colour sample chips for each colour used to Departmental Representative for approval before application of paint to site structures.
.3 Maintain one 18 cm by 25 cm colour sample chip for each colour used in contractors records.

.3 Provide product data and manufacturer's installation/application instructions for paints and coating products to be used.

.4 Provide WHMIS Material Safety Data Sheets (MSDS) for paints and coating materials to be used.

.5 Quality Assurance Submittals:
.1 Manufacturer's Instructions: manufacturer's installation instructions.

.6 Closeout Submittals:
.1 Provide records of products used. List products in relation to finish system and include following:
.1 Product name, type and use (i.e. materials and location).
.2 Manufacturer's product number.
.3 Colour code numbers.
.4 MPI Environmentally Friendly classification system rating.
.5 Manufacturer's Material Safety Data Sheets.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:
.1 Deliver, store and handle materials in accordance with Section 01 11 06, supplemented as follows:
.1 Deliver and store materials in original containers, sealed, with labels intact.

1.5 DELIVERY, STORAGE AND HANDLING (Cont'd)

.1 (Cont'd)

.1 (Cont'd)

.2 Labels to indicate:

.1 Manufacturer's name and address.

.2 Type of paint or coating.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Store and handle in accordance with manufacturer's recommendations.

.5 Store materials and equipment in secure, dry, well-ventilated area with temperature range between 7 degrees C to 30 degrees C. Store materials and supplies away from heat generating devices and sensitive products above minimum temperature as recommended by manufacturer.

.6 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. Upon completion of operations, return areas to clean condition to approval of Departmental Representative.

.7 Remove paint materials from storage in quantities required for same day use.

.8 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.9 Fire Safety Requirements:

.1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site daily.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada.

.2 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with Section 01 35 43.

.2 Paint, stain and wood preservative finishes and related materials are hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

1.5 DELIVERY, STORAGE AND HANDLING (Cont'd)

.2 Waste Management and Disposal:(Cont'd)

.3 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

.6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

.6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

.7 Set aside and protect surplus and uncontaminated finish materials. Deliver to or arrange collection by organizations for verifiable re-use or re-manufacturing.

1.6 AMBIENT CONDITIONS

.1 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer.

.2 Do not perform repainting work when:

.1 Ambient air and substrate temperatures are below 10 degrees C.

.2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.

1.6 AMBIENT CONDITIONS (Cont'd)

.1 (Cont'd)

.2 (Cont'd)

.3 Substrate and ambient air temperatures are expected to fall outside paint manufacturer's prescribed limits.

.4 Relative humidity is above 85% or when dew point is less than 3 degrees C variance between air/surface temperature.

.5 Rain or snow is forecast to occur before paint has thoroughly cured.

.6 It is foggy, misty, raining or snowing at site.

.3 Conduct moisture tests using properly calibrated electronic Moisture Meter, except test existing painted concrete floors for moisture using simple "cover patch test" on failed areas.

.4 Do not perform repainting work when maximum moisture content of substrate exceeds:

.1 12% for concrete and masonry (clay and concrete brick/block and stone).

.2 15% for wood.

.3 12% for stucco.

.5 Test painted concrete, masonry and plaster surfaces for alkalinity as required.

.2 Application Requirements:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind conditions are not such that airborne particles will affect quality of finished surface.

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted.

.3 Apply paint when previous coat of paint is dry or adequately cured, unless otherwise pre-approved by specific coating manufacturer.

.4 Apply paint finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.

.5 Do not apply paint when:

.1 Temperature is expected to drop below 10 degrees C before paint has thoroughly cured.

.2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.

.3 Surface to be painted is wet, damp or frosted.

.6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by

1.6 AMBIENT CONDITIONS (Cont'd)

.2 Application Requirements:(Cont'd)
.6 (Cont'd)
manufacturer. Protect until paint is dry or until weather conditions are suitable.
.7 Schedule repainting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
.8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Paint materials for each coating formulae to be products of a single manufacturer.

.2 Use paint appropriate for the various types of surfaces to be repainted (stone/brick & mortar, wood, metal, drywall, stucco, etc.)

.3 Paint pigment to match existing.

2.2 PAINTING SYSTEMS

.1 REX 3.1 - Concrete Vertical Surfaces: (including horizontal soffits).
.1 REX 3.1A - Latex finish.
.2 REX 3.1B - Latex Aggregate finish.
.3 REX 3.1C - High Performance Acrylic.
.4 REX 3.1D - 2 Component Epoxy (for chemical resistance).
.5 REX 3.1E - 2 Component Epoxy (waterborne).
.6 REX 3.1F - Elastomeric.
.7 REX 3.1J - High-Build Acrylic.

.2 REX 3.2 - Concrete Horizontal Surfaces: (decks, stairs, parking and court areas, and driveways).
.1 REX 3.2A - Latex Floor Paint.
.2 REX 3.2G - Concrete Floor Sealer (Solvent Based).

.3 REX 4.2 - Concrete Masonry Units: (Concrete Block and Brick).
.1 REX 4.2A - Latex.
.2 REX 4.2B - Latex Aggregate.
.3 REX 4.2C - High Performance Acrylic.
.4 REX 4.2D - Elastomeric.
.5 REX 4.2E - 2 Component Epoxy.
.6 REX 4.2F - 2 Component Epoxy (waterborne).
.7 REX 4.2G - Aliphatic Polyurethane.
.8 REX 4.2K - High-Build Acrylic.

2.2 PAINTING SYSTEMS (Cont'd)

.4 REX 5.3 - Galvanized Metal: High Contact/High Traffic Areas (Doors, Frames, Railings, Pipes, and Handrail. Low Contact/Low Traffic Areas (Overhead Decking, Eavestrough (Gutters), Downpipes, and Ducts.
.1 REX 5.3A - Latex.
.2 REX 5.3B - Alkyd.
.3 REX 5.3C - 2 Component Epoxy.
.4 REX 5.3D - Wash Primer/Aliphatic Polyurethane (high contact/traffic).
.5 REX 5.3E - Bituminous (low traffic areas) (unexposed next to concrete).
.6 REX 5.3F - Aluminum Paint (low contact/traffic).
.7 REX 5.3G - High Performance Acrylic.

.5 REX 5.4 - Aluminum: (sash, sills and frames, flashing, posts and railings, and downpipes).
.1 REX 5.4A - Alkyd (for exposed aluminum).
.2 REX 5.4B - Aliphatic Polyurethane.
.3 REX 5.4C - Aluminum paint (for exposed aluminum).
.4 REX 5.4D - Bituminous (unexposed aluminum).

.6 REX 6.3 - Dressed Lumber: (doors, door and window frames, casings, battens, and smooth fascias).
.1 REX 6.3A - High Performance Acrylic.
.2 REX 6.3B - Alkyd.
.3 REX 6.3C - Solid Colour Stain (do not use in high contact areas or on doors).
.4 REX 6.3D - Semi-Transparent Stain.
.5 REX 6.3E - Semi-Transparent Stain/Alkyd Varnish.
.6 REX 6.3F - Natural Stain.
.7 REX 6.3G - Clear Alkyd Varnish.
.8 REX 6.3H - Clear 2 Component Polyurethane.
.9 REX 6.3J - Aliphatic Polyurethane, Pigmented.
.10 REX 6.3K - Alkyd, Flat (for low traffic areas) (not to be used for doors).
.11 REX 6.3L - Latex Flat Finish on Doors.
.12 REX 6.3M - 2 Component Epoxy.

.7 REX 6.4 - Wood Panelling: (plywood siding, fascias, and soffits).
.1 REX 6.4A - Latex Solid Colour Stain.
.2 REX 6.4B - Alkyd.
.3 REX 6.4C - Solid Colour Stain.
.4 REX 6.4D - Semi-Transparent Stain.
.5 REX 6.4G - Latex.

2.2 PAINTING SYSTEMS (Cont'd)

.8 REX 6.6 - Wood Shingle and Shake Siding.
.1 REX 6.6A - Latex.
.2 REX 6.6B - Alkyd.
.3 REX 6.6C - Shingle Stain.

.9 REX 9.1 - Stucco: (walls and soffits).
.1 REX 9.1A - Latex.
.2 REX 9.1B - High Performance Acrylic.
.3 REX 9.1C - Elastomeric.
.4 REX 9.1D - 2 Component Epoxy.
.5 REX 9.1F - High-Build Acrylic..

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PAINT REMOVAL AND REPLACEMENT

.1 Remove existing lead and PCB containing paint/coatings.
.1 Some existing paints contain lead and PCBs.
.1 Refer to Section 02 83 10 Lead-Base Paint Minimum Precautions.

.2 Repaint surfaces where lead and PCB containing paints were removed. New paint to match pigment of original paint.

3.3 PREPARATION

.1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting requirements except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

.3 Clean and prepare exterior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
.1 Remove dust, dirt, and surface debris by brushing, wiping with dry, clean cloths or compressed air.
.2 Wash surfaces with a biodegradable detergent (and bleach where applicable) and

3.3 PREPARATION (Cont'd)

.3 (Cont'd)

.2 (Cont'd)
clean warm water using a stiff bristle brush to remove dirt, oil and surface contaminants.
.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
.4 Use trigger operated spray nozzles for water hoses.
.5 Allow surfaces to drain completely and to dry thoroughly.
.6 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.
.7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or such organic solvents to clean up water-based paints.

.4 Where required, pressure wash exterior surfaces prior to repainting in accordance with MPI standards for type of surfaces and recommended pressures to ensure complete removal of loose paint, stains, dirt, and foreign matter. This work to be carried out by qualified workers experienced in pressure water cleaning. Use of spray equipment such as water hose cleaning will not be considered satisfactory unless specified. Allow sufficient drying time and test surfaces using an electronic moisture meter before commencing work.

.5 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements. Remove such contaminates from surfaces, pockets and corners to be repainted by brushing with clean brushes, blowing with clean dry compressed air, or brushing/vacuum cleaning as required.

.6 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.

.7 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

.8 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects from previously painting (e.g. runs, and sags) that are visible from distance up to 1000 mm.

3.4 EXISTING CONDITIONS

.1 Prior to commencing work, examine site conditions and existing exterior substrates to be repainted and report in writing to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions of surfaces that will adversely affect this work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Departmental Representative. Maximum moisture content not to exceed specified limits.

.3 No repainting work to commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to Painting Subcontractor and Inspection Agency.

.4 Degree of surface deterioration (DSD) to be assessed using MPI Identifiers and Assessment criteria indicated in the MPI Maintenance Repainting Manual. MPI DSD ratings and descriptions are as follows:

Condition	Description
DSD-0	Sound Surface (includes visual (aesthetic) defects that do not affect film's protective properties).
DSD-1	Slightly Deteriorated Surface (indicating fading; gloss reduction, slight surface contamination, minor pin holes and scratches).
DSD-2	Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, and staining).
DSD-3	Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges).
DSD-4	Substrate Damage (repair or replacement of surface required).

3.5 PROTECTION

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such

3.5 PROTECTION (Cont'd)

.1 (Cont'd) surfaces as directed by Departmental Representative.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect window surfaces from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.

.5 Protect general public and building occupants in and about the building.

.6 Removal of light fixtures, surface hardware on doors, and surface mounted equipment, fittings and fastenings to be done prior to undertaking painting operations. Store items and re-install after painting is completed.

.7 Move and cover exterior furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.8 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas to approval of Departmental Representative.

3.6 APPLICATION

.1 Apply paint by method that is best suited for substrate being repainted. Conform to manufacturer's application instructions unless specified otherwise. In each case method of application to be as pre-approved by Departmental Representative before commencing work.

.2 Brush and Roller Application:
.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
.2 Work paint into cracks, crevices and corners.
.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

3.6 APPLICATION (Cont'd)

.2 Brush and Roller Application:(Cont'd)
.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces to be free of roller tracking and heavy stipple unless approved by Departmental Representative.
.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray Application:
.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
.2 Keep paint ingredients properly mixed in containers during paint application by intermittent agitation as frequently as necessary.
.3 Apply paint in uniform layer, with overlapping at edges of spray pattern.
.4 Back roll spray applications and brush out runs and sags immediately.
.5 Use brushes to work paint into cracks, crevices and places that are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Departmental Representative.

.5 Apply paint coats in a continuous manner and allow surfaces to dry and cure between coats for minimum time period as recommended by manufacturer. Minimum dry film thickness of coats not less than that recommended by manufacturer. Repaint thin spots or bare areas before next coat of paint is applied. Minimum of one coat of primer and two coats of paint required for each surface to be painted.

.6 Sand and dust between coats to remove visible defects.

.7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.

.8 Finish to doors include all edges including top and bottom edges. Surfaces concealed by door hardware to be repainted unless otherwise pre-approved.

3.7 FIELD QUALITY CONTROL

.1 Advise Departmental Representative when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

3.8 CLEANING

.1 Proceed in accordance with Section 01 11 06.

.2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

.3 Keep work area free from unnecessary accumulation of tools, equipment, surplus materials and debris.

.4 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.

.5 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as cleaning and protective materials (e.g. rags, drop cloths, and masking papers), paints, thinners, paint removers/strippers in accordance with the safety requirements of authorities having jurisdiction and as specified.

.6 Clean painting equipment in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations to be dispose of in manner acceptable to authorities having jurisdiction.

.7 Recycle paint and coatings in excess of repainting requirements as specified.

3.9 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on affected exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible solvent.

