



SJR Environmental
Consulting

Materials Management Plan (MMP)
The Source Hotel
3330 Brighton Boulevard
Denver, Colorado

Prepared for:

3330 Brighton Blvd LLC
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Prepared by:



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MATERIALS MANAGEMENT PLAN (MMP)

The Source Hotel

3330 Brighton Blvd, LLC

3330 Brighton Boulevard

Denver, Colorado

1 INTRODUCTION

3330 Brighton Blvd, LLC (Owner) wishes to develop a property located at 3330 Brighton Boulevard (the Site), Denver, Colorado.

The Owner requested SJR Environmental Consulting Services, Inc. (SJRE) to prepare a Materials Management Plan (MMP) for proposed site improvements that include a first level parking garage, an eight story hotel along with a two-story retail building including a restaurant, tavern, offices, and mercantile/retail stores. The Site will be known as The Source Hotel.

Several environmental investigations have been performed. The Site has building debris from historical buildings that were razed. Groundwater is only present on the south 1/3 of the Site due to a bedrock ridge across the Site. Groundwater is at a depth of nineteen feet below grade or greater.

Contaminants of concern includes historical industrial use of the Site and surrounding properties, PCE and by-products in the soil and groundwater, and non-native fill and construction debris (including potentially asbestos debris).

It is unknown if historical construction debris will be encountered during construction but this MMP has been prepared to guide the handling of the soil, ground water, and construction debris during construction. This MMP also addresses worker safety and protection from potential exposure to vapors. Figure 1 provides a Site plan and Figure 2 includes the proposed Site improvements

In the event Regulated Asbestos Containing Soil (RACS) is encountered during soil disturbing activities associated with the planned activities, Section 5.5.7 of the Colorado Department of Public Health and Environment (CDPHE) Hazardous Material and Waste Management Division (HMWMD) Regulation will be followed using best management practices (BMPs). No known asbestos contaminated soil conditions exist at the Site at the time this MMP was prepared.

1.1 Background Information

The extent of the boundary subject to this MMP is that the Site is bordered by Brighton Boulevard on the southwest and commercial developments on the other three sides. See Figure 1 and Figure 2.

Below is a table for key contact information for this project:

Company	Role	Contact
3330 Brighton Blvd LLC	Environmental Project Manager	Name: Phone: E-mail:
Contractor Name	General Contractor	Name: Phone: E-mail:
Sub-contractors Name	TBD	Name: Phone: E-mail:
SJR Environmental Consulting Services, Inc.	MMP Manager	Thomas Norman Phone: 970.214.4828 E-mail: tnorman@sjrenvironmental.com
SJR Environmental Consulting Services, Inc.	Field Technician/ Certified Asbestos Building Inspectors (CABI)	Name: Billy Godby Phone: 720 341 9495 E-mail: bgodby@sjrenvironmental.com

1.2 Management Plan Purpose and Scope

The purpose of this MMP is to provide a guidance document to manage contaminated material, if encountered, during the Site development. Through implementation of this MMP, the Owner/Owner's Representative will be notified of potential environmental-related incidents pertaining to construction activities at the Site.

1.3 Environmental Protocols

The following are the contaminants of concern:

1. Historic Industrial Use. The long-term historic industrial use of the Site as a foundry raises the potential for unknown contamination. However, over thirty bore holes and wells have been drilled on the Site. Low concentrations of PCE and PAHs were identified but no major evidence of historical contamination has been documented.
2. Potential Off-site Sources. The Site is located within an industrial setting and there is the potential for off-site sources of contamination. The major avenue of contaminant migration is through the groundwater system. Several subsurface

investigations have been performed and groundwater contamination was only identified for PCE and its by-products.

3. PCE and By-products. Low concentrations of PCE and its by-products were identified in the soil and groundwater. PCE concentrations above Colorado groundwater standards were identified in select wells located in the southeast corner of the Site. Groundwater was only identified in the south $\frac{1}{3}$ of the property.
4. Non-native Fill and Construction Debris. The Site has had historical site improvements including buildings. Although not identified in the subsurface investigations, the potential exists for asbestos debris from the historical buildings. Non-native fill is located throughout the Site and may contain contaminated soils.

Response to known or suspected surface or subsurface environmental conditions encountered during intrusive activities (as defined above), will be performed in accordance with this MMP. If asbestos-containing material (ACM) is discovered in soil, it will be handled in accordance with applicable regulations and agency guidance including 6 CCR 1007-2, Section 5.5.7.

The project has been submitted to CDPHE under the Voluntary Cleanup Program. The regulating authority for the management of historical industrial contamination; contaminated soil and groundwater, and groundwater; and asbestos in soil is the CDPHE's Solid Waste Unit of the HMWMD. The Solid Waste Unit has regulatory oversight capacity over activities pursuant to this MMP and is the agency responsible for providing regulatory compliance.

The following sections of this MMP provide the specific procedures that the Developer and its contractors and subcontractors will follow in performing the Site development activities. It shall be a contractual requirement that any contractor and its associated subcontractors under its control abide by applicable procedures set forth in this MMP.

