



CITY OF VANCOUVER

ENGINEERING SERVICES

D.H. Rudberg, P.Eng., General Manager

T.R. Timm, P.Eng., Deputy City Engineer

MEMORANDUM

August 24, 2004

TO: Mayor and Council

FROM: Dave Rudberg, General Manager
Engineering Services

SUBJECT: "REVIEW OF GRAFFITI PROGRAM - SERVICE DELIVERY AND ENVIRONMENTAL IMPACTS" COUNCIL REPORT DATED FEBRUARY 6, 2004

The attached report "Review of Graffiti Program - Service Delivery and Environmental Impacts", dated February 6, 2004 was deferred by Council at the March 25, 2004 City Services & Budgets Committee. This report is being resubmitted for approval. There are two items we wish to bring to Council's attention:

1. Distribution of graffiti removal product to the public (Recommendation D)

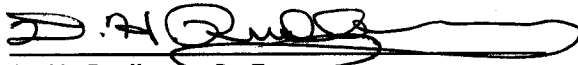
One of the issues dealt with in this report was the distribution of a graffiti removal product to the public. Concerns were raised about the toxicity of one of the compounds, N-Methyl-2-Pyrrolidone (NMP), found in this product. As part of the work of a consultant hired by staff to develop a set of Best Management Practices for graffiti removal, the consultant was asked to examine the compounds in this product. Based on available information, the consultant concluded that the product was of relatively low toxicity and that it is among the most benign available products available that are effective in removing graffiti.

However, in order to appropriately respond to concerns raised about this product, a significant amount of further research and testing would be required to fully explore the toxicity of this product to humans and to the environment. This would apply to other products that we may distribute in the future. While the distribution of this product to the public assists in the reduction in graffiti, its main benefit is in education and awareness. Staff feel that this benefit does not justify the staff time and costs to continue distributing this or other products to the public. Therefore, I am recommending we discontinue distributing graffiti removal chemicals to the general public. This will require replacing recommendation D with the following recommendation:

"D. THAT staff discontinue the distribution of graffiti removal chemicals to the general public."

2. Best Management Practices (BMPs)

At the March 25, 2004 Committee meeting, staff were asked to forward the Best Management Practices, drafted by Golder Associates, to Federal and Provincial agencies responsible for environmental issues for comment. The Ministry of Water, Land and Air Protection supported the BMPs. Environment Canada has provided additional comments which have been used to clarify and tighten the BMPs. These include the requirement to contain all rinse water used, comments on the preferred removal methods, and restricting the use of toxic chemicals as defined in the Canadian Environmental Protection Act (CEPA, 1999). The report on BMPs is on file with the City Clerk.



D. H. Rudberg, P. Eng.
General Manager of Engineering Services



Final Report For: Best Management Practices for Graffiti Removal Practices in the City Of Vancouver



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FINAL REPORT ON

**BEST MANAGEMENT PRACTICES
FOR GRAFFITI REMOVAL
IN THE CITY OF VANCOUVER**

Submitted to:

City of Vancouver
453 West 12th Avenue
Vancouver, British Columbia
V5Y-1V4

DISTRIBUTION:

20 Copies - City of Vancouver
2 Copies - Golder Associates Ltd.

September 20, 2004

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Appendix I Best Management Practices (Section 1-7)

1.0 INTRODUCTION

Golder Associates Ltd (Golder) was retained by the City of Vancouver (“the City”) to prepare best management practices for graffiti removal. The purpose of these BMPs is to help the City minimize environmental impacts from graffiti removal and comply with relevant legislation, regulations and current best management practices.

The City contracts out graffiti removal from City buildings and other municipal infrastructure, such as light poles, bridges, retaining walls, and traffic signs.

The City of Vancouver’s current regulatory and contract requirements related to graffiti removal were used as the basis for developing BMPs and are summarized below.

References used in developing the BMPs incorporate graffiti removal practices from several major cities in North America including; San Francisco, Seattle, Calgary, Toronto and New York. We wish to acknowledge these cities for providing us with informative documentation.

The information here is not intended to replace the health and safety plan of a graffiti removal contractor.

2.0 CURRENT REGULATORY AND CONTRACT REQUIREMENTS

The City of Vancouver has adopted regulatory and contractual requirements from the following sources:

- City of Vancouver Sewer and Watercourse By-law (No. 8093);
- British Columbia Occupational Health and Safety Regulation (OHSR); and,
- City of Vancouver graffiti removal services request for proposal (RFP P202031).

A summary of these requirements are provided below.

2.1 Summary of Section 3 of the City Of Vancouver Sewer and Watercourse By-Law No. 8093

The relevant section of the City of Vancouver Sewer and Watercourse By-Law No. 8093 is Section 3, "*Wastewater and Storm Water Discharge and Quality Standards*".