3.9 RESTORATION (Cont'd)

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

END

Appendix A – Site Photographs

Appendix A1 – Site Structures for Paint Abatement and Repainting

(Photo 1 - Light Station Tower, Photo 2 - Lighthouse Keeper's Residence,
Photo 3 – Assistant Lighthouse Keeper's Residence, Photo 4 – Workshop, Photo 5 – Boat Shed,
Photo 6 – Old Fog Alarm Building, Photo 7 – Oil Shed)


2013/08/08 10:55


2013/08/08 09:50


2013/08/08 14:58


2013/08/08 12:17


2013/08/08 10:05


2013/08/08 12:07


2013/08/08 12:14

Appendix A2 – Photos of lead paint abatement work completed last year

(Photo 1 – Workshop, Photo 2 – Boat Shed,
Photo 3 – Oil Shed)

Appendix A3 – Broken Windows for Repair or Replacement

(Photo 1 – Workshop, Photo 2 – Boat Shed,
Photo 3 – Oil Shed)

Appendix A4 – Debris for Removal from Site

Appendix B – CEAA Environmental Assessment Mitigation Measures

CEAA Enviornmental Assessment – Mitigation Monitoring Report Form

Responsible Authority: Fisheries and Oceans Canada
Project Title: Cove Island Light Station, Cove Island, Lake Huron, Ontario, Lead & PCB Paint Abatement and Debris Removal
PWGSC Project No.: R.071694.001
PWGSC File No.:

The purpose of this record is to monitor the implementation of mitigation measures identified in the Environmental Assessment Screening Report. It is the responsibility of the Project Manager to ensure that this record is completed over the duration of the project. This environmental Mitigation Monitoring Report form must be completed in full. Specify in the table below whether the mitigation measures set out in the environmental assessment have been applied. If a mitigation measure has not been applied, specify the reason(s) why this has not been done. **A copy of the completed Mitigation Monitoring Report form should be included in the project file and a copy must be sent to the attention of Martin Bouwma (fax: 416-590-8284) PWGSC, Environmental Services, upon completion of the project. PWGSC will forward a copy of the completed Mitigation Monitoring Report Form to DFO.**

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
Maintain vehicles, machinery and equipment in good repair, equipped with emission controls, as applicable, and operate them within regulatory requirements.			
Comply with operating specifications for heavy equipment and machinery.			
Minimize operation and idling of gas powered equipment and vehicles, in particular, during smog advisories.			
No burning of waste or excess materials is permitted.			
Suppress releases of dust using water mist or other appropriate methods of control during site preparation, excavation, and loading and unloading of materials.			

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
Debris will be transported in a fashion to limit loss of contaminated soils as dust.			
Use controlled work procedures in order to eliminate release of dust from construction works including avoiding activities with potential to release airborne particulates during windy and prolonged dry periods.			
Workers to wear protective gear (e.g. safety work boots, respirators, hard hats, etc.) in accordance with the Occupational Health and Safety Act (OHSA) and regulations.			
Work shall be carried out in compliance with the Canadian Environmental Protection Act (CEPA), and applicable air emission regulations and by-laws.			
Machinery will be operated in accordance with the local noise bylaws.			
Where applicable, appropriate ear protection equipment must be worn by all employees working on site.			
Install noise mufflers on construction machinery to reduce noise levels.			
Contractors should avoid excess and unnecessary noise.			
All project works will be conducted outside the critical nesting period for migratory and colonial water birds.			
Stabilize soil after excavation to prevent its erosion and transport.			
Develop and implement an erosion control plan.			
To minimize land disturbance, the excavation envelope			

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
should be clearly demarcated and kept as small as possible.			
Undertake earthworks using construction techniques designed to prevent sedimentation.			
Ensure that absorbent materials are available on-site in the event that a spill of deleterious substances should occur.			
All spills and leaks of deleterious substances must be immediately contained and cleaned up in accordance with Provincial regulatory requirements and reported immediately to the Ontario Spills Action Centre (1-800-268-6060). Maintain a logbook detailing any such measures.			
Minimize as much as possible any disturbance to existing vegetation.			
Ensure hazardous substances, if required, are stored, handled and applied in accordance with local regulations and in a manner which prevents re-release into the environment.			
Any hazardous substances stored within the stockpile areas will be properly contained to prevent its re-release into the environment.			
Ensure a contingency plan is developed and implemented in the event of an accidental spill from construction vehicle, machinery or equipment.			
Minimize as much as possible any disturbance to vegetation on-site which serves as potential mammal, amphibian, reptile, or bird habitat.			

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
Construct silt fencing to keep amphibian and reptiles out of Project footprint of debris removal from dumpsites. Avoid use of silt fencing with nylon mesh netting reinforcing the regular, woven plastic strand material. Large bodied snakes become entangled in this mesh and perish.			
Should any other SARA/ESA species be encountered during further inventories or during progress of construction within the study area, work shall cease and EC and/or MNR will be contacted immediately to determine any requirements pursuant to SARA and ESA, respectively.			
Erosion control plan to mitigate potential effects on water quality with respect to the transport and movement of remediation equipment and contaminated sediments and remediation soils.			
Appropriate measures should be adopted to minimize any impacts of accidental spill during transport, staging and maintenance activities.			
Transportation of debris and lead abatement materials to the mainland will be properly contained and secured so that wind does not blow debris into the water. Transportation across the water during storms with heavy rainfall or high winds should be avoided to minimize risk.			
Ensure that hazardous substances (including fuel) are handled and applied in a manner to prevent release into the environment. All deleterious substances should be stored at least 30 m from the water.			

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
Construction machinery and equipment (including ramping structures) are to arrive on-site in a clean condition and be maintained free of fluid leaks.			
Any washing, refueling or servicing to construction equipment in use on the island is to take place a minimum of 30 m from the lake shore (cobble beach) and within a flat, impermeable stable surface to prevent any deleterious substances from entering the water.			
Store all oils, lubricants, fuels and chemicals in secure areas on impermeable pads a minimum of 30 m from water.			
Stockpiled material will be stored a safe distance from all surface water to ensure that no deleterious substances enter the lake.			
A spill response kit to be on site in the event of a spill.			
Keep all materials securely locked up to avoid vandalism and accidental spills into the lake.			
Site remediation should be completed at a time of year (e.g. during periods of dry weather) that will minimize the potential for sediment, debris and /or other contaminants to enter the lake.			
An erosion control plan should be developed to mitigate potential effects on water quality with respect to the transport and movement of remediation equipment and contaminated sediments.			
Work shall be carried out in such a way that no person			

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
causes the harmful alteration, disruption or destruction (HADD) of fish habitat unless authorized by DFO.			
Consult with DFO throughout the Project's lifespan to obtain input and requirements to be accommodated.			
Sediment and erosion control measures will be installed and will be maintained during the work phase, and until the site has been stabilized			
All materials and equipment used will be operated and stored in a manner that prevents any deleterious substances from entering the water.			
Establish spill management techniques prior to commencement of work.			
Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.			
Immediately suspend all work in the vicinity of a discovery, should human remains be found during excavation. Notify the Ontario Provincial Police, or local police, for them to conduct a site investigation and to contact the district coroner. Also notify the Ministry of Culture at 1-800-461-7629.			
Should other un-recorded cultural heritage values (archaeological or historical features) be identified during the construction, suspend all activities in the vicinity of the discovery and contact DFO and the Ministry of Culture.			
Use adequate safety barriers and signs to provide a safe environment for workers, employees of the site and the			

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
public. The contractor will be required to implement a Health and Safety plan as per the OHSA.			
All waste generated will be disposed according to regulations (i.e., O.Reg. 347, and as amended).			
The contractor is required to submit proof that a licensed waste hauler is transporting the waste to a facility certified to accept the material. A copy of waste disposal/transfer site's Certificate of Approval and a letter verifying that the said disposal/transfer site will accept the waste must be supplied to the proponent prior to removal of waste from site.			
Potentially hazardous wastes will be separated from normal waste through segregation of storage areas and proper labeling of containers. All registered waste will be removed from the site by licensed waste contractors and disposed at approved facilities.			
The project will implement a solid waste management program for typical debris handling and disposal.			
The disposal of designated substances is regulated under the Ontario Environmental Protection Act (EPA), specifically O.Reg.347, General – Waste Management (most recently amended by O.Reg. 395/07)			
Protocols for management of hazardous materials (e.g. responsibilities, emission control, safe storage practices, refueling protocols, spill containment, emergency response, regulatory compliance, accident/incident			

Environmental Mitigation Measure	**Implementation Schedule/Date**	**Person/Title/Firm Responsible**	**Compliance (Task Complete – Yes or No/Date) If No, Provide Reason**
reporting) should be in place.			
Ensure spill response plan and clean up materials are available at the site when hazardous materials are being used.			
All personnel will be trained to respond to a spill.			
Provide adequate safety barriers and signs to protect safety of workers.			
Reduce worker fall hazards near the excavation site.			
Maintain safe ingress and egress to work area.			
Make medical provisions prior to Project's start for prompt medical aid in the event of serious injury.			
Develop and implement a site specific Health and Safety Plan as per the OSHA.			

NOTES: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Completed By:

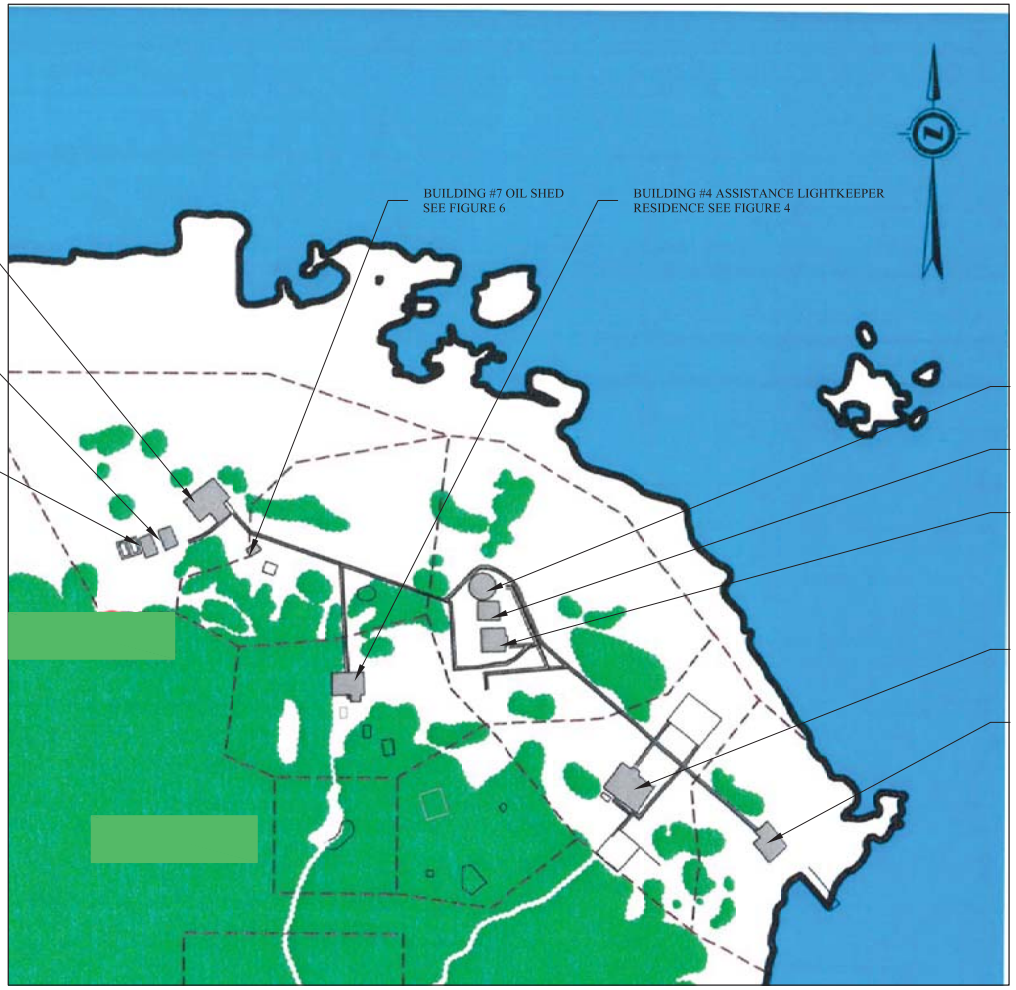
Name: _____ Title: _____

Firm: _____ Telephone No.: _____

Signature: _____ Date: _____

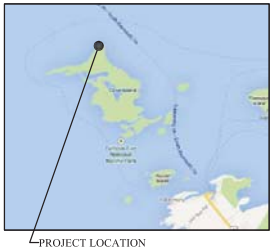
Appendix C – Site Figures


N
SITE LOCATION
GEORGIAN BAY
COVE ISLAND
LAKE HURON
Marquette
Sault Ste. Marie
Sudbury
North Bay
Lake Nipissing
Lake Huron
Georgian Bay
Lake Michigan
MICHIGAN
Owen Sound
Orillia
Barrie
Green Bay
Manitowoc
Sheboygan
Midland
Saginaw Bay
Markham
Mississauga
Oshawa
Toronto
West Bend
Muskegon
Saginaw
Kitchener
Milwaukee
Grand Rapids
Flint
Sarnia
St Catharines
Lansing
London
Welland
Buffalo
Holland
Warren
Livonia
Lake Erie
Kalamazoo
Ann Arbor
Detroit
Chatham
Erie
Jamestown
Chicago
Portage
Adrian
Toledo
Ashtabula
Gary
South Bend
Cleveland
Portage
Goshen
Lorain
Fort Wayne
Findlay
Akron
Youngstown
INDIANA
Alliance
State College
LEGEND
- Forested Area
Title:
SITE LOCATION
Client:
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA FOR DEPARTMENT OF FISHERIES AND OCEANS CANADA
FRANZ ENVIRONMENTAL INC.
CONSULTING ENGINEERING TECHNOLOGIES
Date:
July 2009
Date:
Feb. 22, 2010
FIGURE 0



NOTE: FIGURE BASED ON "CH2MHILL FIGURE 2.10 BACKGROUND SAMPLE LOCATIONS, COVE ISLAND LIGHT STATION" PROVIDED BY PWGSC AND XCG FIELD NOTES.