2 PROJECT CONTACTS AND RESPONSIBILITIES

2.1 3330 Brighton Boulevard LLC (Owner)

3330 Brighton Boulevard LLC is the owner of the Site and is responsible for the site improvements. The point of contact for the MMP is as follows:

Bryan Bulatovic
Project Manager, 3330 Brighton Boulevard LLC
3455 Ringsby Court, Denver, CO 80216
Cell: 303.482.7207
brian@thebjbgroup.com

2.2 General Contractor

The Owner will hire a general contractor (GC) to oversee the proposed site improvements. A GC is responsible for the day to day management of development activities but must work hand in hand with the Materials Management Coordinator (MMC) to ensure regulatory compliance and protection of human health and the environment with respect to soil disturbance activities. As the GC is identified, the appropriate section of this MMP will be updated and sent to the Project Contacts identified in this section of the MMP.

2.3 Materials Management Coordinator (MMC)

The MMC for this Site will be provided by SJRE. In general, the primary responsibility of the MMC is to coordinate with GC regarding all activities that involve the disturbance of soil.

The MMC's concern is the proper and cost effective handling of materials and compliance with this MMP. The MMC is also responsible for responding to and mitigating any environmental conditions encountered during construction activities and tracking of environmental activities relating to activities which fall within the scope of this MMP. The MMC is also responsible for ensuring that personnel performing activities that fall within the scope of this MMP are properly trained and licensed. The contact information for the MMC is as follows:

Mr. Thomas Norman, Professional Engineer
SJR Environmental
1735 Lafayette Street
Denver, CO 80218
Cell Phone: 970.214.4828
Email: tnorman@sjrenvironmental.com

Alternate: Mr. Michael Castell
Field Supervisor
SJR Environmental
Cell Phone 970.231.7623
Email: mcastell@sjrenvironmental.com

2.4 Colorado Department of Public Health and Environment

The CDPHE will provide regulatory oversight to activities including, but not limited to, contaminated soil, landfill debris, asbestos abatement, contaminated soil disturbance, and waste disposal.

Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Phone: 303-692-3416
Fax: 303-759-5355

3 PERSONNEL RESPONSIBILITIES AND TRAINING REQUIREMENTS

While the Site's Master Health and Safety Plan (HSP) covers personnel training for all activities performed on the Site, this MMP will only address training and licensing that is relevant to waste handling and soil disturbing activities. The following is a list of job titles for personnel working on the Site, their general responsibilities, and the minimum amount of training they are required to have.

3.1 Field Technician

The Field Technician (FT), has the responsibility of identifying non-native material and soil impacts during soil disturbing activities. The FT is responsible for screening of disturbed soils for contamination by visual observation, odors, explosive gases and volatile vapor monitoring using hand held instrumentation such as a photoionization detector (PID) or an organic vapor analyzer (OVA) and a combustible gas meter, in accordance with this MMP. In addition, the FT must ensure that (i) contaminated soil, surface water, and groundwater are properly handled, (ii) contamination is contained to a specific work area, (iii) proper decontamination procedures are followed, (iv) waste is properly characterized for disposition, and (v) waste is properly documented for transportation. At a minimum, the FT will be a State of Colorado certified Asbestos Building Inspector (CABI) and have six (6) months experience in asbestos-contaminated soil management.

FTs are provided by the Owner and are not the responsibility of contractors performing soil disturbing activities on the Site.

3.2 Air Monitoring Specialist

Whenever a soil disturbing activity is taking place in asbestos contaminated soil, an air monitoring specialist (AMS) must be present. The AMS is responsible for collecting personal and area air samples for analysis of airborne asbestos fibers. This person must have a current State of Colorado AMS certification. The AMS will monitor wind speeds and has the authority to stop work if airborne emissions are visible from soil being disturbed that is contaminated with asbestos.

3.3 Site Safety and Health Officer

The Site Health and Safety Officer (SHSO) is responsible for ensuring the safety of all personnel on Site. With respect to the management of materials at the Site, the SHSO is responsible for dictating personal protective equipment (PPE) requirements when environmental contaminants such as organic compounds and asbestos are discovered. The SHSO is the responsibility of the General Contractor.

3.4 Truck Driver

Truck Drivers operate the vehicles that bring materials to the Site and transport materials, potentially contaminated and hazardous, to other areas of the Site or off the Site. As long as a Truck Driver does not leave the cab of his/her truck, this MMP will not require any

additional training other than the Site awareness training provided when the driver first arrives on Site. If leaving the cab of his/her truck is necessary, the Truck Driver will be classified as a Laborer and be required to have the appropriate Laborer training.

3.5 Heavy Equipment Operator

Heavy Equipment Operators (HEOs) operate the equipment that perform the majority of the soil disturbance activities. This equipment includes graders, backhoes, front end loaders, dozers, scrapers, etc. Because HEOs operate equipment within the soil disturbance area, they will work jointly with the FTs to identify debris and possible soil contamination. If asbestos is identified in soil on the Site, HEOs will be required to have taken Asbestos Awareness training within the last year. If during a soil disturbance activity, suspicious material is identified, the HEO performing the soil disturbing activity will stop the soil disturbance activity and contact the FT assigned to the work area.

3.6 Laborer

Laborers at the Site will perform hand digging, setting up fencing, decontaminating equipment, wetting soil, constructing concrete forms, installing infrastructure such as water, sewer and natural gas lines, and forming roads, sidewalks, and curbs. If asbestos is identified in the soil, laborers will be required to have taken Asbestos Awareness training within the past year.