With respect to graffiti removal practices, Section 3 of the Bylaw prohibits discharge, without express permission, into a sanitary sewer or combined sewer substances which have the following characteristics:

- Solids with particle sizes greater than 0.5 cm in any dimension, suspended solids content of more than 600 milligrams per litre, or garbage;
- Greases at a concentration of 150 milligrams per litre or which contains more than 15 milligrams per litre of substances derived from petroleum sources;
- Acidic or alkaline waste or waste water having a pH lower than 5.5 or higher than 10.5;
- Liquid or vapour having a temperature higher than 65°C; and,
- Toxic substances.
- Discharge, directly or indirectly, or cause to be discharged, into the storm drainage system or watercourse, water or waste having the following characteristics:
 - Water or wastes with a total suspended solid content of more than 75 milligrams per litre;

- Water or wastes containing grease in a concentration more than 15 milligrams per litre;
- Acidic or alkaline waste, prior to discharge, having a pH lower than 6.0 or higher than 9.0;
- Chemical wastes;
- Liquids or vapours having a temperature higher than 40°C; and,
- Deleterious substances as defined in Section 34(1) of the federal *Fisheries Act*.
- Placement, or discharge, or cause to be placed or discharged, into the sewerage system, the storm drainage system, or watercourse any of the following:
 - Explosive or flammable substances;
 - Poisonous and infectious substances;
 - Corrosive or noxious substances;
 - Hazardous wastes as defined by the British Columbia Environment Management Act (formerly named Special wastes in the BC *Waste Management Act*);
 - High temperature wastes;
 - Truck wastes; and,
 - Obstructive wastes.

In addition, the Bylaw requires that accidental discharges of prohibited substances into public or private sewerage system, storm drainage system or watercourse, be reported.

In accordance with Section 8 of the “*Wastewater and Storm Water Discharge and Quality Standards*” persons in violation of the provisions of this By-Law may be found guilty of an offence against this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines of not less than \$200 or more than \$10,000 for each offence.

2.2 Summary of Part 5, Section 5.57, of the British Columbia OHSR

Part 5 of the British Columbia OHSR refers to hazards associated with “*Chemical and Biological Substances*”. Table 1 includes short term exposure limits and time weighted 8- hour average (TWA) limits for worker exposure. In addition, if a substance identified in American Conference of Governmental Industrial Hygienists (ACGIH) or the International Agency for Research on Cancer (IARC) by any of the following notations, abbreviations, or endnotes is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers:

- ACGIH A1 or A2, or IARC 1, 2A or 2B (Carcinogens),
- Reproductive critical effects (Reproductive Toxins),
- Sensitization critical effect or SEN notation (Sensitizers), or
- L endnote (Exposure by all routes should be carefully controlled to levels as low as possible).

In addition to prohibiting the chemicals or products listed by the ACGIH or IARC with the ratings mentioned above the City of Vancouver also prohibits the use of methylene chloride, a probable carcinogen¹.

2.3 Summary of Part C, Section 4, of the City of Vancouver’s RFP PS02031

In accordance with the City of Vancouver’s RFP PS02031, Part C - Special Conditions, Section 4.0, “*Product Methodology Safety and Environmental Protection*”, the graffiti removal contractor is required to:

- Use environmentally sensitive products and/or services²;
- Comply with the City of Vancouver Sewer and Watercourse bylaw No. 8093 with particular emphasis placed on Section 3, Sub-sections 3.1-3.4;
- Supply the City of Vancouver, and have available at all times, current copies of Material Safety Data Sheets (MSDS) for each chemical or product that contains a controlled product listed in the *Canadian Hazardous Products Act* and/or the Canadian Controlled Product Regulations. Information contained within the MSDS must meet the requirements of the Canadian Controlled Products Regulations.

¹ Further information relating to toxicity to humans can be found at www.worksafebc.com

² For further information relating to environmental toxicity see Environment Canada’s website www.ec.gc.ca (keyword CEPA)

- Provide the worker's training records and written work procedures to the City of Vancouver upon request. The written work procedures must comply with the applicable statements on the MSDS and with the British Columbia Occupational Health and Safety Regulation.

2.4 Canadian Environmental Protection Act (CEPA)

As part of the BMPs, no products should be used that contain chemicals listed in Schedule 1 of the Canadian Environmental Protection Act³

³ Website www.ec.gc.ca

3.0 BEST MANAGEMENT PRACTICES (BMPS)

BMPs are proposed for adoption by the City of Vancouver for graffiti removal. It is intended that these general BMPs would be provided to contractors and members of the public to protect the health and safety of graffiti removal workers and the public, help minimize environmental impacts, and facilitate compliance with applicable legislation and regulations, including the City of Vancouver Sewer and Watercourse Bylaw. It is anticipated that the City will use the BMPs provided here to develop a Bulletin or Bulletins for general distribution. BMPs related to specific graffiti removal methods are presented in Appendix I (Section 1-7). The BMPs provided here do not provide advice as to what removal technique should be used for specific situations based on the number of different types of scenarios. However, the removal method with the lowest environmental impact should be preferentially used when possible. The order of preference for graffiti removal methods is: 1) painting of surface; 2) power washing without the use of chemicals; 3) spray and wipe chemical application; and, 4) power washing using chemicals.