KEY MAP



DRAWING REFERENCE: Building layouts are approximate and are not intended to be detailed drawings.

NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

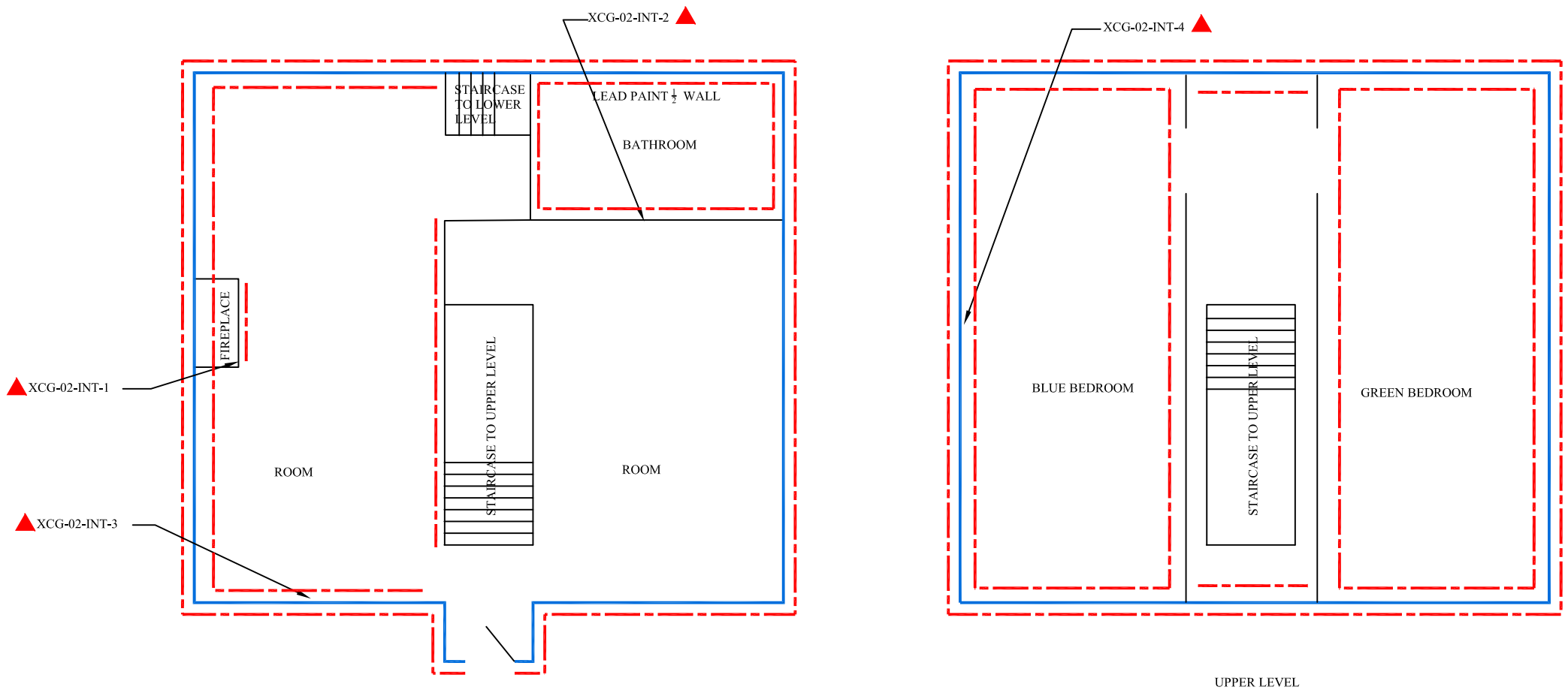
TITLE:
BUILDING LOCATION AND DRAWING REFERENCE PLAN
PLAN

LOCATION:
COVE ISLAND LIGHT STATION
TOBERMORY, ONTARIO

XCG
Environmental Engineers & Scientists

DATE:	DRAWN:	FIGURE:
AUG 2013	AG	1

PROJECT No: 1-336-184-01



MAIN LEVEL

UPPER LEVEL

LIMESTONE DWELLING
(BUILDING #2)

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m^2) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Limestone Dwelling	SCI-02-INT-01	Interior	Wall across from front door	White	Drywall	Good, intact	<1.0	NA	NA	-	Electrical wiring, piping	None
Limestone Dwelling	SCI-02-INT-02	Interior	Window frame in kitchen	Green	Wood, Drywall	Poor, cracking and peeling	<1.0	NA	NA	-		None
Limestone Dwelling	SCI-02-INT-05	Interior	Door frame to upstairs	Grey	Wood	Cracking	<1.0	NA	NA	-		None
Limestone Dwelling	XCG-02-INT-1	Interior	Fireplace	Black	Steel	Poor, cracking and peeling	**25,500**	<5	< 0.3*	1		
Limestone Dwelling	XCG-02-INT-2	Interior	Main Level Bathroom	Black	Tile	Poor, cracking and peeling	**8,680**	<5	1.1	12		
Limestone Dwelling	XCG-02-INT-4	Interior	Upstairs bedroom wall	Blue	Drywall	Poor, cracking and peeling	**750**	9	1.33	251		Estimated area includes upstairs walls, bathroom, storage area below the stairs, and the parlour, which are painted blue, green, and white and are assumed to contain lead, and potentially PCBs, at a concentration above the criteria. All paint that is blue, green, and white within these rooms should be mitigated. It is assumed that the green paint on the upstairs walls has elevated levels of both lead and PCBs; the estimated surface area of this paint is 129 m^2.
Limestone Dwelling	COV 18	Interior	Bathroom wall	Blue	Plaster	Generally good; some flaking	**58,500**	NA	NA			
Limestone Dwelling	COV PC-10	Interior	Bathroom wall	Blue	-	-	NA	NA	1.1			
Limestone Dwelling	COV 20	Interior	Rear room wall	White	Plaster	Considerable flaking and peeling	**69,600**	NA	NA			
Limestone Dwelling	COV 21	Interior	Upstairs bedroom wall	Green	Plaster	Considerable cracking and peeling	**35800**	NA	NA			
Limestone Dwelling	COV PC-09	Interior	Wall	Green	-	-	NA	NA	**77**			
Limestone Dwelling	XCG-02-INT-3	Interior	Window trim	White	-	Poor, cracking and peeling	**78,400**	<5	2	87		
Estimated interior surface area requiring abatement										**351**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Limestone Dwelling	SCI-02-EXT-01	Exterior	West wall beside back door	White	Stone	Some chipping	**222**	NA	NA	210		
Limestone Dwelling	SCI-02-EXT-02	Exterior	Windowsill on south side of house	Red	Stone/ Concrete	Weathering evident	**23,200**	NA	<1.0	16		
Estimated exterior surface area requiring abatement										**226**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**

* * * *

[1] Samples were collected by the following consultants:

COV Data from Phase 1 Environmental Assessment completed by Oliver, Mangione, McCalla and Associates Limited (1997)

COV PC Data from Phase 2 Environmental Assessment completed by Royal Military College (1999)

SCI Data from Lead and PCBs Assessment completed by CH2MHill (January 2011)

XCG Data from XCG's investigation (August 2013)

[2] Surface Coating Materials Regulation for lead in surface coatings is 90 mg/kg (SOR/2005-109, as amended)

[3] There are no guidelines for Arsenic Content

[4] Ontario Regulation 362 classifies PCB waste as materials with a PCBs concentration greater than 50 mg/kg

[5] Estimated surface area includes 10% contingency

NA Not Analyzed

PCBs Polychlorinated Biphenyls

- Not applicable or unknown

< 1.0 Not detected above the specified detection limit

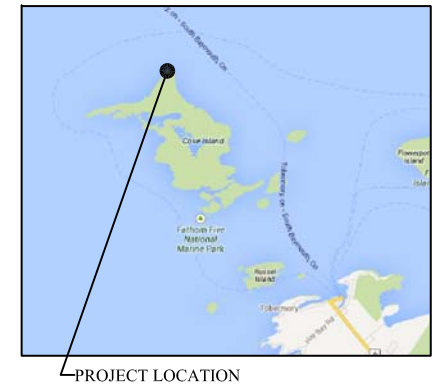
259 Value exceeds 90 mg/kg (lead) or 50 mg/kg (PCBs)

951 Results from preliminary analytical report or results not yet received

* Lab Note on the Analytical Report: Low surrogate recovery; results may be biased low.

** Lab Note on the Analytical Report: Sample not analyzed for PCBs due to low sample volume

KEY MAP

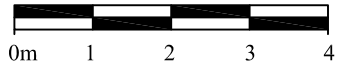


LEGEND

- ▲ CONFIRMED LEAD PAINT SAMPLING LOCATION
- △ NON-LEAD BASED PAINT SAMPLING LOCATION
- BUILDING OUTLINE
- APPROXIMATE EXTENT OF LEAD CONTAINING PAINT.

NOTE: ONLY XCG PAINT SAMPLES ARE SHOWN. THE LOCATIONS OF HISTORIC PAINT SAMPLES COLLECTED BY OTHERS ARE UNKNOWN.

Scale



DRAWING REFERENCE: Based on XCG field notes. Building layouts are approximate and are not intended to be detailed drawings.

NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

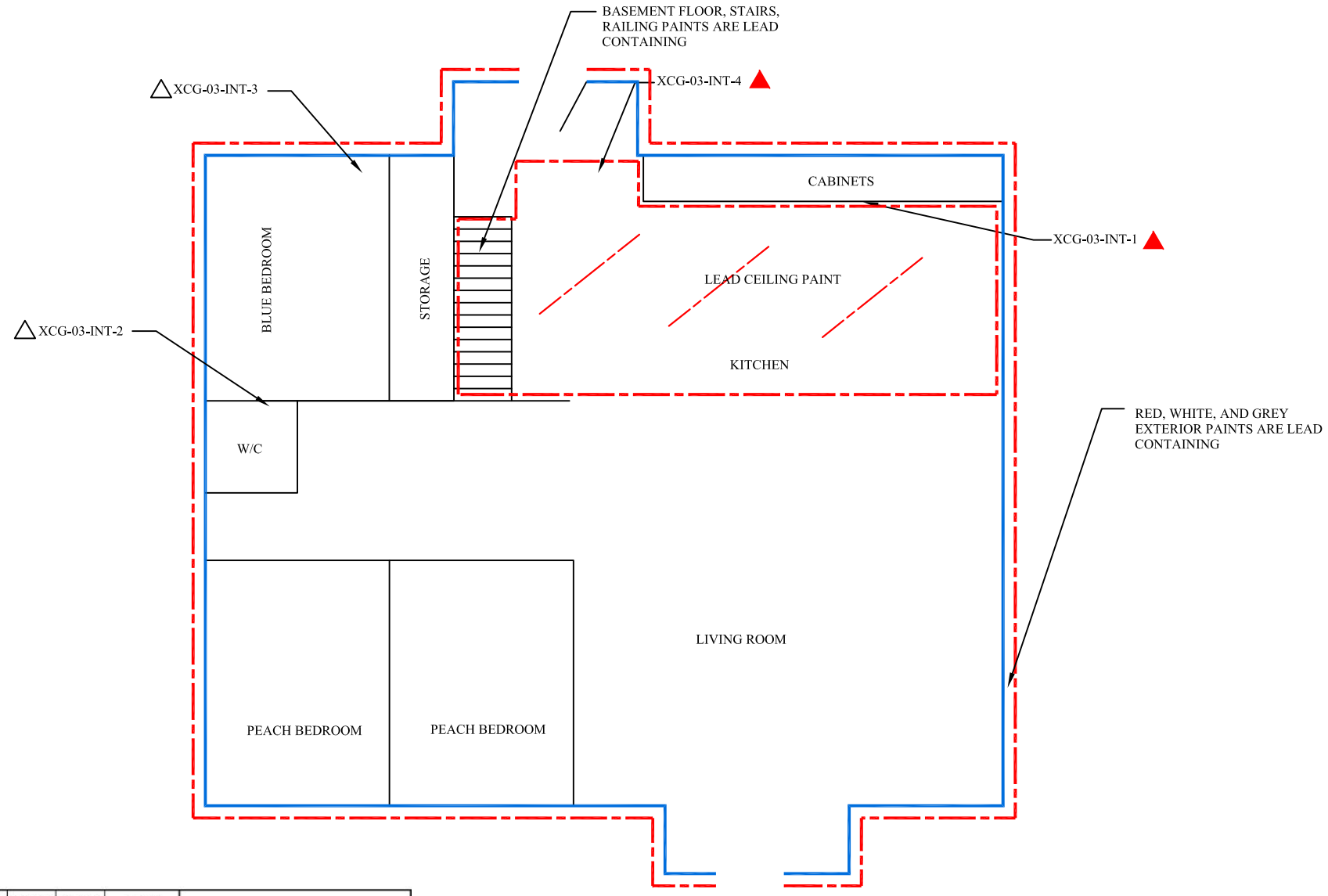
TITLE:
SUPPLEMENTARY INTERIOR SAMPLE LOCATIONS