3.7 Record Keeping

Attendance records of all training offered by the GC such as Asbestos Awareness and General Site Hazard Awareness will be kept by the individual or organization responsible for such training as indicated in the Site's Master HSP. Copies of all training certifications including fit for duty documentation, HAZWOPER training, and asbestos certifications, will be kept on Site by the GC.

3.8 Asbestos Awareness and On-The-Job Training

If ACM is found in the soil, all personnel who enter the boundaries of the Site, other than visitors and Truck Drivers who stay within the cab of their truck while on Site, are required to have completed a two hour Asbestos Awareness training class within the last year. This class must have cover the topics required by OSHA for Class IV operations.

This training is not required if the person has current State of Colorado certification as an asbestos Worker, Supervisor, Building Inspector, Management Planner, Project Designer, or AMS.

All personnel who enter the boundaries of the Site, other than visitors, will be required to attend a one-time, Site specific, on-the-job asbestos-contaminated soil awareness training. This class will be conducted by a State of Colorado certified Asbestos Supervisor, Building Inspector, or Project Designer with a minimum of six (6) months experience in asbestos-contaminated soil management, and will cover, at a minimum, the following:

- The background of asbestos; including health effects
- The nature of operations that could result in exposure to asbestos

- Spill prevention and contamination reduction techniques
- Proper use, handling and disposal of PPE
- Best management practices for the establishment of controlled access work areas and stormwater control
- Engineering controls and other measures to prevent contact with contaminants
- Personnel decontamination
- Emergency procedures
- Equipment decontamination.

3.9 Hazardous Waste Training

All personnel involved with the performance of soil disturbing activities in areas of known or unknown chemical contamination at the Site will be required to have the OSHA 40-Hour HAZWOPER training in accordance with 29 CFR 1910. 120. These personnel include, but are not limited to, equipment operators, laborers working in direct contact with soil, supervisors, AMSs, FTs, the MMC, and anyone who enters an established work zone or contamination reduction zone. The MMC is responsible to keeping, on Site, records documenting this training.

4 CONTAMINANTS OF CONCERN

4.1 Asbestos in Soil

Because the Site historically had buildings that have been razed, the potential exists to encounter suspect asbestos debris. If asbestos debris is encountered, the work will proceed in accordance with BMPs identified in the Section 5.5.7 of the Solid Waste Regulations (Appendix B).

The previous subsurface investigations did not mention the presence of asbestos debris or building debris but this may not have been part of the Scope of Work. However the previous Phase I ESA mentioned buildings that had been razed that raises the potential for suspect building materials.

4.2 Contaminated Soil

Because the Site is associated with a historical industrial usage (onsite and offsite); PCE and PAH contamination in the soil; PCE contamination in the groundwater; and non-native fill and construction debris; VOCs and SVOCs may be detected in the non-native fill. The location of these known and suspected contaminants in the soil is expected to be in the non-native fill located at the surface and down to seven to fourteen feet below grade.

Previous subsurface investigations identified low concentrations of PCE and PAHs in the non-native fill material. The soil samples were collected at depths from zero to four feet.

Based on the subsurface investigations, it can be expected that at some point during soil disturbance activities at the Site, ACM, organic compounds, and construction debris, may be encountered. If additional investigations confirm or deny the presence of contamination, this MMP will be modified or amended to reflect this new information and allow contractors to modify their work practices if necessary.

4.3 Construction Debris in Soil

Miscellaneous construction debris may be encountered during soil disturbance activities at the Site. Incidental amounts of construction debris that are not suspected of containing asbestos or any other hazardous material do not need to be segregated from soil. Incidental debris is defined as waste items that appear to be singular in nature and not part of a larger concentration of non-native fill material. This field determination will be made by the FT. If a greater than incidental quantity of debris is discovered, then the debris must be segregated and dispositioned by the MMC.

Previous investigations included installing over thirty soil borings to a depth of over twenty feet below ground surface. The vertical depth of the non-native fill materials averaged four to fourteen feet below grade across the Site. If construction debris is encountered, it will be segregated and assessed for disposal options.

4.4 Groundwater

Based on the previous investigations, depth to groundwater was observed greater than 19 feet below ground surface for the Site. PCE and its degradation by-products were detected at low concentrations in the groundwater and some PCE concentrations were above the CDPHE groundwater standard.

Because the Site is associated with a historical industrial use, the groundwater may be contaminated with other VOCs, SVOCs, and heavy metals. Depth to groundwater is expected to be observed greater than 19 feet bgs for the Site. The proposed site activities should only encounter groundwater during the installation of caissons. If groundwater is extracted, the water will be stored and properly disposed offsite.

4.5 Vapors

Previous investigations included installing sixteen soil vapor borings to determine the presence of VOCs on the south side of the property. VOCs were detected in several borings at low concentrations.

VOC and LEL monitoring will be required during construction and appropriate precautionary measures will be taken if detected.

5 WORK PRACTICES

Once this MMP is approved (signed by all parties), any activity that disturbs soil on the Site will be performed according to the procedures set forth in this MMP. Activities include, but are not limited to, grading, foundation and building construction, road construction, trenching and installation of new utilities, and surface soil disturbances.