3.1 Prevention in Areas Prone to Graffiti

1. Undertake regular maintenance of areas prone to graffiti. Studies have shown that graffiti removed within 72 hours of its appearance have a minimized likelihood of re-occurring at that location (City of Calgary, 2002).
2. Use non-toxic coatings to facilitate graffiti removal in areas that are highly prone to graffiti. Use of coatings can prevent penetration of ink and spray paint into porous substances such as concrete and brick.

3.2 Health and Safety During Graffiti Removal

1. Determine the nature of any cleaning agents that are to be employed prior to undertaking graffiti removal and follow all recommended precautions, including use of personal protective equipment. Refer to, and maintain, the Material Safety Data Sheet (MSDS) for any chemicals that are to be used.
2. Where required erect signs, barriers and all other appropriate means to prevent exposure of any water and/or cleaning agents used in graffiti removal to the public (such as pedestrians, nearby residents, etc.).
3. This document does not identify preferred treatment methods for a potential graffiti scenario (i.e., spray paint on brick) as it is anticipated that the primary user of this document (i.e., contractors) have training and knowledge of the applicability of removal options, however, the method with minimal environmental impact is preferred (i.e. paint over surface instead of cleaning, use the least amount of chemicals possible).

3.3 Chemical Restrictions

1. Never use chemicals that are restricted under the ACGIH or IARC as reproductive toxins, carcinogens or sensitizers.
2. Use the least toxic (environmental and human health) chemical product possible to remove graffiti. Information on toxicity can be found at the websites listed in section 2.3 (i.e. CEPA and BC PHSR). For further information on toxicity, call the City of Vancouver Graffiti Coordinator at (604) 871-6300.
3. Never mix chemical agents or cleaning products.

3.4 Minimize Use of Water and Cleaning Agents

1. Use the least amount of water possible to remove graffiti. All water used in graffiti removal has the potential to carry ink, paint, other residue on the washed surface, and in some cases particles from the washed surface itself, into the stormwater system.
2. Use the least amount of any chemical products possible. It will be easier to properly apply, contain, clean-up and dispose of small amounts of chemicals.

3.5 Use and Containment of Chemical Agents

1. Ensure all containers are properly labeled in accordance with British Columbia Occupational Health and Safety Regulation. Keep them closed when not in use.
2. Never dump any chemical agent or cleaning product down open sewers. This includes wash water from cleaning paint brushes or rags.
3. Provide inlet protection such as filter cloth or tarpaulin to storm water catch basins and sewer drain covers.
4. Keep empty paint cans, allow them to dry, and take them to the paint recycling centre for disposal.
5. Keep any excess or leftover paint in the original container. Contractors working with large volumes of paint products may collect products into drums or other appropriate containers. Paint products should not be mixed. Waste paint should be disposed of by a chemical disposal contractor.

6. Brushes should be washed in an acceptable work environment preferably with containment of waste water or cleaners. Small volumes of rinse water can be treated at the sewage treatment plant. Do not pour brush wash water into an open sewer, it will be discharged to a watercourse and waterbody and may be hazardous to fish and other aquatic organisms. Solvents are a prohibited waste and shall not be discharged into the sewer or drainage systems.

3.6 Spills

1. Contain and curb any spill so that it does not enter the stormwater system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill (if it is safe to do so) once the spill is contained.

3.7 Storing Chemicals

1. Keep stored containers cool and dry. Do not store containers near any source of heat or flame, or in damp or wet areas.
2. Store rags used to clean up chemicals in an appropriate container.

3.8 Compliance Monitoring

1. Contractors will provide work schedules and removal methods to the City of Vancouver prior to the commencement of works.
2. Monitoring of contractor compliance will be carried out by City officials without prior notice.
3. Questions concerning practices or bylaw violations should be directed to the City of Vancouver Environmental Protection Office.

4.0 LIMITATIONS

This report was prepared for the exclusive use of the City of Vancouver. This report is intended to provide an assessment of current best management practices relating to graffiti removal.

Golder Associates Ltd. makes no warranty, expressed or implied, and assumes no liability with respect to the use of the information contained in this report by the City of Vancouver or any third party. This report intends to provide Health and Safety information only; it is not a recommendation or endorsement of specific removal techniques.

5.0 CLOSURE

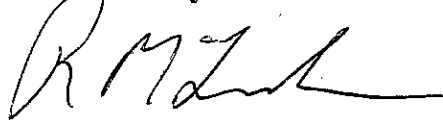
We trust that this report meets your requirements. Should you have questions or comments please contact the undersigned at 604-296-4200.

GOLDER ASSOCIATES LTD.

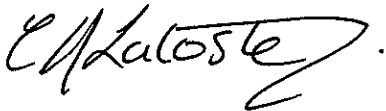


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CL/DB/TM/JH/rja
Attachments
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APPENDIX I
BEST MANAGEMENT PRACTICES

SECTION 1
ALKALINE COMPOUNDS

1.0 GRAFFITI REMOVAL BEST MANAGEMENT PRACTICES

METHOD: ALKALINE COMPOUNDS

Best management practices (BMPs) related to specific methods of graffiti removal are presented in this document and are supplementary to the generalized BMPs outlined in Section 4 of Golder Associates “*Environmental Review of Graffiti Removal Practices in the City of Vancouver*”, October, 2003. Contractors intending to carry out graffiti removal in the City of Vancouver must adhere to City of Vancouver Sewer and Watercourse By-Law No.8093. This document is a guide and not intended to replace or supersede federal, provincial or municipal legislation. Additionally, this document is not intended to be to a health and safety guide.