LOCATION:
COVE ISLAND LIGHT STATION
TOBERMORY, ONTARIO

XCG
Environmental Engineers & Scientists

DATE:	DRAWN:	FIGURE:
AUG 2013	AG	2

PROJECT No: 1-336-184-01



LIGHTKEEPER'S RESIDENCE
(BUILDING #3)

Table 1 Paint Summary Table

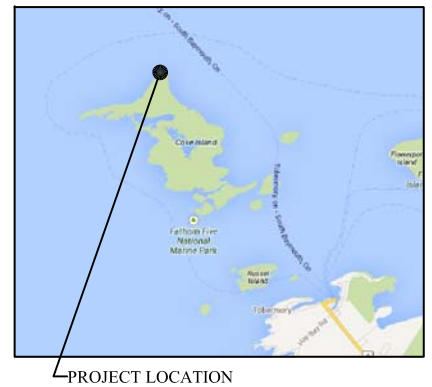
Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m^2) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Estimated exterior surface area requiring abatement										**#REF!**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Lightkeeper's Residence	SCI-03-INT-01	Interior	Living room wall across from front door	White	Drywall	Good, intact	<1.0	NA	NA	-	Paint cans, electrical wiring, piping	None
Lightkeeper's Residence	SCI-03-INT-02	Interior	First bedroom, wall below window	Peach	Drywall	Fair, some cracking, peeling, water damage	<1.0	NA	NA	-		None
Lightkeeper's Residence	SCI-03-INT-03	Interior	Bedroom, wall by closet	Blue	Drywall	Good	<1.0	NA	NA	-		None
Lightkeeper's Residence	XCG-03-INT-1	Interior	Kitchen cabinets	Yellow	Wood	Good	**871**	<5	2.13	5		
Lightkeeper's Residence	XCG-03-INT-2	Interior	Bathroom Tile	Yellow	Tile	Good	59	<5	4.20	-		None
Lightkeeper's Residence	XCG-03-INT-3	Interior	Storage room	Green	Drywall	Good	11	<5	0.9	-		None
Lightkeeper's Residence	XCG-03-INT-4	Interior	Kitchen ceiling	White, gloss finish	Drywall	Fair to good, some water damage	**111**	<5	7.0	28		
Lightkeeper's Residence	COV 5	Interior	Basement floor	Grey	Concrete	Poor; flaking and peeling	**1,120**	NA	NA	117		Estimated area includes basement floor and stairway and railing leading to main floor
Estimated interior surface area requiring abatement										**150**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Lightkeeper's Residence	SCI-03-EXT-01	Exterior	Southeast wall	White	Wood	Fair, some cracking and peeling	**538**	NA	NA	209		
Lightkeeper's Residence	SCI-03-EXT-02	Exterior	Windowsill by back door	Red	Wood, Concrete	Fair, some cracking and peeling	**6,090**	NA	2.4	30		Estimated area includes window sills and frames, door frames, handrails, edge of gardens and stair well to basement, and eaves, which are painted red and assumed to contain lead at a concentration above the criteria. All areas painted red on the exterior of the building should be mitigated.
Lightkeeper's Residence	SCI-03-EXT-03	Exterior	Stairs to front door	Grey	Wood	Fair, cracking and peeling	**541**	NA	NA	11		
Estimated exterior surface area requiring abatement										**250**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**

[1] Samples were collected by the following consultants:
COV Data from Phase 1 Environmental Assessment completed by Oliver, Mangione, McCalla and Associates Limited (1997)
COV PC Data from Phase 2 Environmental Assessment completed by Royal Military College (1999)
SCI Data from Lead and PCBs Assessment completed by CH2MHill (January 2011)
XCG Data from XCGs investigation (August 2013)
[2] Surface Coating Materials Regulation for lead in surface coatings is 90 mg/kg (SOR/2005-109, as amended)
[3] There are no guidelines for Arsenic Content
[4] Ontario Regulation 362 classifies PCB waste as materials with a PCBs concentration greater than 50 mg/kg
[5] Estimated surface area includes 10% contingency

NA Not Analyzed
PCBs Polychlorinated Biphenyls
- Not applicable or unknown
< 1.0 Not detected above the specified detection limit

259 Value exceeds 90 mg/kg (lead) or 50 mg/kg (PCBs)
951 Results from preliminary analytical report or results not yet received
* Lab Note on the Analytical Report: Low surrogate recovery; results may be biased low.
** Lab Note on the Analytical Report: Sample not analyzed for PCBs due to low sample volume

KEY MAP



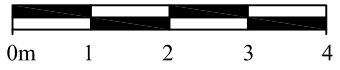
PROJECT LOCATION

LEGEND

- CONFIRMED LEAD PAINT SAMPLING LOCATION
- NON-LEAD BASED PAINT SAMPLING LOCATION
- BUILDING OUTLINE
- APPROXIMATE EXTENT OF LEAD CONTAINING PAINT.

NOTE: ONLY XCG PAINT SAMPLES ARE SHOWN. THE LOCATIONS OF HISTORIC PAINT SAMPLES COLLECTED BY OTHERS ARE UNKNOWN.

Scale



DRAWING REFERENCE: Based on XCG field notes. Building layouts are approximate and are not intended to be detailed drawings.

NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

TITLE:

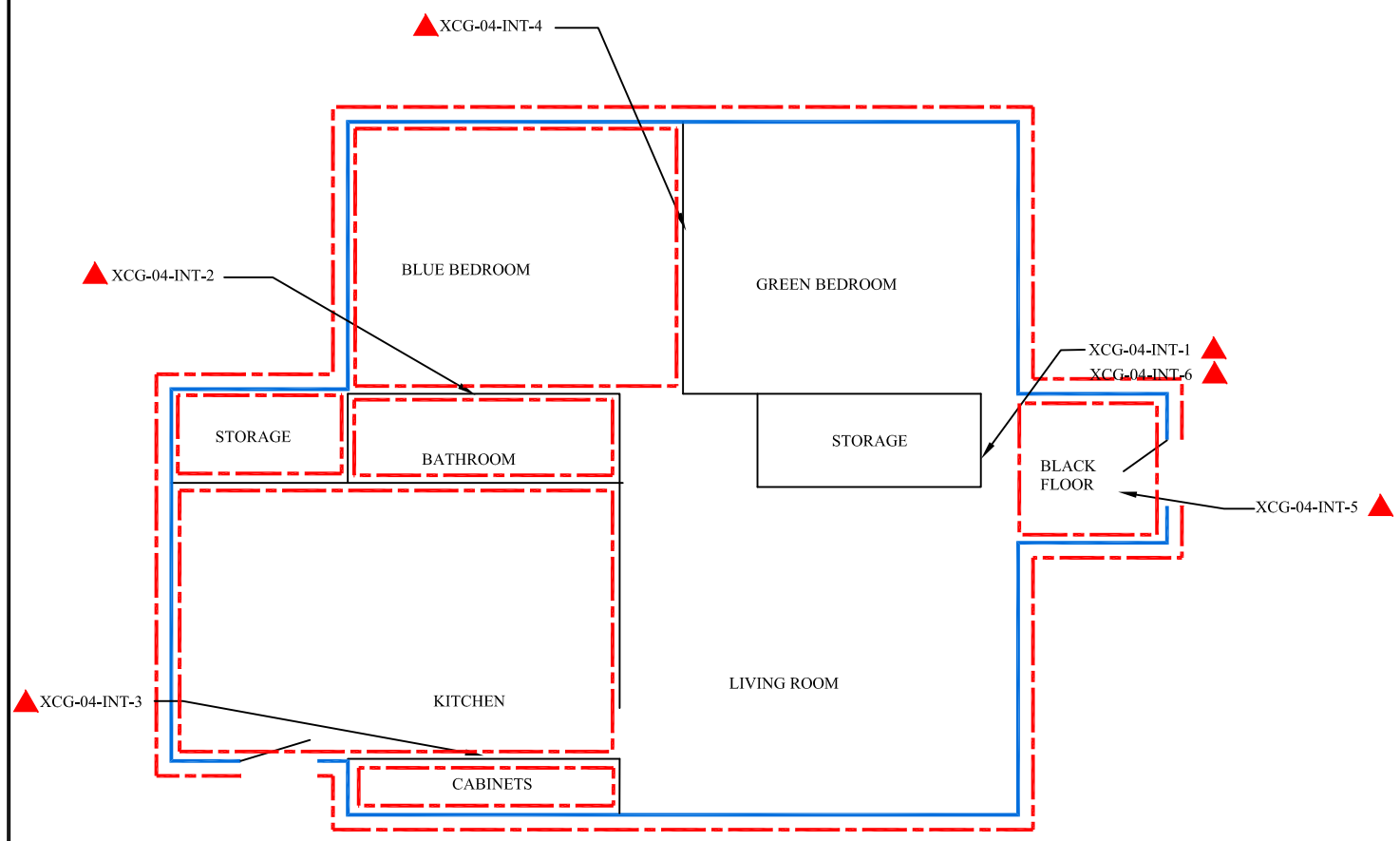
PAINT

SAMPLE LOCATIONS

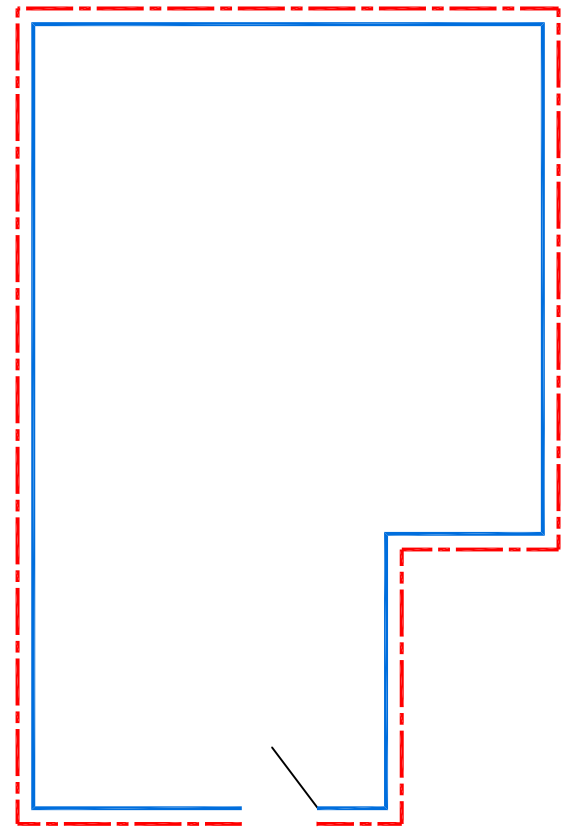
LOCATION:
COVE ISLAND
TOBERMORY, ONTARIO

XCG
Environmental Engineers & Scientists

DATE: AUG 2013
DRAWN: AG
FIGURE: 3
PROJECT No: 1-336-184-01



ASSISTANT LIGHTKEEPER'S RESIDENCE
(BUILDING #4)



BOAT SHED
(BUILDING #6)

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m^2) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Assistant Lightkeeper's Residence	SCI-04-INT -01	Interior	Windowsill in living room	White	Drywall, Wood	Fair, minor cracking and peeling	<1.0	NA	NA	-	Electrical wiring	None
Assistant Lightkeeper's Residence	SCI-04-INT -02	Interior	South wall of living room	Peach	Drywall	Fair, minor cracking and peeling	<1.0	NA	NA	-		None
Assistant Lightkeeper's Residence	XCG-04-INT -1 (dup: XCG-04-INT -6)	Interior	Front entrance, bedroom	Green	Drywall	Fair, minor cracking and peeling	**4,440**	<5	0.55/0.46	55		
Assistant Lightkeeper's Residence	XCG-04-INT -2	Interior	Bathroom	Yellow	Tile	Fair, minor cracking and peeling	**28,900**	<5	0.3	10		
Assistant Lightkeeper's Residence	XCG-04-INT -3	Interior	Kitchen cabinets	Yellow	Wood	Fair, minor cracking and peeling	**3,130**	<5	1.3	9		
Assistant Lightkeeper's Residence	XCG-04-INT -4	Interior	Kitchen, bedroom	Blue	Drywall	Fair, minor cracking and peeling	**388**	<5	< 0.3	63		
Assistant Lightkeeper's Residence	XCG-04-INT -5	Interior	Entrance floor	Black	Wood	-	**4,280**	<5	0.7	2		
Estimated interior surface area requiring abatement										**139**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Assistant Lightkeeper's Residence	SCI-04-EXT -01	Exterior	North wall by front door	White	Wood	Fair, minor cracking and peeling	42.5		NA	-		None
Assistant Lightkeeper's Residence	SCI-04-EXT -02	Exterior	Windowsill at south west corner	Red	Wood	Fair, minor cracking and peeling	**33,800**		<1.0	24		Estimated area includes window sills and frames, door frames, and eaves, which are painted red and assumed to contain lead at a concentration above the criteria. All areas painted red on the exterior of the building should be mitigated.
Estimated exterior surface area requiring abatement										**24**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**