5.1 Work Practices for All Soil Disturbance Activities

5.1.1 Plan-of-the-Day

At the beginning of each shift, personnel involved in soil disturbing activities, including the MMC and GC (as appropriate) will participate in a Plan-of-the-Day (POD) meeting. The purpose of this meeting is to review all activities that are planned for the day, answer questions, and address any safety issues that may exist. Ideally, all personnel who will be working on the Site will be in attendance but at a minimum a representatives from each contractor will be present and will have the responsibility of passing along all information to their own field personnel.

5.1.2 Work Area Clearance

Prior to conducting any work activities, the GC shall coordinate with the MMC with regard to planned work activities, schedule, and work areas. The MMC will identify areas of known and potentially contaminated soil, surface water, and/or groundwater to the Contractor. FTs will perform a visual and odor survey of the area over which the work will take place each day. The FTs will examine the work area for suspect ACM, staining, odor, and debris that might indicate the presence of buried material. If suspect material is identified during this initial survey, the specific location of each finding will be identified with a colored flag, survey stake – color coded with fluorescent paint, or survey ribbon will be placed at the boundaries of the exposed soil.

If evidence of surficial contamination or debris is not identified in the planned work area, then soil disturbance will proceed.

5.1.3 Work Area Oversight

During all soil disturbance activities, the GC and sub-contractors shall be trained and aware of the requirements of the MMP. If field observations of stained soils, odors, debris, etc. is not identified, the work may progress. If stained soil, odors, debris, contaminants of concern, etc. are identified, the work shall immediately stop and a FT notified. No additional shall be performed until a FT can assess the Site.

During all soil disturbance activities, in areas of known contamination, a FT will be present. In areas of suspect and unknown contamination, FTs will rotate around the Site to active areas of soil disturbance. The goal of the FT is to provide continuous observation as soil is disturbed in all excavations.

In areas of known contamination, the FT is responsible for field monitoring and screening of

soil as it is being disturbed. The FT will monitor and screen the soil for contaminants of concern at the Site including, but not limited to, organic compounds, ACM, and debris. Screening will be performed using visual and olfactory senses and mechanical devices such as a PID, OVA, and a combustible gas meter.

5.1.4 Dust Control

All work that takes place during the development of the Site will be held to a goal of zero dust emission. Due to the potential for asbestos in soil and the fact that some ACM is difficult to identify when wet, the MMC and FTs will work with the GC to maintain soil “wetness” that meets dust control objectives and still allows for the observation of ACM in soil.

Each subcontractor will be responsible for submitting a Site specific dust control permit for review and approval by the MMC prior to mobilization by the subcontractor. Dust control plans and their implementation shall meet the CDPHE air quality regulations.

The primary method to minimize fugitive dust emissions will be the use of water to control dispersion of soil during excavation, loading, transport, stockpiling, and/or placement of soil. Subcontractors will be expected to provide Best Management Practices on the Site during all earthwork operations for use as needed to control dust. To control dust emissions, soil stockpiles will be maintained by wetting and rolling.

5.1.5 Vapors

Low level concentrations of VOCs were identified on the south side of the Site. VOCs include PCE and are a health concern. Other VOCs may indicate the presence of explosive gases and displaces oxygen. All below grade work shall be tested routinely for lower explosive limits (methane), oxygen, hydrogen sulfide, and volatile organic compounds at least at the beginning of morning and afternoon shifts.

If the Lower Explosive Limit (LEL) is detected, continuous vapor monitoring shall be performed. If the vapor monitoring reaches 10% of the LEL, work shall immediately stop and the work area assessed. Engineering and administrative controls shall be implemented and the MMP updated.

5.1.6 Stormwater

Prior to any soil disturbing activities at the Site, a storm water management plan (SWMP) will be developed and a permit obtained by the GC. All contractors are required to comply with SWMP permits. BMPs shall be implemented.

5.2 Specific Work Practices

The following sections describe specific activities that will be performed on Site as part of development. If soil contamination is suspected during these activities, the protocol established in the appropriate subsections of the MMP, will be followed.

Any excess material that is not contaminated will either be utilized offsite, reused immediately onsite, stockpiled onsite for reuse, or disposed in a landfill. Contamination will not be chased beyond the excavation limits necessary for site improvements and utility corridors.

5.2.1 Building Construction/Grading/Roadway Excavation

Building construction, grading, and roadway excavation is expected to consist of shallow to moderate 'cuts' (excavation depth) and fills across the Site to obtain rough final grades. It is anticipated that this operation will primarily be completed using dozers and scrapers, though some material designated for export from the Site may be excavated and direct loaded using excavators and loaders.

During soil disturbance activities, soil that is being moved and the ground left behind will be observed by the equipment operators and any personnel in the vicinity. Personnel in the vicinity of soil disturbance activities shall stop the soil disturbance activity if discolored soil or debris is observed and notify the FT immediately. If contamination is suspected, the protocol established Contaminant Specific Management Procedures, will be followed. The FT for that specific work area must clear the area before mass excavation may continue.

6 CONTAMINANT SPECIFIC MANAGEMENT PROCEDURES

When contamination is found during soil disturbing activities, those activities will cease and the protocol defined in this section of the MMP will be followed. While FTs have the specific responsibility of identifying contaminants or non-native material in soil, all personnel on Site have the responsibility to look for and report evidence of contamination to a FT, the MMC, and/or the GC.