Alkaline Compounds

Alkaline compounds are used to remove oil, grease and wax from non-alkali sensitive surfaces. Similar to organic solvents and paint removers, these compounds are often used in conjunction with a poultice to remove graffiti from masonry.

Best Management Practices for the Application of Alkaline Compounds

The City of Vancouver has adopted a “Zero Discharge” standard for the treatment of graffiti. As such any wastes generated from the application of alkaline compounds or other agents used in conjunction with alkaline compounds, including equipment or material that becomes contaminated during the process, must be contained and / or treated such that no pollution is emitted to the environment.

1. Before selecting alkaline compounds, or other agents used in conjunction with alkaline compounds, ensure that the material as a whole or individual chemical constituents contained within are not listed by the ACGIH or the IARC as carcinogens, reproductive toxins, sensitizers or are designated with an L endnote (Exposure by all routes should be carefully controlled to levels as low as possible). Chemicals listed under Schedule 1 of the Canadian Environmental Protection Act (CEPA) should not be used. In addition, use of methylene chloride or products containing methylene chloride are prohibited.
2. Alkaline compounds are generally caustic and may react with certain surfaces. Carefully review the information provided on product labels and Material Data Safety Sheets (MSDS) to ensure that the product is appropriate for its intended use.
3. Application of alkaline compounds may require specific personal protective equipment. Refer to products labels and MSDS regarding all chemicals to be utilized.

4. Erect signs, barriers and all other appropriate means to prevent exposure of alkaline compounds or other agents used in graffiti removal to others (such as pedestrians, nearby residents, etc.) and the environment.
5. When preparing a work site ensure that storm water and sewer drains are protected with booms, sandbags, and a tarpaulin or a combination of methods. Wastes generated from the application of alkaline compounds or other agents are not permitted to enter storm sewer or watercourses. Waste water from alkaline compounds or other agents may not be allowed to discharge to sanitary sewer systems without the express permission of the City of Vancouver's Environmental Protection Branch.
6. Keep alkaline compounds and other agents away from storm water inlets, sewer drains and watercourses. Refer to product labels and MSDS for safe storage and handling procedures.
7. Use the least amount of product as possible. It will be easier to properly apply, contain, clean-up and dispose of small amounts of chemicals.
8. Product containers are designed to provide storage for the materials they contain. Keep any leftover product in the original container.
9. Brushes, rags and other placement and removal equipment should be properly stored in clearly labeled containers and, if not re-used, should be disposed of to an appropriate waste treatment facility.
10. Caustic compounds are generally basic with high pH values. Following the removal of graffiti, surfaces should be rinsed with a weak acid wash to neutralize the remaining alkaline residue. Rinse water shall be contained, collected and taken to an approved treatment or disposal facility.

Spills

Contain and curb any spill so that it does not enter the storm sewer system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill, if it is safe to do so, once the spill is contained.

Enforcement

In accordance with Section 8 of the City's "*Sewer and Watercourse Bylaw No 8093*" persons in violation of the provisions of this By-Law may be found guilty of an offence under this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines up to \$10,000 for each offence.

SECTION 2
BARRIER COATINGS

2.0 GRAFFITI REMOVAL BEST MANAGEMENT PRACTICES

METHOD: BARRIER COATINGS

Best management practices (BMPs) related to specific methods of graffiti removal are presented in this document and are supplementary to the generalized BMPs outlined in Section 4 of Golder Associates “*Environmental Review of Graffiti Removal Practices in the City of Vancouver*”, October, 2003. Contractors intending to carry out graffiti removal in the City of Vancouver must adhere to City of Vancouver Sewer and Watercourse By-Law No.8093. This document is a guide and not intended to replace or supersede federal, provincial or municipal legislation. Additionally, this document is not intended to be to a health and safety guide.

Barrier Coatings

A barrier coating is utilized as a preventive measure to reduce the damage caused by graffiti by providing a protective layer between the graffiti and the surface of a structure. Barrier coatings are intended to facilitate the removal of graffiti by acting as a “sacrificial” layer that is removed along with the graffiti or, a permanent layer that allows for the easy removal of graffiti, or a combination of both. In all cases graffiti is removed from structures with barrier coatings by power washing with detergent or treating with chemical solvents (when removing graffiti refer to graffiti removal BMPs method documents for *Pressure Washing* and *Organic Solvents and Paint Removers*).

Best Management Practices for the Application of Barrier Coatings

The City of Vancouver has adopted a “Zero Pollution” standard for the treatment of graffiti. As such any wastes generated from the application of a barrier coating, including equipment or material that becomes contaminated during the process, must be contained and / or treated such that no pollution is emitted to the environment.