Notes:

[1] Samples were collected by the following consultants:
- COV Data from Phase 1 Environmental Assessment completed by Oliver, Mangione, McCalla and Associates Limited (1997)
- COV PC Data from Phase 2 Environmental Assessment completed by Royal Military College (1999)
- SCI Data from Lead and PCBs Assessment completed by CH2MHill (January 2011)
- XCG Data from XCG's investigation (August 2013)

[2] Surface Coating Materials Regulation for lead in surface coatings is 90 mg/kg (SOR/2005-109, as amended)

[3] There are no guidelines for Arsenic Content

[4] Ontario Regulation 362 classifies PCB waste as materials with a PCBs concentration greater than 50 mg/kg

[5] Estimated surface area includes 10% contingency

NA Not Analyzed
PCBs Polychlorinated Biphenyls
- Not applicable or unknown
< 1.0 Not detected above the specified detection limit

259 Value exceeds 90 mg/kg (lead) or 50 mg/kg (PCBs)
951 Results from preliminary analytical report or results not yet received
* Lab Note on the Analytical Report: Low surrogate recovery; results may be biased low.
** Lab Note on the Analytical Report: Sample not analyzed for PCBs due to low sample volume

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m^2) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Boat Shed	-	Interior	No paint on interior surfaces No sample collected				-	-	-	-	Electrical wiring	None
Estimated interior surface area requiring abatement										**0**		
Boat Shed	SCI-06-EXT-01	Exterior	Southeast wall	White	Wood	Some cracking and chipping	**904**	NA	<1.0	120		Estimated area includes the walls, window sills and frames, doors and door frames, and eaves, which are painted both white and red and are assumed to contain lead at a concentration above the criteria. The entire exterior of the building should be mitigated.
Boat Shed	SCI-06-EXT-02	Exterior	Front door frame	Red	Wood	Good, some peeling	**7,300**	NA	<0.50			
Estimated exterior surface area requiring abatement										**120**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**

Notes:

[1] Samples were collected by the following consultants:
- COV Data from Phase 1 Environmental Assessment completed by Oliver, Mangione, McCalla and Associates Limited (1997)
- COV PC Data from Phase 2 Environmental Assessment completed by Royal Military College (1999)
- SCI Data from Lead and PCBs Assessment completed by CH2MHill (January 2011)
- XCG Data from XCG's investigation (August 2013)

[2] Surface Coating Materials Regulation for lead in surface coatings is 90 mg/kg (SOR/2005-109, as amended)

[3] There are no guidelines for Arsenic Content

[4] Ontario Regulation 362 classifies PCB waste as materials with a PCBs concentration greater than 50 mg/kg

[5] Estimated surface area includes 10% contingency

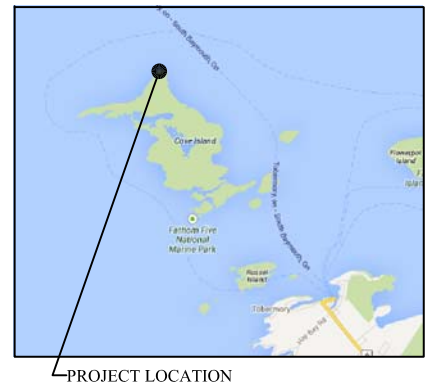
NA Not Analyzed
PCBs Polychlorinated Biphenyls
- Not applicable or unknown
< 1.0 Not detected above the specified detection limit

259 Value exceeds 90 mg/kg (lead) or 50 mg/kg (PCBs)
951 Results from preliminary analytical report or results not yet received
* Lab Note on the Analytical Report: Low surrogate recovery; results may be biased low.
** Lab Note on the Analytical Report: Sample not analyzed for PCBs due to low sample volume

Scale

0m 1 2 3 4

KEY MAP



LEGEND

- CONFIRMED LEAD PAINT SAMPLING LOCATION
- NON-LEAD BASED PAINT SAMPLING LOCATION
- BUILDING OUTLINE
- APPROXIMATE EXTENT OF LEAD CONTAINING PAINT.

NOTE: ONLY XCG PAINT SAMPLES ARE SHOWN. THE LOCATIONS OF HISTORIC PAINT SAMPLES COLLECTED BY OTHERS ARE UNKNOWN.

DRAWING REFERENCE: Based on XCG field notes. Building layouts are approximate and are not intended to be detailed drawings.

NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

TITLE:

PAINT

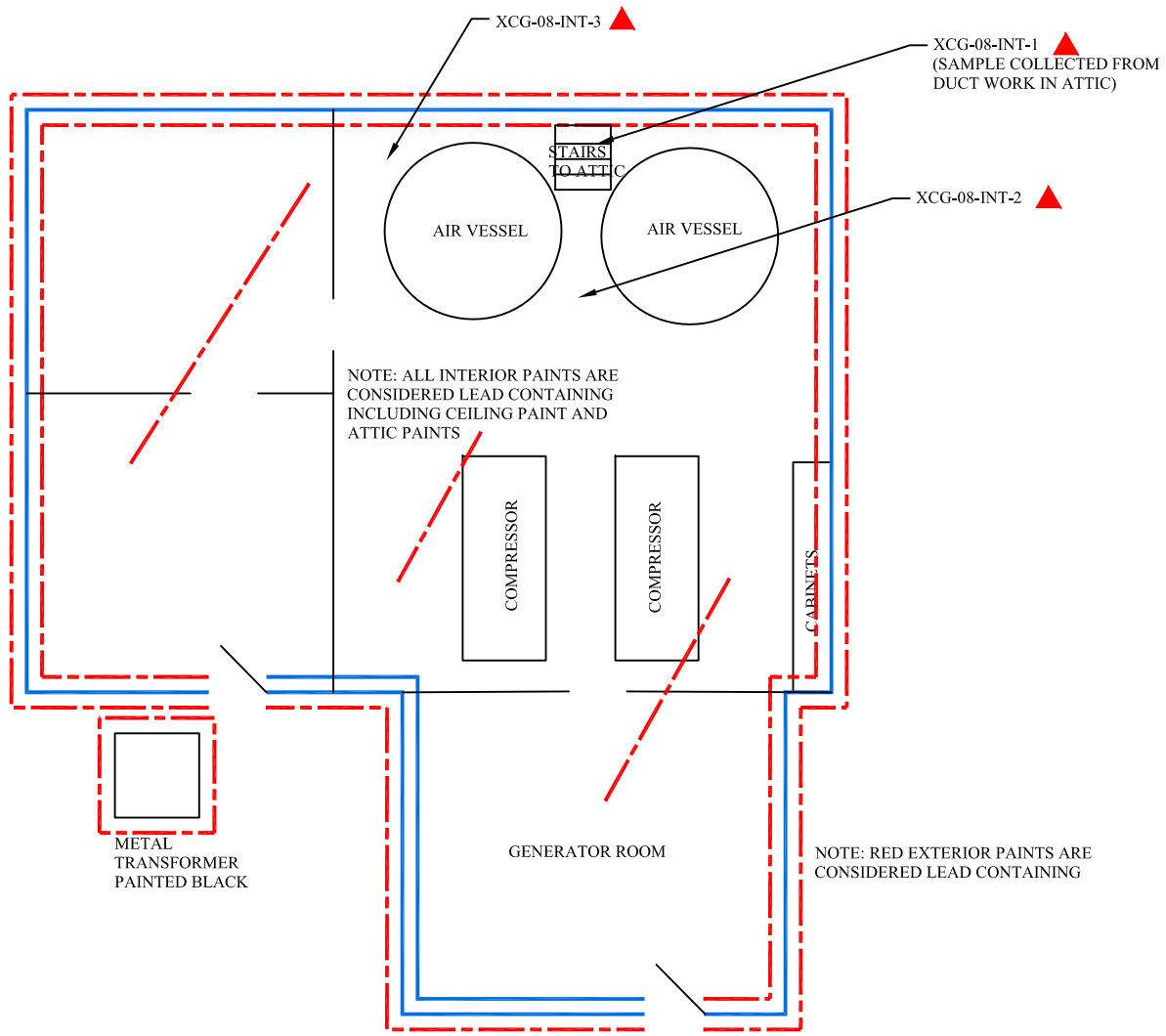
SAMPLE LOCATIONS

LOCATION:
COVE ISLAND
TOBERMORY, ONTARIO

XCG
Environmental Engineers & Scientists

DATE:	DRAWN:	FIGURE:
AUG 2013	AG	4

PROJECT No: 1-336-184-01



OLD FOG ALARM BUILDING
(BUILDING #8)

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m²) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Old Fog Alarm Building	SCI-08-INT-01	Interior	Wall in back side room	White	Drywall	Good, minor peeling	**1,810**	NA	5.28	240		Estimated area includes the walls, window sills and frames, doors and door frames, and trim, which are painted both white and green and are assumed to contain lead at a concentration above the criteria. All areas painted white and green within the interior of the building should be mitigated.
Old Fog Alarm Building	SCI-08-INT-03	Interior	Windowsill in back side room	Green	Wood	Good, minor chipping	**13,500**	NA	15.9			
Old Fog Alarm Building	SCI-08-INT-04	Interior	Floor in main room	Grey	Concrete, Wood	Good, some cracking	**3,170**	NA	**951**	94		Estimated area includes the entire grey painted surface of the floor, which is assumed to contain lead and PCBs at concentrations above the criteria. The painted floor areas of the building should be mitigated. Grey paint considered PCB containing is to be handled and disposed of in accordance with O.Reg. 362.
Old Fog Alarm Building	XCG-08-INT-1	Interior	Fog alarm and piping	Black	Steel	Good	**48,000**	19	1.7*	5		
Old Fog Alarm Building	XCG-08-INT-2 (Dup: XCG-08-INT-5)	Interior	Stairs, walls, cabinets	Bright green	Wood, Drywall	Good	**10,900**	<5	**48.2/101**	48		
Old Fog Alarm Building	COV PC-02	Interior	Engine mount	Red	Concrete	Good	NA	NA	**4,200**	18	Electrical wiring	Estimated area includes all red painted engine mounts, which are assumed contain PCBs at concentrations above the criteria. Any red paint within the interior of the building should be mitigated. Red paint considered PCB containing is to be handled and disposed of in accordance with O.Reg. 362.
Old Fog Alarm Building	COV PC-05 & XCG-08-INT-3	Interior	Walls , Air vessels, Ceiling in Generator Room	Silver	Drywall, Metal	Good	**3,680**	11	**6.4/102**	107		Sample COV PC-05 was analyzed for PCBs only (6.4 mg/kg)
Old Fog Alarm Building	XCG-08-INT-4	Interior	Windows, Walls, Cieling in compessor room	White	Drywall	Good	**37,300**	7	61.1	163		
Estimated interior surface area requiring abatement										**675**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Old Fog Alarm Building	SCI-08-EXT-01	Exterior	Southeast wall between window and door	White	Wood	Good, some cracking and chipping	<1.0	NA	NA	-		None
Old Fog Alarm Building	SCI-08-EXT-02	Exterior	Window frame on southwest side wall	Red	Wood	Good, some peeling	**259**	NA	NA	11		
Estimated exterior surface area requiring abatement										**11**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**

Notes:

[1] Samples were collected by the following consultants:
- COV — Data from Phase 1 Environmental Assessment completed by Oliver, Mangione, McCalla and Associates Limited (1997)
- COV PC — Data from Phase 2 Environmental Assessment completed by Royal Military College (1999)
- SCI — Data from Lead and PCBs Assessment completed by CH2MHill (January 2011)
- XCG — Data from XCG's investigation (August 2013)

[2] Surface Coating Materials Regulation for lead in surface coatings is 90 mg/kg (SOR/2005-109, as amended)

[3] There are no guidelines for Arsenic Content

[4] Ontario Regulation 362 classifies PCB waste as materials with a PCBs concentration greater than 50 mg/kg

[5] Estimated surface area includes 10% contingency

NA Not Analyzed
PCBs Polychlorinated Biphenyls
- Not applicable or unknown
< 1.0 Not detected above the specified detection limit

259 Value exceeds 90 mg/kg (lead) or 50 mg/kg (PCBs)
951 Results from preliminary analytical report or results not yet received
* Lab Note on the Analytical Report: Low surrogate recovery; results may be biased low.
** Lab Note on the Analytical Report: Sample not analyzed for PCBs due to low sample volume

Scale

0m 1 2 3 4

KEY MAP

LEGEND

- CONFIRMED LEAD PAINT SAMPLING LOCATION
- NON-LEAD BASED PAINT SAMPLING LOCATION
- BUILDING OUTLINE
- APPROXIMATE EXTENT OF LEAD CONTAINING PAINT.

NOTE: ONLY XCG PAINT SAMPLES ARE SHOWN. THE LOCATIONS OF HISTORIC PAINT SAMPLES COLLECTED BY OTHERS ARE UNKNOWN.

DRAWING REFERENCE: Based on XCG field notes. Building layouts are approximate and are not intended to be detailed drawings.

NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

TITLE:

PAINT

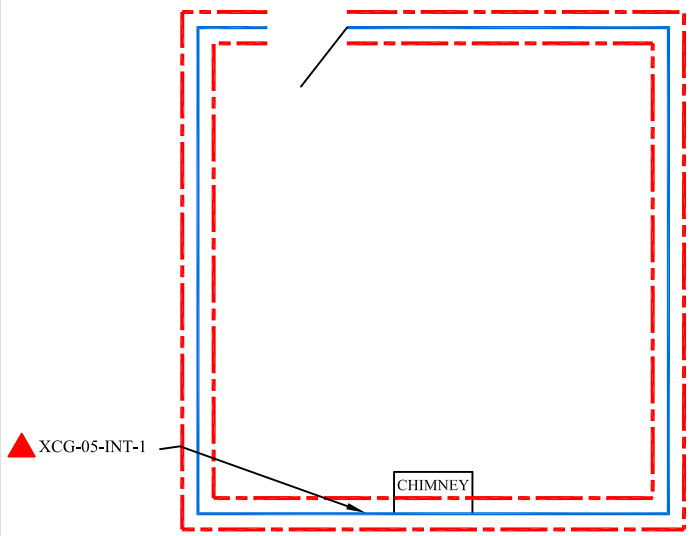
SAMPLE LOCATIONS

LOCATION: COVE ISLAND
TOBERMORY, ONTARIO

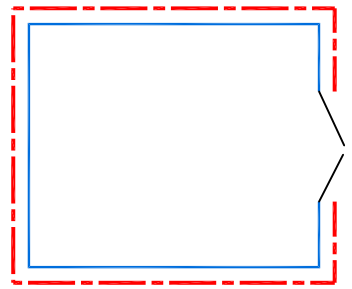
XCG
Environmental Engineers & Scientists

DATE:	DRAWN:	FIGURE:
AUG 2013	AG	5

PROJECT No: 1-336-184-01

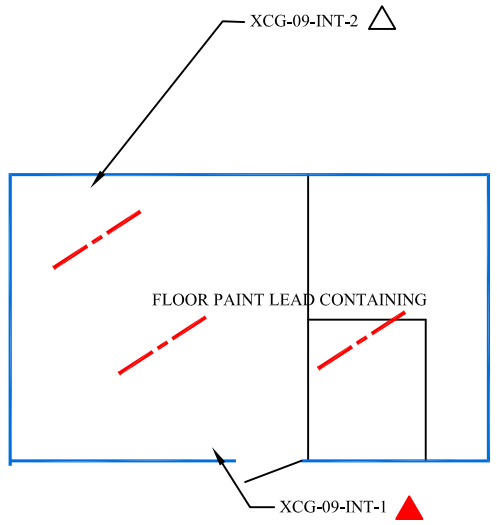


WORKSHOP
(BUILDING #5)



OIL SHED
(BUILDING #7)

NOTE: THERE ARE NO INTERIOR PAINTS IN THIS BUILDING



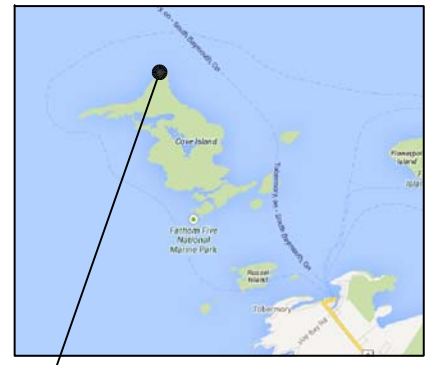
RADIO BUILDING
(BUILDING #9)

NOTE: THERE ARE NO EXTERIOR PAINTS ON THIS BUILDING

GENERATOR BUILDING
(BUILDING #10)

NOTE: THERE ARE NO EXTERIOR PAINTS ON THIS BUILDING

KEY MAP



LEGEND

- ▲ CONFIRMED LEAD PAINT SAMPLING LOCATION
- △ NON-LEAD BASED PAINT SAMPLING LOCATION
- BUILDING OUTLINE
- APPROXIMATE EXTENT OF LEAD CONTAINING PAINT.

NOTE: ONLY XCG PAINT SAMPLES ARE SHOWN. THE LOCATIONS OF HISTORIC PAINT SAMPLES COLLECTED BY OTHERS ARE UNKNOWN.

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m²) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Workshop	SCI-05-INT-01	Interior	Floor	Grey	Concrete	Worn, cracking	<1.0	NA	NA	-	Electrical wiring	None
Workshop	SCI-05-INT-02	Interior	Windowsill on west wall	White	Wood	Good, minor cracking	<1.0	NA	NA	-		None
Workshop	XCG-05-INT-1	Interior	Walls	Green	Drywall	Good, minor cracking	**30,600**	<5	1.1	60		
Estimated interior surface area requiring abatement										**60**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Workshop	SCI-05-EXT-01	Exterior	East wall, below window	White	Wood	Good, some cracking	**13,200**	NA	<1.0	82		Estimated area includes the walls, window sills and frames, doors and door frame, and eaves, which are painted both white and red and are assumed to contain lead at a concentration above the criteria. The entire exterior of the building should be mitigated.
Workshop	SCI-05-EXT-02	Exterior	Windowsill on east side of building	Red	Wood	Good, some cracking and peeling	**3,960**	NA	<1.0			
Estimated exterior surface area requiring abatement										**82**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**
Oil Shed	-	Interior	No paint on interior surfaces No sample collected				-		-	-	None	None
Estimated interior surface area requiring abatement										**0**		
Oil Shed	SCI-07-EXT-01	Exterior	Northwest wall of building	White	Wood	Good, some cracking	**52,200**	NA	<0.50	49	None	Estimated area includes walls, doors and door frames, window sills and frames, and eaves, which are painted both white and red and are assumed to contain lead at a concentration above the criteria. The entire exterior of the building should be mitigated.
Oil Shed	SCI-07-EXT-02	Exterior	Window frame on southwest wall	Red	Wood	Some cracking and peeling	**4,950**	NA	<1.0			
Estimated exterior surface area requiring abatement										**49**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**
Radio Building	COV PC-01 & XCG-09-INT-1	Interior	Floor	Grey	Concrete	Fair	**10,100**	<5	4.3/1.72	23	Electrical wiring	Sample COV PC-01 was analyzed for PCBs only (4.3 mg/kg)
Radio Building	XCG-09-INT-2	Interior	Walls, rafters	White	Drywall, Wood	Good, some cracking	7	<5	NA **			
Radio Building	-	Interior	Walls	Grey	Wood	Good	NA	NA	NA	-		Paint too thin to sample
Estimated interior surface area requiring abatement										**23**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Radio Building	-	Exterior	No paint on exterior surfaces No sample collected				-	-	-	-		None
Estimated exterior surface area requiring abatement										**0**		
Generator Building	XCG-10-INT-1	Interior	Floor	Grey	Concrete	Good	**1,190**	<5	6.0	23	Electrical wiring	
Radio Building	-	Interior	Walls	Grey	Wood	Good	NA	NA	NA	-		Paint too thin to sample
Estimated interior surface area requiring abatement										**23**		**Type 1 removal procedures for lead paint using chemical gel or pasteor similar lead paint removal product.**
Generator Building	-	Exterior	No paint on exterior surfaces No sample collected				-		-	-		None
Estimated exterior surface area requiring abatement										**0**		

Notes:

[1] Samples were collected by the following consultants:

COV Data from Phase 1 Environmental Assesment completed by Oliver, Mangione, McCalla and Associates Limited (1997)

COV PC Data from Phase 2 Environmental Assesment completed by Royal Military College (1999)

SCI Data from Lead and PCBs Assesment completed by CH2MHill (January 2011)

DRAWING REFERENCE: Based on XCG field notes. Building layouts are approximate and are not intended to be detailed drawings.

NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

TITLE:

SUPPLEMENTAL INTERIOR PAINT SAMPLE LOCATIONS

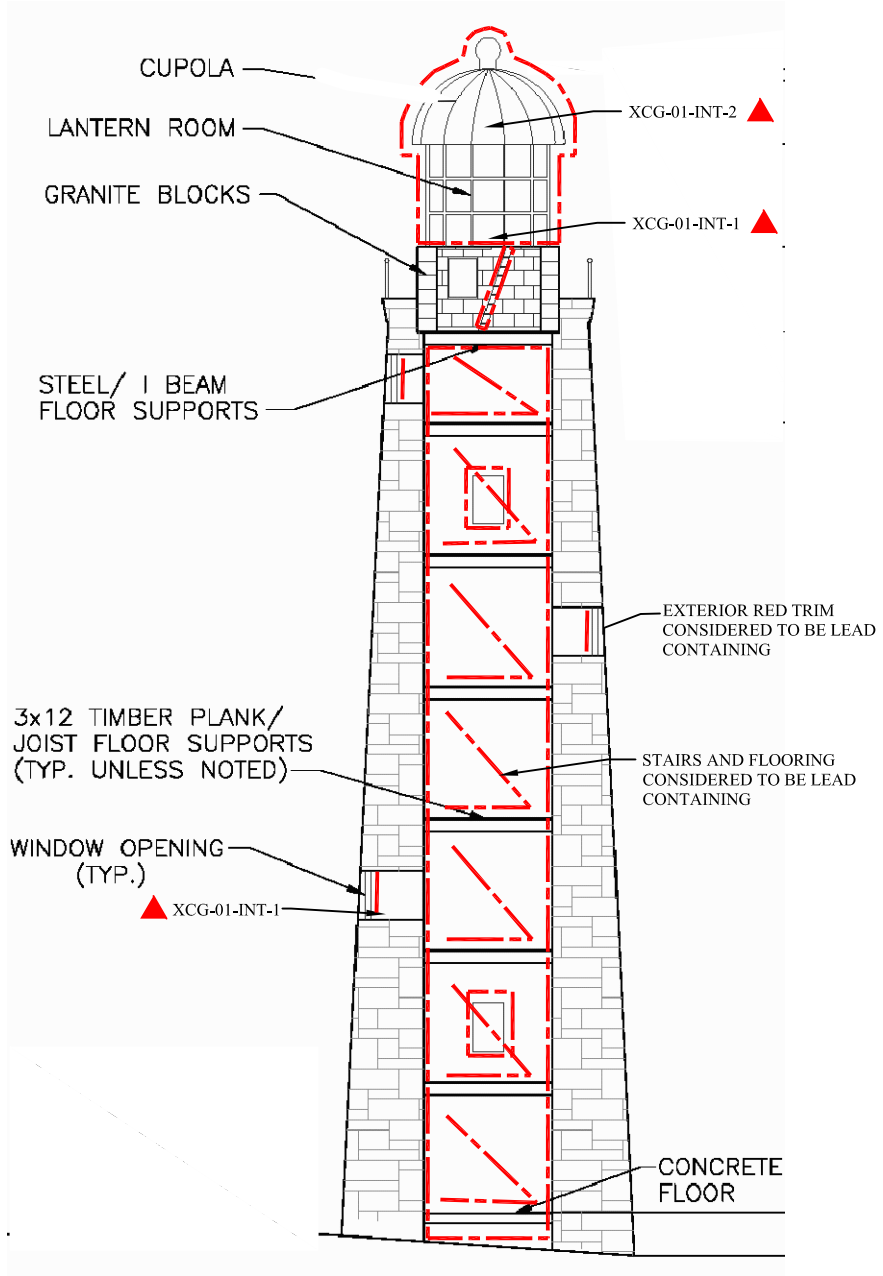
LOCATION:

COVE ISLAND
TOBERMORY, ONTARIO

XCG
Environmental Engineers & Scientists

DATE:	DRAWN:	FIGURE:
AUG 2013	AG	6

PROJECT No: 1-336-184-01



Scale

NOT TO SCALE

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m^2) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Lighthouse Tower	SCL-01-INT-02	Interior	Wall beside door	White	Stone	Good	<1.0	NA	NA	-	Battery, electrical wiring	None
Lighthouse Tower	XCG-01-INT-1	Interior	Tower light fixture base	Green	Steel	Foor, cracking and peeling	**34,700**	6	< 0.3	2		
Lighthouse Tower	XCG-01-INT-2	Interior	Ceilingin top level	White	Copper	Foor, cracking and peeling	**3,300**	20	< 0.3	15		
Lighthouse Tower	XCG-01-INT-3	Interior	Interior window on level 3	White	Wood	Foor, cracking and peeling	**21,600**	<5	< 0.3	6		
Lighthouse Tower	COV 9	Interior	First level, floor and landing	Grey	Wood	Good; some flaking and peeling	**3,250**	NA	NA	94		Estimated areas include landings and stairways on the interior of the tower and the painted stone in the top level, which are all painted grey and are assumed to contain lead at a concentration above the criteria. All areas painted grey on the interior of the tower should be mitigated.
Lighthouse Tower	COV10	Interior	Top evel	Grey	Wood, Stone	Poor to good; some flaking	**3,180**	NA	NA			
Estimated interior surface area requiring abatement										**117**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Lighthouse Tower	SCL-01-EXT-01	Exterior	North side of tower	White	Stone	Good	10.6	NA	NA	-		None (To be Confirmed)
Lighthouse Tower	SCL-01-EXT-02	Exterior	Door frame	Red	Stone, Concrete	God, some cracking	**59,700**	NA	<1.0	50		Estimated area includes door frame, as well as window sills and frames, step risers, roof, and handrail, which are painted red and are assumed to contain lead at a concentration above the criteria. All areas painted red on the exterior of the building should be mitigated.
Estimated exterior surface area requiring abatement										**50**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**

[1] Samples were collected by the following consultants:
COV Data from Phase 1 Environmental Assessment completed by Olivet, Mangiose, McCalla and Associates Limited (1997)
COVPC Data from Phase 2 Environmental Assessment completed by Royal Military College (1999)
SCI Data from Lead and PCBs Assessment completed by CH2MHill (January 2011)
XCG Data from XCG's investigation (August 2013)

[2] Surface Coating Materials Regulation for lead in surface coatings is 90 mg/kg (SOR/2005-109, as amended)

[3] There are no guidelines for Arsenic Content

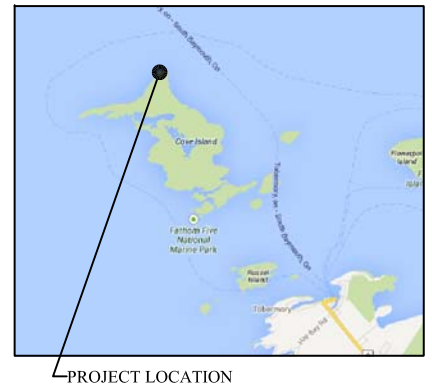
[4] Ontario Regulation 362 classifies PCB waste as materials with aPCBs concentration greater than 50 mg/kg

[5] Estimated surface area includes 10% contingency

NA Not Analyzed
PCBs Polychlorinated Biphenyls
- Not applicable or unknown
< 1.0 Not detected above the specified detection limit

259 Value exceeds 90 mg/kg (lead) or 50 mg/kg (PCBs)
951 Results from preliminary analytical report or results not yet received
* Lab Note on the Analytical Report: Low surrogate recovery; results may be biased low.
** Lab Note on the Analytical Report: Sample not analyzed for PCBs due to low sample volume

KEY MAP



LEGEND

- CONFIRMED LEAD PAINT SAMPLING LOCATION
- NON-LEAD BASED PAINT SAMPLING LOCATION
- BUILDING OUTLINE
- APPROXIMATE EXTENT OF LEAD CONTAINING PAINT.