As a general matter, contaminated soil will not be removed beyond the limits necessary to complete the soil disturbance activity for the development unless the material left in place is not geotechnically suitable for construction. Disturbed soil that is contaminated above an Action Level will be properly profiled and disposed at an offsite licensed disposal facility. Disturbed soil that is contaminated but at a concentration less than the Action Level for the contaminant may be reused onsite or transported offsite to a disposal facility. Uncontaminated soil may be re-used onsite, reused offsite, or disposed at a disposal facility.

For ACM contamination, the Action Level is the visual presence of ACM. The Action Level for organic compounds, pesticides/herbicides, PCBs, and metals (not radionuclides) are the Residential Landuse values reported in the EPA Regional Screening level recommended by the CDPHE. In situations where disturbed soil is contaminated with petroleum compounds, a total petroleum hydrocarbons (TPH) value of 500 milligrams per kilogram (mg/kg) will serve as the Action Level.

When contamination is left in place at the boundaries of the soil disturbing activity, an identification barrier will be placed over or on top of the exposed soil prior to backfilling. The location and type of contamination left in place will be recorded in close-out reports for the Site.

At the end of development for a particular area of the Site, there may be areas outside of parking structures, parking lots, roadways, and sidewalks, and after final grade, where contamination is known to still exist. In order to prevent exposure to future receptors during intrusive activities such as landscaping, one foot of soil will be removed from these areas. If contamination still exists, identification barrier will be laid down before backfilling and bringing the area back to final grade with clean material.

6.1 Asbestos in Utilities

The possibility exists that ACM debris may be encountered during excavation. To ensure worker safety and health and appropriate management of these materials, all Contractors conducting intrusive activities on the Site shall comply with the MMP requirements. When potential ACM is encountered during construction activities, the Contractor should immediately:

- Contact the MMC,

- Isolate the area containing the potential ACM, and
- Await further instruction from the MMC.

Under no circumstances is the Contractor to remove, cut, or otherwise disturb the potential ACM. The MMC is responsible for characterization and disposal of the potential ACM. The Contractor is not responsible for characterization or disposal activities, or for associated costs. Management and disposal of ACM will be performed by properly trained, certified, and licensed personnel.

6.2 Asbestos in Soil

All disturbance activities in soil known to contain ACM will be performed in accordance with the CDPHE Regulations, Section 5.5.7 (See attached Appendix B). Soil that is suspected of being contaminated with ACM will be observed continuously by a FT.

6.2.1 Non-friable Suspect ACM

If material is discovered that is suspect of being ACM and determined by the MMC or FT to be non-friable, it may be picked-up by a current State of Colorado certified Asbestos Building Inspector (CABI) and analyzed to determine asbestos content or disposed as non-friable ACM waste.

Handling of suspect ACM may continue throughout the soil disturbing activity as long as the suspect material is non-friable or the MMC may choose to call the soil contaminated with non-friable ACM, and follow the protocol established in Appendix B. If at any time, friable suspect ACM is found, the protocol in Appendix B will be followed. Unless analytical data indicates otherwise, all non-friable suspect ACM, as determined by a CABI, will be disposed as non-friable ACM.

6.2.2 Friable Suspect ACM

If material is discovered that is suspected of being friable ACM, the FT will instruct contractors to “stop work” immediately.

The FT will determine whether discovered material will be treated as ACM without sampling. If the suspect material will be sampled to confirm or deny the presence of asbestos, the FT will instruct contractors to take the following steps.

- Wet area immediately to minimize the potential for airborne asbestos;
- Demarcate the area suspected of containing asbestos with barrier tape, fencing or other means to provide access control. The area must be identified/marked as suspected of containing asbestos;

- The FT will collect samples of the suspect ACM and send them to a National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory for analysis by the Polarized Light Microscopy (PLM) Method to determine if asbestos fibers are present;
- The area, when not being sampled, must be kept wet and/or covered with a layer of six (6)-mil polyethylene or similar material;
- The FT will instruct contractors to assume all clothing and equipment that has come into contact with suspect asbestos-contaminated soil is contaminated unless analytical results indicate the suspect material is not ACM;
- Clothing that came into contact with the suspect material will be assumed to be contaminated until/unless analytical results indicate the material does not contain any asbestos. Depending on the potential level of exposure, the following procedure will be used to decontaminate workers in the immediate area of the discovered suspect ACM:
 - Visible soil and dust will be removed with damp wipes or cloths or by using a HEPA filter equipped vacuum.
 - Wipes and cloths will be placed in a plastic bag and labeled as “Investigative Waste” with date and company name.
 - If necessary, outer clothing will be removed and bagged separately. If suspect material does contain asbestos fibers, this clothing may be washed or disposed as asbestos-contaminated debris.
- Equipment that came into contact with the suspect material will remain at the location where the suspect material was found until analytical results return or be decontaminated as follows:
 - Decontamination of equipment will be carried out by State of Colorado certified Asbestos Workers.
 - Gross soils and dust will be removed mechanically.
 - Equipment will be washed in the area where the suspect material was discovered. Rinse water will either be allowed to run onto the ground in the excavation or be collected and stored at the work area until analytical results return.
 - If suspect material contains asbestos fibers, the rinse water, if collected, will be filtered to 5 microns and disposed in the publicly owned treatment works.