1. Before selecting a barrier coating ensure that the material as a whole or individual chemical constituents contained within are not listed by the ACGIH or the IARC as carcinogens, reproductive toxins, sensitizers or are designated with an L endnote (Exposure by all routes should be carefully controlled to levels as low as possible). Chemicals listed under Schedule 1 of the Canadian Environmental Protection Act (CEPA) should not be used. In addition, use of methylene chloride or products containing methylene chloride are prohibited.
2. Barrier coatings may react with, or damage certain surfaces. Carefully review the information provided on product labels and Material Data Safety Sheets (MSDS) to ensure that the product is appropriate for its intended use.

3. Use of barrier coatings may require specific personal protective equipment during application. Refer to product labels and MSDS regarding all chemicals to be utilized.
4. Erect signs, barriers and all other appropriate means to prevent exposure of barrier coatings to others (such as pedestrians, nearby residents, etc.) and the environment.
5. When preparing a work site ensure that storm water inlets and sewer drains are protected with sandbags and a tarpaulin or a combination of methods. Wastes generated from the application of barrier coatings are not permitted to enter storm sewers or watercourses. Waste water from barrier coatings may not be allowed to discharge to sanitary sewer systems without the express permission of the City of Vancouver's Environmental Protection Branch.
6. Keep barrier coatings away from storm water inlets, sewer drains and watercourses. Refer to product labels and MSDS for safe storage and handling procedures.
7. Use the least amount of product as possible. It will be easier to properly apply, contain, clean-up and dispose of small amounts of chemicals.
8. Product containers are designed to provide storage for the materials they contain. Keep any leftover product in the original container.
9. Brushes, rags and other placement and removal equipment should be properly stored in clearly labeled containers and, if not re-used, should be disposed of to an appropriate waste treatment facility.

Spills

Contain and curb any spill so that it does not enter the storm sewer system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill, if it is safe to do so, once the spill is contained.

Enforcement

In accordance with Section 8 of the City's "*Sewer and Watercourse Bylaw No 8093*" persons in violation of the provisions of this By-Law may be found guilty of an offence under this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines of up to \$10,000 for each offence.

SECTION 3
BLEACHES

3.0 GRAFFITI REMOVAL BEST MANAGEMENT PRACTICES

METHOD: BLEACHES

Best management practices (BMPs) related to specific methods of graffiti removal are presented in this document and are supplementary to the generalized BMPs outlined in Section 4 of Golder Associates “*Environmental Review of Graffiti Removal Practices in the City of Vancouver*”, October, 2003. Contractors intending to carry out graffiti removal in the City of Vancouver must adhere to City of Vancouver Sewer and Watercourse By-Law No.8093. This document is a guide and not intended to replace or supersede federal, provincial or municipal legislation. Additionally, this document is not intended to be to a health and safety guide.

Bleaches

Bleaches are used to decolorize dyes and inks contained within paints. As with organic solvents, paint removers and alkaline compounds, bleaches may be used in conjunction with a poultice to remove graffiti.

Best Management Practices for the Application of Bleaches

The City of Vancouver has adopted a “Zero Pollution” standard for the treatment of graffiti. As such any wastes generated from the application of bleaches or other agents used in conjunction with bleaches, including equipment or material that becomes contaminated during the process, must be contained and / or treated such that no pollution is emitted to the environment.

1. Before selecting bleaches or other agents used in conjunction with bleaches ensure that the material as a whole or individual chemical constituents contained within are not listed by the ACGIH or the IARC as carcinogens, reproductive toxins, sensitizers or are designated with an L endnote (Exposure by all routes should be carefully controlled to levels as low as possible). Chemicals listed under Schedule 1 of the Canadian Environmental Protection Act (CEPA) should not be used. In addition, use of methylene chloride or products containing methylene chloride are prohibited.
2. Bleaches are generally caustic and may react with certain surfaces. Carefully review the information provided on product labels and Material Data Safety Sheets (MSDS) to ensure that the product is appropriate for its intended use.
3. The application of bleaches may require specific personal protective equipment. Refer to products labels and MSDS regarding all chemicals to be utilized.

4. Where needed erect signs, barriers and all other appropriate means to prevent exposure of bleaches or other agents used in graffiti removal to the public (such as pedestrians, nearby residents, etc.) and the environment.
5. When preparing a work site ensure that storm water inlets and sewer drains are protected with booms, sandbags and a tarpaulin or a combination of methods. Wastes generated from the application of bleaches or other agents are not permitted to enter storm water inlets or watercourses. Waste water from bleaches or other agents may not be allowed to discharge to sanitary sewer systems without the express permission of the City of Vancouver's Environmental Protection Branch.
6. Keep bleaches and other agents away from storm water inlets, sewer drains and watercourses. Refer to product labels and MSDS for safe storage and handling procedures.
7. Use the least amount of product as possible. It will be easier to properly apply, contain, clean-up and dispose of small amounts of chemicals.
8. Product containers are designed to provide storage for the materials they contain. Keep any leftover product in the original container.
9. Brushes, rags and other placement and removal equipment should be properly stored in clearly labeled containers and, if not re-used, should be disposed of to an appropriate waste treatment facility.
10. Caustic compounds are generally basic with high pH values. Rinse water must be collected for treatment or disposal. Residual chlorine must be dechlorinated using sodium thiosulphate.