NOTE: ONLY XCG PAINT SAMPLES ARE SHOWN. THE LOCATIONS OF HISTORIC PAINT SAMPLES COLLECTED BY OTHERS ARE UNKNOWN.

DRAWING REFERENCE: Based drawing provided by Friend of the Lighthouse.

NOTE: Location of building, underground utilities, etc. are for reference only and should not be relied upon for detailed design, renovation, or construction purposes. Property boundary and building locations shown may not represent actual surveyed boundaries.

TITLE:

SUPPLEMENTAL INTERIOR PAINT SAMPLE LOCATIONS

LOCATION:

COVE ISLAND
TOBERMORY, ONTARIO

XCG
Environmental Engineers & Scientists

DATE:	DRAWN:	FIGURE:
AUG 2013	AG	7

PROJECT No: 1-336-184-01

Appendix D – Tables of Lead and PCB Concentrations in Paint

XCG
Environmental Engineers & Scientists

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m^2) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Lighthouse Tower	SCI-01-INT-02	Interior	Wall beside door	White	Stone	Good	<1.0	NA	NA	-	Battery, electrical wiring	None
Lighthouse Tower	XCG-01-INT-1	Interior	Tower light fixture base	Green	Steel	Poor, cracking and peeling	**34,700**	6		2		
Lighthouse Tower	XCG-01-INT-2	Interior	Ceiling in top level	White	Copper	Poor, cracking and peeling	**3,300**	20	< 0.3	15		
Lighthouse Tower	XCG-01-INT-3	Interior	Interior window on level 3	White	Wood	Poor, cracking and peeling	**21,600**	<5	< 0.3	6		
Lighthouse Tower	COV 9	Interior	First level, floor and landing	Grey	Wood	Good; some flaking and peeling	**3,250**	NA	NA	94		Estimated areas include landings and stairways on the interior of the tower and the painted stone in the top level, which are all painted grey and are assumed to contain lead at a concentration above the criteria. All areas painted grey on the interior of the tower should be mitigated.
Lighthouse Tower	COV 10	Interior	Top level	Grey	Wood, Stone	Poor to good; some flaking	**3,180**	NA	NA			
Estimated interior surface area requiring abatement										**117**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Lighthouse Tower	SCI-01-EXT-01	Exterior	North side of tower	White	Stone	Good	10.6	NA	NA	-		None (To be Confirmed)
Lighthouse Tower	SCI-01-EXT-02	Exterior	Door frame	Red	Stone, Concrete	Good, some cracking	**59,700**	NA	<1.0	50		Estimated area includes door frame, as well as window sills and frames, step risers, roof, and handrail, which are painted red and are assumed to contain lead at a concentration above the criteria. All areas painted red on the exterior of the building should be mitigated.
Estimated exterior surface area requiring abatement										**50**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Limestone Dwelling	SCI-02-INT-01	Interior	Wall across from front door	White	Drywall	Good, intact	<1.0	NA	NA	-	Electrical wiring, piping	None
Limestone Dwelling	SCI-02-INT-02	Interior	Window frame in kitchen	Green	Wood, Drywall	Poor, cracking and peeling	<1.0	NA	NA	-		None
Limestone Dwelling	SCI-02-INT-05	Interior	Door frame to upstairs	Grey	Wood	Cracking	<1.0	NA	NA	-		None
Limestone Dwelling	XCG-02-INT-1	Interior	Fireplace	Black	Steel	Poor, cracking and peeling	**25,500**	<5	< 0.3	1		
Limestone Dwelling	XCG-02-INT-2	Interior	Main Level Bathroom	Black	Tile	Poor, cracking and peeling	**8,680**	<5	1.1	12		
Limestone Dwelling	XCG-02-INT-4	Interior	Upstairs bedroom wall	Blue	Drywall	Poor, cracking and peeling	**750**	9	1.33	251		Estimated area includes upstairs walls, bathroom, storage area below the stairs, and the parlour, which are painted blue, green, and white and are assumed to contain lead, and potentially PCBs, at a concentration above the criteria. All paint that is blue, green, and white within these rooms should be mitigated. It is assumed that the green paint on the upstairs walls has elevated levels of both lead and PCBs; the estimated surface area of this paint is 129 m^2.
Limestone Dwelling	COV 18	Interior	Bathroom wall	Blue	Plaster	Generally good; some flaking	**58,500**	NA	NA			
Limestone Dwelling	COV PC-10	Interior	Bathroom wall	Blue	-	-	NA	NA	1.1			
Limestone Dwelling	COV 20	Interior	Rear room wall	White	Plaster	Considerable flaking and peeling	**69,600**	NA	NA			
Limestone Dwelling	COV 21	Interior	Upstairs bedroom wall	Green	Plaster	Considerable cracking and peeling	**35800**	NA	NA			
Limestone Dwelling	COV PC-09	Interior	Wall	Green	-	-	NA	NA	**77**			
Limestone Dwelling	XCG-02-INT-3	Interior	Window trim	White	-	Poor, cracking and peeling	**78,400**	<5	2	87		
Estimated interior surface area requiring abatement										**351**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Limestone Dwelling	SCI-02-EXT-01	Exterior	West wall beside back door	White	Stone	Some chipping	**222**	NA	NA	210		
Limestone Dwelling	SCI-02-EXT-02	Exterior	Windowsill on south side of house	Red	Stone/ Concrete	Weathering evident	**23,200**	NA	<1.0	16		
Estimated exterior surface area requiring abatement										**226**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Lightkeeper's Residence	SCI-03-INT-01	Interior	Living room wall across from front door	White	Drywall	Good, intact	<1.0	NA	NA	-	Paint cans, electrical wiring, piping	None
Lightkeeper's Residence	SCI-03-INT-02	Interior	First bedroom, wall below window	Peach	Drywall	Fair, some cracking, peeling, water damage	<1.0	NA	NA	-		None
Lightkeeper's Residence	SCI-03-INT-03	Interior	Bedroom, wall by closet	Blue	Drywall	Good	<1.0	NA	NA	-		None
Lightkeeper's Residence	XCG-03-INT-1	Interior	Kitchen cabinets	Yellow	Wood	Good	**871**	<5	2.13	5		
Lightkeeper's Residence	XCG-03-INT-2	Interior	Bathroom Tile	Yellow	Tile	Good	59	<5	4.2	-		None
Lightkeeper's Residence	XCG-03-INT-3	Interior	Storage room	Green	Drywall	Good	11	<5	0.9	-		None
Lightkeeper's Residence	XCG-03-INT-4	Interior	Kitchen ceiling	White, gloss finish	Drywall	Fair to good, some water damage	**111**	<5	7	28		
Lightkeeper's Residence	COV 5	Interior	Basement floor	Grey	Concrete	Poor; flaking and peeling	**1,120**	NA	NA	117		Estimated area includes basement floor and stairway and railing leading to main floor
Estimated interior surface area requiring abatement										**150**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Lightkeeper's Residence	SCI-03-EXT-01	Exterior	Southeast wall	White	Wood	Fair, some cracking and peeling	**538**	NA	NA	209		
Lightkeeper's Residence	SCI-03-EXT-02	Exterior	Windowsill by back door	Red	Wood, Concrete	Fair, some cracking and peeling	**6,090**	NA	2.4	30		Estimated area includes window sills and frames, door frames, handrails, edge of gardens and stair well to basement, and eaves, which are painted red and assumed to contain lead at a concentration above the criteria. All areas painted red on the exterior of the building should be mitigated.
Lightkeeper's Residence	SCI-03-EXT-03	Exterior	Stairs to front door	Grey	Wood	Fair, cracking and peeling	**541**	NA	NA	11		
Estimated exterior surface area requiring abatement										**250**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**
Assistant Lightkeeper's Residence	SCI-04-INT-01	Interior	Windowsill in living room	White	Drywall, Wood	Fair, minor cracking and peeling	<1.0	NA	NA	-	Electrical wiring	None
Assistant Lightkeeper's Residence	SCI-04-INT-02	Interior	South wall of living room	Peach	Drywall	Fair, minor cracking and peeling	<1.0	NA	NA	-		None
Assistant Lightkeeper's Residence	XCG-04-INT-1 (dup: XCG-04-INT-6)	Interior	Front entrance, bedroom	Green	Drywall	Fair, minor cracking and peeling	**4,440**	<5	0.55/0.46	55		
Assistant Lightkeeper's Residence	XCG-04-INT-2	Interior	Bathroom	Yellow	Tile	Fair, minor cracking and peeling	**28,900**	<5	0.3	10		
Assistant Lightkeeper's Residence	XCG-04-INT-3	Interior	Kitchen cabinets	Yellow	Wood	Fair, minor cracking and peeling	**3,130**	<5		9		
Assistant Lightkeeper's Residence	XCG-04-INT-4	Interior	Kitchen, bedroom	Blue	Drywall	Fair, minor cracking and peeling	**388**	<5	< 0.3	63		
Assistant Lightkeeper's Residence	XCG-04-INT-5	Interior	Entrance floor	Black	Wood	-	**4,280**	<5		2		
Estimated interior surface area requiring abatement										**139**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Assistant Lightkeeper's Residence	SCI-04-EXT-01	Exterior	North wall by front door	White	Wood	Fair, minor cracking and peeling	42.5		NA	-		None
Assistant Lightkeeper's Residence	SCI-04-EXT-02	Exterior	Windowsill at south west corner	Red	Wood	Fair, minor cracking and peeling	**33,800**		<1.0	24		Estimated area includes window sills and frames, door frames, and eaves, which are painted red and assumed to contain lead at a concentration above the criteria. All areas painted red on the exterior of the building should be mitigated.
Estimated exterior surface area requiring abatement										**24**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**

XCG Environmental Engineers & Scientists

Lead based paint on Workshop abated in 2013/2014

Lead based paint on Boat Shed partially abated in 2013/2014, approximately 30 square meters remain.