If the suspect material is found to not be ACM, the work at the specific location will continue as planned.

If analytical results indicate that the soil is contaminated with asbestos or contains ACM, then the CDPHE HMWMD will be notified by the MMC within 24 hours of receipt of sample results. If the suspect ACM is presumed to contain asbestos, the MMC will notify the HMWMD within 24 hours of that decision.

6.3 Organic Compounds in Soil

Low concentrations of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) in soil associated with non-native fill is suspected to exist in various locations at depth across the Site. The contamination was found in the non-native fill starting at the surface and going to a depth of 9 to 14 feet. This organic contamination included PCE and PAHs.

6.3.1 Chlorinated Solvent Contamination

In areas of the Site where chlorinated solvent contamination is suspected, if soil staining or odor is observed during soil disturbing activities, or organic compounds are detected by a PID or OVA, soil disturbing activities in the immediate work area will stop, and the SHSO, GC and MMC contacted immediately.

If not already done so, the FT will first confirm the presence of organic compounds using handheld instrumentation such as an OVA or PID. Based on these results, the SHSO will prescribe the proper PPE for personnel working in the area. If organic material is present, the GC and MMC will determine if (i) the potentially contaminated soil will be sampled and left in place until analytical results return, (ii) the potentially contaminated soil will be stockpiled at the work site, or (iii) the potentially contaminated soil is to be transported to an on Site stockpile area for further evaluation by the MMC.

Soil sampling will be performed by the MMC or by others at his direction. The analytical suite will be selected by the MMC based on the location of the contamination, contaminants of concern, professional experience, and observation of the suspected contamination.

Soil disturbed as part of the activity and contaminated with organic compounds above the CDPHE Action Levels will be segregated, profiled, manifested, transported, and disposed offsite at a licensed disposal facility. If analytical results indicate that contaminant concentrations are below the CDPHE Action Levels, the soil will be used as backfill on Site or will be segregated, profiled, manifested, transported, and disposed offsite at a licensed disposal facility.

If analytical results indicate concentrations of contaminants above the CDPHE action levels, the MMC is responsible for making required notifications to the regulatory agency with jurisdiction.

If contamination is left in place, an identification barrier will be placed at the boundaries of the soil disturbing activity prior to backfilling. This material will serve as a visual warning of contamination to individuals performing future soil disturbing activities. The placement of

the identification barrier will be coordinated by the MMC and the location of the known contamination will also be recorded by the MMC for inclusion in close-out reports.

6.3.2 Suspect Soil Left in Place

When soil is left in place after sampling, appropriate precautions must be taken to prevent possible cross-contamination with the rest of the Site and contamination of personnel. After sampling, the area that shows visible signs of potential contamination must be covered with polyethylene sheeting, tarps, or other similar material. The area must also be surrounded by snow fencing, survey ribbon, or similar barrier material and posted with signs directing personnel to keep out. Until analytical results indicate otherwise, it must be assumed that the soil is contaminated above any action level. Therefore any equipment and/or PPE or clothing that comes into contact with the suspect soil will be decontaminated or properly disposed as directed by the MMC.

6.3.3 Suspect Soil Stockpiled at Work Area

In order to continue with the planned soil disturbance activity, suspect soil may be segregated at the work site based on field observations such as PID or OVA readings, odor, staining, etc. This material must be placed on polyethylene sheeting, tarps, or other similar material in a bermed area. At the end of the day, the stockpile of suspect material must be covered with polyethylene sheeting, tarps, or other similar material. The stockpile must also be surrounded by snow fencing, survey ribbon, or similar barrier material and posted with signs directing personnel to stay out. All equipment and PPE that comes into contact with the suspect soil must be assumed to be contaminated and therefore decontaminated prior to leaving the Site or disposed of as directed by the MMC.

6.4 Metals in Soil

Elevated concentrations of metals in soil is not anticipated.

6.5 Debris

If during soil disturbing activities, general trash or debris is discovered, the GC and the MMC must be contacted immediately to assess the material before it is stockpiled. At a minimum, to the extent necessary to complete the intended soil removal activity, the debris will be separated from the surrounding soil and segregated either at the work site or transported to a fenced stockpile area. The MMC will visually screen the material and collect samples of any material that exhibits staining, odor, or appears to be ACM. The construction manager also will evaluate whether the material is geotechnically suitable for the intended use of the property. The MMC and the construction manager together will direct the extent of excavation and removal required and disposition of the material based on the level and type of contamination and geotechnical suitability of the material.

6.6 Contaminated Water

Contaminated groundwater is expected to be encountered during the installation of the caissons on the south side of the Site. The groundwater will be collected, stored, tested, and disposed offsite at a permitted disposal facility.

A stormwater management plan will be developed. Any stormwater that comes in contact with the non-native fill will be contained onsite and allowed to seep into the soil. Process water from soil wetting or dust control will be contained onsite and allowed to seep into the soil. The MMC will direct the contractor with regard to the handling and disposition of any water generated during construction that appears to be contaminated.

6.7 Personal Protective Equipment

Used PPE will be segregated and containerized at the time of generation based on the contaminant of exposure. Each waste stream will be profiled with the contracted and properly licensed disposal facility, manifested, and transported to such facility. The MMC is responsible for ensuring that this waste is properly handled and dispositioned.