Spills

Contain and curb any spill so that it does not enter the storm sewer system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill, if it is safe to do so, once the spill is contained.

Enforcement

In accordance with Section 8 of the City's "*Sewer and Watercourse Bylaw No 8093*" persons in violation of the provisions of this By-Law may be found guilty of an offence under this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines up to \$10,000 for each offence.

SECTION 4
MECHANICAL OR ABRASIVE METHODS

4.0 GRAFFITI REMOVAL BEST MANAGEMENT PRACTICES

METHOD: MECHANICAL OR ABRASIVE METHODS

Best management practices (BMPs) related to specific methods of graffiti removal are presented in this document and are supplementary to the generalized BMPs outlined in Section 4 of Golder Associates “*Environmental Review of Graffiti Removal Practices in the City of Vancouver*”, October, 2003. Contractors intending to carry out graffiti removal in the City of Vancouver must adhere to City of Vancouver Sewer and Watercourse By-Law No.8093. This document is a guide and not intended to replace or supersede federal, provincial or municipal legislation. Additionally, this document is not intended to be to a health and safety guide.

Mechanical or Abrasive Methods

Mechanical or abrasive methods include high pressure washing, sanding, grinding and dry or wet blasting with abrasive grits.

Best Management Practices for Mechanical or Abrasive Methods

The City of Vancouver has adopted a “Zero Pollution” standard for the treatment of graffiti. As such any wastes generated from mechanical or abrasive methods, including equipment or material that becomes contaminated during the process, must be contained and / or treated such that no pollution is emitted to the environment.

1. If using a chemical-based abrasive grit ensure that the material as a whole or individual chemical constituents contained within are not listed by the ACGIH or the IARC as carcinogens, reproductive toxins, sensitizers or are designated with an L endnote (Exposure by all routes should be carefully controlled to levels as low as possible). Chemicals listed under Schedule 1 of the Canadian Environmental Protection Act (CEPA) should not be used. In addition, use of methylene chloride or products containing methylene chloride are prohibited.
2. Carefully review the information provided on product labels and Material Data Safety Sheets (MSDS) of chemical abrasive grits to ensure that the product is appropriate for its intended use.
3. High pressure washing, sanding, grinding or blasting may require specific personal protective equipment. Refer to equipment operating manuals for the safe usage of any equipment.
4. Erect signs, barriers and all other appropriate means to prevent injury from mechanical or abrasive methods used in graffiti removal to others (such as pedestrians, nearby residents, etc.) and the environment.

5. When preparing a work site ensure that storm water inlets and sewer drains are protected with sandbags, a tarpaulin or a combination of methods. Wastes generated from the mechanical or abrasive methods are not permitted to enter storm water inlets or watercourses. Waste water from mechanical or abrasive methods are not allowed to discharge to sanitary sewer systems without the express permission of the City of Vancouver's Environmental Protection Branch.
6. Keep chemically abrasive grits away from storm water inlets, sewer drains and watercourses. Refer to product labels and MSDS for safe storage and handling procedures.
7. Minimize the amount of water used.
8. Sweep up paints chips, grits, sand, and other debris and placed into a waste container. Dispose of paint chips, grits, sand and other debris to an appropriate waste treatment facility.
9. Product containers are designed to provide storage for the materials they contain. Keep any leftover product in the original container.
10. Brushes, rags and other placement and removal equipment should be properly stored in clearly labeled containers and, if not re-used, should be disposed of to an appropriate waste treatment facility.

Spills

Contain and curb any spill so that it does not enter the storm sewer system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill, if it is safe to do so, once the spill is contained.

Enforcement

In accordance with Section 8 of the City's "*Sewer and Watercourse Bylaw No 8093*" persons in violation of the provisions of this By-Law may be found guilty of an offence under this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines of up to \$10,000 for each offence.

SECTION 5

ORGANIC SOLVENTS AND PAINT REMOVERS

5.0 GRAFFITI REMOVAL BEST MANAGEMENT PRACTICES

METHOD: ORGANIC SOLVENTS AND PAINT REMOVERS

Best management practices (BMPs) related to specific methods of graffiti removal are presented in this document and are supplementary to the generalized BMPs outlined in Section 4 of Golder Associates “*Environmental Review of Graffiti Removal Practices in the City of Vancouver*”, October, 2003. Contractors intending to carry out graffiti removal in the City of Vancouver must adhere to City of Vancouver Sewer and Watercourse By-Law No.8093. This document is a guide and not intended to replace or supersede federal, provincial or municipal legislation. Additionally, this document is not intended to be to a health and safety guide.

Organic Solvents and Paint Removers

Organic solvents and paint removers are effective at removing most types of graffiti. Similar to alkaline compounds and bleaches, solvents and paint removers are often used in conjunction with a poultice to remove graffiti from masonry.

Best Management Practices: Application of Organic Solvents and Paint Removers

The City of Vancouver has adopted a “Zero Pollution” standard for the treatment of graffiti. As such any wastes generated from the application of organic solvents or paint removers, or other agents used in conjunction with organic solvents and paint removers, including equipment or material that becomes contaminated during the process, must be contained and / or treated such that no pollution is emitted to the environment.