Lead based paint on Oil Shed abated in 2013/2014

Table 1 Paint Summary Table

Building Name	Sample Identification Number [1]	Location	Sample Location	Colour	Base Material	Condition	Lead Content (mg/kg) [2]	Arsenic content (mg/kg) [3]	Total PCBs Content (mg/kg) [4]	Estimated Surface Area (m^2) [5]	Potential Lead-Containing Items Observed	Notes & Mitigation Measures
Workshop	SCI-05-INT-01	Interior	Floor	Grey	Concrete	Worn, cracking	<1.0	NA	NA	-		None
Workshop	SCI-05-INT-02	Interior	Windowsill on west wall	White	Wood	Good, minor cracking	<1.0	NA	NA	-		None
Workshop	XCG-05-INT-1	Interior	Walls	Green	Drywall	Good, minor cracking	**30,600**	<5	1.1	60		
Estimated interior surface area requiring abatement										**60**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Workshop	SCI-05-EXT-01	Exterior	East wall, below window	White	Wood	Good, some cracking	**13,200**	NA	<1.0	82	Electrical wiring	Estimated area includes the walls, window sills and frames, doors and door frame, and eaves, which are painted both white and red and are assumed to contain lead at a concentration above the criteria. The entire exterior of the building should be mitigated.
Workshop	SCI-05-EXT-02	Exterior	Windowsill on east side of building	Red	Wood	Good, some cracking and peeling	**3,960**	NA	<1.0			
Estimated exterior surface area requiring abatement										**82**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**
Boat Shed	-	Interior	No paint on interior surfaces No sample collected				-	-	-	-		None
Estimated interior surface area requiring abatement										**0**		
Boat Shed	SCI-06-EXT-01	Exterior	Southeast wall	White	Wood	Some cracking and chipping	**904**	NA	<1.0	120	Electrical wiring	Estimated area includes the walls, window sills and frames, doors and door frames, and eaves, which are painted both white and red and are assumed to contain lead at a concentration above the criteria. The entire exterior of the building should be mitigated.
Boat Shed	SCI-06-EXT-02	Exterior	Front door frame	Red	Wood	Good, some peeling	**7,300**	NA	<0.50			
Estimated exterior surface area requiring abatement										**120**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**
Oil Shed	-	Interior	No paint on interior surfaces No sample collected				-		-	-		None
Estimated interior surface area requiring abatement										**0**		
Oil Shed	SCI-07-EXT-01	Exterior	Northwest wall of building	White	Wood	Good, some cracking	**52,200**	NA	<0.50	49	None	Estimated area includes walls, doors and door frames, window sills and frames, and eaves, which are painted both white and red and are assumed to contain lead at a concentration above the criteria. The entire exterior of the building should be mitigated.
Oil Shed	SCI-07-EXT-02	Exterior	Window frame on southwest wall	Red	Wood	Some cracking and peeling	**4,950**	NA	<1.0			
Estimated exterior surface area requiring abatement										**49**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**
Old Fog Alarm Building	SCI-08-INT-01	Interior	Wall in back side room	White	Drywall	Good, minor peeling	**1,810**	NA	5.28	240	Electrical wiring	Estimated area includes the walls, window sills and frames, doors and door frames, and trim, which are painted both white and green and are assumed to contain lead at a concentration above the criteria. All areas painted white and green within the interior of the building should be mitigated.
Old Fog Alarm Building	SCI-08-INT-03	Interior	Windowsill in back side room	Green	Wood	Good, minor chipping	**13,500**	NA	15.9			
Old Fog Alarm Building	SCI-08-INT-04	Interior	Floor in main room	Grey	Concrete, Wood	Good, some cracking	**3,170**	NA	**951**	94		Estimated area includes the entire grey painted surface of the floor, which is assumed to contain lead and PCBs at concentrations above the criteria. The painted floor areas of the building should be mitigated. Grey paint considered PCB containing is to be handled and disposed of in accordance with O.Reg. 362.
Old Fog Alarm Building	XCG-08-INT-1	Interior	Fog alarm and piping	Black	Steel	Good	**48,000**	19	1.7	5		
Old Fog Alarm Building	XCG-08-INT-2 (Dup: XCG-08-INT-5)	Interior	Stairs, walls, cabinets	Bright green	Wood, Drywall	Good	**10,900**	<5	48.2/	48		
Old Fog Alarm Building	COV PC-02	Interior	Engine mount	Red	Concrete	Good	NA	NA	**4,200**	18		Estimated area includes all red painted engine mounts, which are assumed contain PCBs at concentrations above the criteria. Any red paint within the interior of the building should be mitigated. Red paint considered PCB containing is to be handled and disposed of in accordance with O.Reg. 362.
Old Fog Alarm Building	COV PC-05 & XCG-08-INT-3	Interior	Walls , Air vessels, Ceiling in Generator Room	Silver	Drywall, Metal	Good	**3,680**	11	6.4	107		Sample COV PC-05 was analyzed for PCBs only (6.4 mg/kg)
Old Fog Alarm Building	XCG-08-INT-4	Interior	Windows, Walls, Cieling in compessor room	White	Drywall	Good	**37,300**	7		163		
Estimated interior surface area requiring abatement										**675**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Old Fog Alarm Building	SCI-08-EXT-01	Exterior	Southeast wall between window and door	White	Wood	Good, some cracking and chipping	<1.0	NA	NA	-		None
Old Fog Alarm Building	SCI-08-EXT-02	Exterior	Window frame on southwest side wall	Red	Wood	Good, some peeling	**259**	NA	NA	11		
Estimated exterior surface area requiring abatement										**11**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product**
Radio Building	COV PC-01 & XCG-09-INT-1	Interior	Floor	Grey	Concrete	Fair	**10,100**	<5	4.3	23	Electrical wiring	Sample COV PC-01 was analyzed for PCBs only (4.3 mg/kg)
Radio Building	XCG-09-INT-2	Interior	Walls, rafters	White	Drywall, Wood	Good, some cracking	7	<5				
Radio Building	-	Interior	Walls	Grey	Wood	Good	NA	NA	NA	-		Paint too thin to sample
Estimated interior surface area requiring abatement										**23**		**Type 1 removal procedures for lead paint using chemical gel or paste or similar lead paint removal product.**
Radio Building	-	Exterior	No paint on exterior surfaces No sample collected				-	-	-	-		None
Estimated exterior surface area requiring abatement										**0**		
Generator Building	XCG-10-INT-1	Interior	Floor	Grey	Concrete	Good	**1,190**	<5	NA	23	Electrical wiring	
Radio Building	-	Interior	Walls	Grey	Wood	Good	NA	NA	NA	-		Paint too thin to sample
Estimated interior surface area requiring abatement										**23**		**Type 1 removal procedures for lead paint using chemical gel or pasteor similar lead paint removal product.**
Generator Building	-	Exterior	No paint on exterior surfaces No sample collected				-		-	-		None
Estimated exterior surface area requiring abatement										**0**		
Abandoned Garage	-	Interior	No paint on interior surfaces No sample collected	-	-	-	-		-	-	None	None
Estimated interior surface area requiring abatement										**0**		
Abandoned Garage	SCI-11-EXT-01	Exterior	Garage door	Grey	Wood	Poor, weathered, cracking	<1.0	NA	NA	-		None
Estimated exterior surface area requiring abatement										**0**		
Tool Shed	-	Interior	No paint on interior surfaces No sample collected				-	-	-	-	None	None
Estimated interior surface area requiring abatement										**0**		
Tool Shed	SCI-12-EXT-01	Exterior	Front door	White	Wood	Cracking and peeling	1.5	NA	NA	-		None
Estimated exterior surface area requiring abatement										**0**		

Notes:

[1] Samples were collected by the following consultants:

COV Data from Phase 1 Environmental Assessment completed by Oliver, Mangione, McCalla and Associates Limited (1997)

COV PC Data from Phase 2 Environmental Assessment completed by Royal Military College (1999)

SCI Data from Lead and PCBs Assessment completed by CH2MHill (January 2011)

XCG Data from XCG's investigation (August 2013)

[2] Surface Coating Materials Regulation for lead in surface coatings is 90 mg/kg (SOR/2005-109, as amended)

[3] There are no guidelines for Arsenic Content

[4] Ontario Regulation 362 classifies PCB waste as materials with a PCBs concentration greater than 50 mg/kg

[5] Estimated surface area includes 10% contingency

NA Not Analyzed

PCBs Polychlorinated Biphenyls

- Not applicable or unknown

< 1.0 Not detected above the specified detection limit

259 Value exceeds 90 mg/kg (lead) or 50 mg/kg (PCBs)

951 Results from preliminary analytical report or results not yet received

Appendix E – Mitigation Measures Massasauga Rattlesnake

MITIGATION MEASURES

Massasauga Rattlesnake
Cove Island

Removal of anthropogenic waste and lead-based paints from buildings located on Cove Island, Lake Huron are planned to be conducted. The project involves lead-based paint abatement of residential-type buildings and the removal of solid wastes from two areas within the vicinity of the buildings. Massasauga Rattlesnake (*Sistrurus catenatus)* has occurred on the island[1]. The following mitigation measures are recommended in the event that any snake species are detected prior to commencement of and during remediation.

Mitigation Measures
Massasauga Rattlesnake - Cove Island

The arrival and mere presence of workers on-site as well as the ignition and movement of equipment should alarm any wildlife (including snakes) and cause them to disperse from the work area prior to commencement of work. This is a desired effect as this will clear the area of all mobile wildlife and this should avoid any need for work stoppage.

Before commencement of work color photos of the snake species will be circulated to the workers prior to remediation. This will familiarize them with its physical characteristics. Workers will be instructed to alert other colleagues and the Departmental Representative (DR) of any detected snakes' presence and location.

In the event any snake is detected within or in close proximity to the work area, the following steps are recommended:

- The snake's presence should simply be acknowledged and the DR notified;
- It should be allowed to retreat or move away from the work area and vicinity on its own;
- If it is in close proximity to the work area such that there may be risk of inadvertently harming the snake, work can continue in another section of the work area; or,
- Work can stop temporarily and the workers can wait for a short duration (approximately 1/2 hour) and then re-commence work after the snake is a safe distance away from the work area;
- The snake (or any wildlife) must ***never*** be touched or picked up. ***All*** wildlife species will potentially bite when cornered and/or picked up. The Massasauga Rattlesnake is venomous.

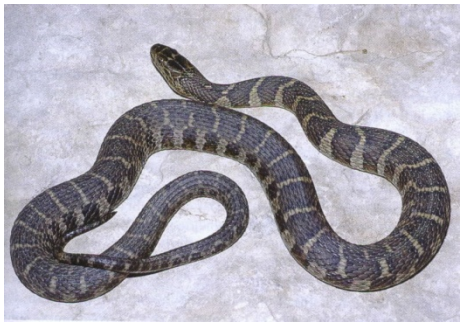
Upon completion of the removal of wastes, vegetation will be allowed to regenerate naturally. The removal of wastes assists in the restoration of natural conditions on the island.

1. Bruce Peninsula Population. Eastern Massasauga Recovery Team (2003-2009). Accessed August 27, 2013. http://www.massasauga.ca/html/pops/bruce.htm

Figure 2: Massasauga Rattlesnake

Source: Species-at-Risk Public Registry, Government of Canada

Figure 3: Northern Water Snake



Source: Michigan Society of Herptologists

Key distinguishing Characteristics

Massasauga Rattlesnake

Length: medium 50 – 70 cm long. Stout-bodied snake. Triangular head. Tail ends in a rattle. Sides and back is typically grey to dark brown with a row of dark brown blotches down the centre of the back alternating with rows of smaller lateral spots. Eye pupil is vertical.

Northern Water Snake

Length: large 61 – 140 cm. Color may be brown, tan or gray. Back and sides have a variable pattern of black, dark brown, or reddish brown cross bands and blotches that alternate and may merge. The blotched pattern may become obscured by dark pigment over time and older adults can appear solid brown or black, especially when their skin is dry.

Note: this species is not an at-risk species but is included since individuals can be mistaken for a Massasauga.

Appendix F – Site Soil TCLP Analysis (From Former Dumpsite)

XCG
Environmental Engineers & Scientists

Table 2 TCLP Results in Soil

Parameter (mg/L)	M.D.L.	Leachate Quality Criteria[1]	Small Dump TCLP	Main Dump TCLP
	Date:		7-Aug-13	7-Aug-13
Arsenic	0.02	2.5	< 0.02	< 0.02
Barium	0.05	100	2.51	0.11
Benzene	0.0005	0.5	< 0.005	< 0.005
Benzo(a)pyrene	0.0005	0.001	< 0.0005	< 0.0005
Boron	0.03	500	0.04	0.04
Cadmium	0.01	0.5	0.05	< 0.01
Carbon Tetrachloride	0.0002	0.5	< 0.002	< 0.002
Chlorobenzene (Monochlorobenzene)	0.0002	8	< 0.002	< 0.002
Chloroform	0.0003	10	< 0.003	< 0.003
Chromium	0.04	5	0.09	0.05
Cresol, m,p,o-	0.01	200	< 0.01	< 0.01
Dichlorobenzene, 1,2-	0.0001	20	< 0.001	< 0.001
Dichlorobenzene, 1,4-	0.0002	0.5	< 0.002	< 0.002
Dichloroethane, 1,2-	0.0001	0.5	< 0.001	< 0.001
Dichloroethene, 1,1-	0.0001	1.4	< 0.001	< 0.001
Dichloromethane	0.0003	5	< 0.003	< 0.003
Dichlorophenol, 2,4- (2,4-DCP)	0.002	90	< 0.002	< 0.002
Dinitrotoluene, 2,4-	0.002	0.13	< 0.002	< 0.002
Hexachlorobenzene	0.001	0.13	< 0.001	< 0.001
Hexachlorobutadiene	0.001	0.5	< 0.001	< 0.001
Hexachloroethane	0.001	3	< 0.001	< 0.001
Lead	0.02	5	0.42	< 0.02
Mercury	0.0005	0.1	< 0.0005	< 0.0005
Methyl Ethyl Ketone	0.001	200	< 0.01	< 0.01
Nitrobenzene	0.01	2	< 0.01	< 0.01
Pentachlorophenol	0.002	6	< 0.002	< 0.002
Selenium	0.03	1	< 0.03	< 0.03
Silver	0.01	5	< 0.01	< 0.01
Tetrachloroethylene	0.0002	3	< 0.002	< 0.002
Tetrachlorophenol, 2,3,4,6-	0.002	10	< 0.002	< 0.002
Trichloroethylene	0.0001	5	< 0.001	< 0.001
Trichlorophenol, 2,4,5-	0.002	400	< 0.002	< 0.002
Trichlorophenol, 2,4,6-	0.002	0.5	< 0.002	< 0.002
Uranium	0.02	10	< 0.02	< 0.02
Vinyl Chloride	0.0002	0.2	< 0.002	< 0.002
Flashpoint (°C)	20	-	> 65	> 65

Notes:

MDL	Laboratory Method Detection Limit
< 0.1	Below Laboratory MDL
APEC	Area of Potential Environmental Concern
Bold	Indicates exceedance of Schedule 4 Leachate Quality Criteria, O. Reg. 347
[1]	Criteria are taken from “Leachate quality criteria" under Schedule 4 of O. Reg. 347
-	not applicable