6.8 Decontamination Water

It is likely that decontamination water will be generated during installation of the caissons. Decontamination water will come from the decontamination of equipment used in the disturbance of soil contaminated with organic compounds. The containerized water will be sampled, profiled, and properly disposed.

6.9 Documenting Contamination Left-in-Place

When contamination in soil is left-in-place, its presence will be documented and recorded by the MMC as well as physically marked with identification barrier material. Documentation for contamination left-in-place will include as appropriate,

- Written description
- Pictures
- Analytical data
- Global positioning system coordinates describing the known horizontal and vertical extent of the contamination.

7 PLAN IMPLEMENTATION

7.1 Material Management Plan Oversight

The oversight of remedial activities at the Site will be conducted by trained environmental professionals capable of executing the requirements of this MMP during the predevelopment work. The MMC shall have experience in the recognition, characterization, handling and disposition of the materials of concern previously identified at the Site. The MMC shall be responsible for overseeing remedial activities at the Site.

7.2 Project Health and Safety Plan

The risks associated with the selected remediation alternative consist primarily of worker protection during construction. Workers and/or managers associated with intrusive (excavation/caisson drilling) site activity will be required to undergo a one-time health and safety orientation meeting at the start of the project. A site-specific Health and Safety Plan (HASP) will be prepared for the planned excavation work and the General Contractor will create a hazard communication program as part of the normal construction activity during site preparation and excavation phases of construction.

8 LIMITATIONS

This MMP is a management tool to addressing regulated materials. This plan was prepared in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale.

The information in this plan reflects the best judgment of SJRE, based on the information that was available at the time of preparation. Any new information or change in Site conditions shall be reviewed and the MMP updated prior to proceeding.

**APPENDIX A
FIGURES
AERIAL SITE LOCATION AND CONSTRUCTION DETAILS**

**APPENDIX B
CDPHE ASBESTOS IN SOILS
SECTION 5.5.7**

APPENDIX B – CDPHE ASBESTOS IN SOILS SUMMARY

The following is the current CDPHE Solid and Hazardous Waste Division requirements for the disturbance of Regulated Asbestos Containing Soils (RACS).

STANDARD REQUIREMENTS FOR THE DISTURBANCE OF RACS

The requirements of this section, if followed in their entirety, constitute a default RACS management plan, eliminating the need to submit a PSRMP or SOP.

(A) ESTABLISHMENT AND CONTROL OF A REGULATED WORK AREA (RWA)

(1) Requirements for establishment and control of a RWA applicable to all projects subject to this Regulation:

- (a) Establish a RWA which is identifiable to all persons. Haul roads between RWAs, where RACS is not present, are considered to be outside the RWA(s); however, equipment decontamination [Section 5.5.7(I)] and spill response procedures [Section 5.5.7(J)] shall be followed; and
- (b) Stop all soil disturbing activities in the RWA if ancillary workers or members of the public are present within the RWA. Truck drivers who do not complete the training under Sections 5.5.3(A) and (B) are ancillary workers. Soil disturbing activities must cease if the truck driver is present within the RWA unless the driver remains in the cab of the truck, the truck's windows remain closed, and the air handling system remains off while the truck is inside the RWA; and
- (c) Post labeling and signage to demarcate RWA(s). The RWA shall be demarcated by visible means that fully defines the extent of the RWA. Labeling and signage shall indicate the presence of asbestos, and that the area is off limits to unauthorized personnel.

(2) **Additional Requirement for Projects Disturbing RACS Containing Friable ACM.** Establish a secured work site (e.g., fencing with locks/zip-ties/chains). Personnel, or staff assigned to this duty, may be used to secure the RWA in lieu of fencing. If the RWA is located within a larger secure facility, fencing of the RWA is not necessary as long as the RWA is secured.

(B) PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR THE PURPOSES OF PREVENTING CROSS-CONTAMINATION

(1) Requirements applicable to all RWAs subject to this Regulation:

- (a) Use of disposable booties or impermeable footwear that will be decontaminated per Section 5.5.7(I); and
- (b) Use of disposable gloves or impermeable gloves that will be decontaminated per Section 5.5.7(I); and
- (c) Replace or decontaminate (per Section 5.5.7(I)) all PPE in all instances where

the integrity of the PPE is compromised, and when workers exit the RWA; and
(d) Decontaminate (per Section 5.5.7(I)) or dispose of all used PPE as asbestos contaminated waste.

(2) **Additional Requirement Applicable to Projects at RWAs Containing Friable ACM.** Use of disposable impermeable suits or equivalent coveralls, remove suits or coveralls upon exiting the RWA, and dispose of used suits or coveralls as asbestos contaminated waste.