1. Before selecting an organic solvent or paint remover, or other agents used in conjunction with organic solvents and paint removers, ensure that the material as a whole or individual chemical constituents contained within are not listed by the ACGIH or the IARC as carcinogens, reproductive toxins, sensitizers or are designated with an L endnote (Exposure by all routes should be carefully controlled to levels as low as possible). Chemicals listed under Schedule 1 of the Canadian Environmental Protection Act (CEPA) should not be used. In addition, use of methylene chloride or products containing methylene chloride are prohibited.
2. Organic solvents and paint removers may be caustic and/or react with certain surfaces. Carefully review the information provided on product labels and Material Data Safety Sheets (MSDS) to ensure that the product is appropriate for its intended use.
3. Application of organic solvents and paint removers may require specific personal protective equipment. Refer to products labels and MSDS regarding all chemicals to be utilized.

4. Erect signs, barriers and all other appropriate means to prevent exposure of organic solvents and paint removers or other agents used in graffiti removal to others (such as pedestrians, nearby residents, etc.) and the environment.
5. When preparing a work site ensure that storm water inlets, sewer drains and watercourses are protected with booms, sandbags, and a tarpaulin or a combination of methods. Wastes generated from the application of organic solvents or paint removers, or other agents, are not permitted to enter storm water inlets or watercourses. Waste water from organic solvents or paint removers, or other agents, may not be allowed to discharge to sanitary sewer systems.
6. Keep organic solvents or paint removers, or other agents, away from storm water inlets, sewer drains and watercourses. Refer to product labels and MSDS for safe storage and handling procedures.
7. Use the least amount of product as possible. It will be easier to properly apply, contain, clean-up and dispose of small amounts of chemicals.
8. Product containers are designed to provide storage for the materials they contain. Keep any leftover product in the original container.
9. Brushes, rags and other placement and removal equipment should be properly stored in clearly labeled containers and, if not re-used, should be disposed of to an appropriate waste treatment facility.
10. Some organic solvents and paint removers may be basic with high pH values. Surfaces cleaned with chemicals containing high pH values should be rinsed with a weak acid wash to neutralize the remaining residue. Rinse water must be collected for treatment or disposal.

Spills

Contain and curb any spill so that it does not enter the storm sewer system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill, if it is safe to do so, once the spill is contained.

Enforcement

In accordance with Section 8 of the City's "*Sewer and Watercourse Bylaw No 8093*" persons in violation of the provisions of this By-Law may be found guilty of an offence under this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines of up to \$10,000 for each offence.

SECTION 6
POULTICING

6.0 GRAFFITI REMOVAL BEST MANAGEMENT PRACTICES

METHOD: POULTICING

Best management practices (BMPs) related to specific methods of graffiti removal are presented in this document and are supplementary to the generalized BMPs outlined in Section 4 of Golder Associates “*Environmental Review of Graffiti Removal Practices in the City of Vancouver*”, October, 2003. Contractors intending to carry out graffiti removal in the City of Vancouver must adhere to City of Vancouver Sewer and Watercourse By-Law No.8093. This document is a guide and not intended to replace or supersede federal, provincial or municipal legislation. Additionally, this document is not intended to be to a health and safety guide.

Poulticing

Poulticing is a process whereby an absorbent material is combined with a cleaning agent to form a paste that is applied directly to the affected area. The paste material, often supported by a plastic sheet to minimize evaporation, absorbs the graffiti. This effective method of graffiti removal is generally utilized for porous surfaces such as masonry.

Best Management Practices for the Application of Poultices

The City of Vancouver has adopted a “Zero Pollution” standard for the treatment of graffiti. As such any wastes generated from the application of poultices, including equipment or material that becomes contaminated during the process, must be contained and / or treated such that no pollution is emitted to the environment.

1. Before selecting a poulticing compound ensure that the material as a whole or individual chemical constituents contained within are not listed by the ACGIH or the IARC as carcinogens, reproductive toxins, sensitizers or are designated with an L endnote (Exposure by all routes should be carefully controlled to levels as low as possible). Chemicals listed under Schedule 1 of the Canadian Environmental Protection Act (CEPA) should not be used. In addition, use of methylene chloride or products containing methylene chloride are prohibited.
2. Depending on the composition of the poultice, chemicals contained within may react with certain surfaces. Carefully review the information provided on product labels and Material Data Safety Sheets (MSDS) to ensure that the product is appropriate for its intended use.
3. Application of poultices may require specific personal protective equipment. Refer to products labels and MSDS regarding all chemicals to be utilized.

4. Erect signs, barriers and all other appropriate means to prevent exposure of poultices or other agents used in graffiti removal to others (such as pedestrians, nearby residents, etc.) and the environment.
5. When preparing a work site ensure that storm water inlets, sewer drains and watercourses are protected with booms, sandbags, and a tarpaulin or a combination of methods. Wastes generated from the application of poultices or other agents are not permitted to enter storm water inlets or watercourses. Waste water from poultices or other agents may not be allowed to discharge to sanitary sewer systems without the express permission of the City of Vancouver's Environmental Protection Branch.
6. Keep Poulticing compounds and other agents away from storm water inlets, sewer drains and watercourses. Refer to product labels and MSDS for safe storage and handling procedures.
7. Use the least amount of product as possible. It will be easier to properly apply, contain, clean-up and dispose of small amounts of chemicals.
8. Product containers are designed to provide storage for the materials they contain. Keep any leftover product in the original container.
9. Brushes, rags and other placement and removal equipment should be properly stored in clearly labeled containers and, if not re-used, should be disposed of to an appropriate waste treatment facility.
10. Poultices may contain compounds that are basic with high pH values. Surfaces cleaned with chemicals containing high pH values should be rinsed with a weak acid wash to neutralize the remaining residue. Rinse water should be contained, collected and taken to an approved treatment or disposal facility.

Spills

Contain and curb any spill so that it does not enter the storm sewer system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill, if it is safe to do so, once the spill is contained.

Enforcement

In accordance with Section 8 of the City's "*Sewer and Watercourse Bylaw No 8093*" persons in violation of the provisions of this By-Law may be found guilty of an offence under this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines of up to \$10,000 for each offence.

SECTION 7
PRESSURE WASHING

7.0 GRAFFITI REMOVAL BEST MANAGEMENT PRACTICES

METHOD: PRESSURE WASHING

Best management practices (BMPs) related to specific methods of graffiti removal are presented in this document and are supplementary to the generalized BMPs outlined in Section 4 of Golder Associates “*Environmental Review of Graffiti Removal Practices in the City of Vancouver*”, October, 2003. Contractors intending to carry out graffiti removal in the City of Vancouver must adhere to City of Vancouver Sewer and Watercourse By-Law No.8093. This document is a guide and not intended to replace or supersede federal, provincial or municipal legislation. Additionally, this document is not intended to be to a health and safety guide.

Pressure Washing

Pressure washing in conjunction with a detergent may be used to remove recently applied water soluble graffiti from porous surfaces. Prior to pressure washing a detergent / water mix is usually applied as a poultice to the graffiti.

Best Management Practices for Pressure Washing

The City of Vancouver has adopted a “Zero Pollution” standard for the treatment of graffiti. As such any wastes generated from pressure washing, including equipment or material that becomes contaminated during the process, must be contained and / or treated such that no pollution is emitted to the environment.

1. Before selecting a detergent ensure that the material as a whole or individual chemical constituents contained within are not listed by the ACGIH or the IARC as carcinogens, reproductive toxins, sensitizers or are designated with an L endnote (Exposure by all routes should be carefully controlled to levels as low as possible). Chemicals listed under Schedule 1 of the Canadian Environmental Protection Act (CEPA) should not be used. In addition, use of methylene chloride or products containing methylene chloride are prohibited.
2. Carefully review the information provided on product labels and Material Data Safety Sheets (MSDS) to ensure that the detergent is appropriate for its intended use.
3. Pressure washing may require specific personal protective equipment. Refer to equipment operating manuals for the safe usage of any equipment.
4. Application of detergents may require specific personal protective equipment. Refer to products labels and MSDS regarding all chemicals to be utilized.

5. Erect signs, barriers and all other appropriate means to prevent injury from pressure washing or exposure of detergents to others (such as pedestrians, nearby residents, etc.) and the environment.
6. When preparing a work site ensure that storm water inlets and sewer drains are protected with sandbags, a tarpaulin or a combination of methods. Wastes generated from pressure washing are not permitted to enter storm water inlets or watercourses. Waste water from pressure washing may not be allowed to discharge to sanitary sewer systems without the express permission of the City of Vancouver's Environmental Protection Branch.
7. Keep detergents away from storm water inlets, sewer drains and watercourses. Refer to product labels and MSDS for safe storage and handling procedures.
8. Use the least amount of product as possible. It will be easier to properly apply, contain, clean-up and dispose of small amounts of chemicals.
9. Minimize the amount of water used.
10. Sweep up paint chips and other debris and placed into a waste container. Dispose of paint chips and other debris to an appropriate waste treatment facility.
11. Product containers are designed to provide storage for the materials they contain. Keep any leftover product in the original container.
12. Brushes, rags and other placement and removal equipment should be properly stored in clearly labeled containers and, if not re-used, should be disposed of to an appropriate waste treatment facility.
13. Rinse water shall be contained, collected and taken to an approved treatment or disposal facility.

Spills

Contain and curb any spill so that it does not enter the storm sewer system. Wipe up a small spill with a rag immediately. Report a large spill of a chemical agent (greater than 1L) to the City of Vancouver Environmental Protection Branch at (604) 873-7528. Clean up the spill, if it is safe to do so, once the spill is contained.

Enforcement

In accordance with Section 8 of the City's "*Sewer and Watercourse Bylaw No 8093*" persons in violation of the provisions of this By-Law may be found guilty of an offence under this By-Law and liable to penalties. Penalty for offences against this By-Law may result in fines of up to \$10,000 for each offence.