(C) WETTING

(1) Wetting requirements applicable to all RACS disturbance:

- (a) Adequately wet all RACS and soils, or other materials containing RACS, on the surface and in the sub-surface prior to and during RACS disturbance, except as provided in Section 5.5.7(F)(1)(b)(ii). Pre-wetting is not necessary if soils are already adequately wet. Apply water or amended water (as required in Section 5.5.7(C)(2)) at low pressure in order to minimize dust generation and splattering to prevent visible emissions from leaving the RWA, or demonstrate that asbestos is not leaving the RWA above risk-based thresholds.
- (b) Mist RACS and soils, or other materials, containing RACS during placement as needed to maintain the material in an adequately wet condition using equipment mounted spray bars, or additional hose operator(s).
- (c) Except as provided in (d) below, incidental occurrences of visible emissions leaving the RWA shall be managed by evaluating site conditions and engineering controls for each occurrence of visible emissions, and immediately implementing any identified engineering control revisions necessary in order to prevent future occurrences of visible emissions. All instances of visible emissions leaving the RWA shall be documented as required in Section 5.5.7(L) of this regulation.
- (d) When utilizing the risk-based air monitoring threshold approach to evaluate the effectiveness of adequately wetting, visible emissions are allowed to leave the RWA as long as the risk-based air threshold is not exceeded.

(2) **Additional requirement for RACS that contains friable ACM.** Use amended water containing a wetting agent, such as a 50:50 mixture of polyoxyethylene ester and polyoxyethylene ether, or the equivalent, in a 0.16 percent solution (1 ounce to 5 gallons) of water, or as per manufacturer recommendations for the wetting of asbestos. This requirement may be waived by the Department for emergency situations where the work must occur immediately and wetting agents are not available.

(D) WIND SPEED MONITORING

(1) Requirements applicable to all projects involving mechanical disturbance of RACS, and hand disturbance of RACS containing friable ACM:

- (a) Take wind measurements from within the RWA using a hand held anemometer. Alternatively, or in conjunction with hand held measurements, an onsite

weather station may be used within a quarter mile of the RWA as long as the conditions measured by the weather station are representative of conditions in the RWA.

- i. Collect wind speed measurements at a minimum of thirty (30) minute intervals and during wind gust(s). Average wind speed measurements shall be obtained manually by taking ten readings at one minute intervals and averaging the ten readings, or through the use of instrumentation that provides a ten minute average wind speed reading.
 - ii. If wind break barriers are used, wind speed measurements may be taken from within barriers; however, wind speed measurements shall also be taken outside the wind break barriers if any RACS disturbing activities, such as loading, are taking place outside or above the barriers. Wind speed shut-down criteria shall be based on measurements taken that are representative of the area of active RACS disturbance.
- (b) Immediate stoppage of all RACS disturbance shall occur based on results of wind speed monitoring conducted in accordance with subsection (a) and exceedance of the following criteria:
- i. Wind gust(s) in excess of 20 mph, or
 - ii. Sustained winds in excess of 12 mph, averaged over ten (10) minutes, or
 - iii. Winds are interfering with the ability of engineering controls to work as intended, or
 - iv. Winds are creating visible emissions that leave the RWA.
- (c) RACS disturbance may resume when all of the following criteria are met:
- i. No gust(s) in excess of 20 mph occur for twenty (20) minutes, and
 - ii. No sustained winds in excess of 12 mph occur for twenty (20) minutes, based on a ten (10) minute average wind speed measurement, and
 - iii. Winds are not interfering with the ability of engineering controls to function as intended, and
 - iv. Winds are not creating visible emissions that leave the RWA.

(E) AIR MONITORING

- (1) If using the risk-based air threshold approach to monitor the effectiveness of adequately wetting:
 - (a) Air monitoring to determine asbestos content of visible emissions allowed to leave the RWA, for comparison to the risk-based air thresholds shall not be utilized for projects that are less than ten (10) days in duration.

- (b) Air monitoring to determine asbestos content of visible emissions allowed to leave the RWA, for comparison to the risk-based air thresholds, shall begin on the first day of the project.
 - (c) A minimum of four (4) air samples per day shall be collected for TEM analysis.
 - (d) Sample collection, analysis, and data evaluation shall be conducted in accordance with Appendix 5A.
- (2) If preventing visible emissions leaving the RWA as an indication of the effectiveness of work practices, not for risk evaluation, air monitoring is required during mechanical disturbance of RACS in RWAs with an adjacent receptor zone:
- (a) No air monitoring is required for RACS disturbance that will not exceed a duration of two (2) days. However, the requirements for adequate wetting (Section 5.5.7(C)) and no visible emissions leaving the RWA (Section 5.5.7(F)) shall be adhered to on all RACS disturbance projects. Dividing projects into multiple two (2) day or shorter components shall not be used as a mechanism to avoid air monitoring requirements.
 - (b) Area monitoring shall consist of a minimum of four (4) samples collected on the perimeter of the RWA at appropriate intervals to provide representative information regarding potential releases of asbestos fibers to the adjacent receptor zone(s). Additional samples shall be collected for large perimeter RWAs (greater than one (1) acre). RWAs greater than one (1) acre shall require additional perimeter monitoring points be added at a rate of one (1) sample for every 200 linear feet (or approximately each additional $\frac{1}{4}$ acre). If representative information about potential releases to the adjacent receptor zone(s) can be collected using less than the minimum number of samples, the remaining sample locations shall be at the discretion of the AMS.
 - (c) Phase Contrast Microscopy (PCM) analysis is required on all samples collected (unless all samples will be analyzed by Transmission Electron Microscope (TEM) by default). The laboratory shall be requested to provide verbal results to the AMS or the QPM by the start of the next working day, or as soon as possible after the start of the next working day, with written results within 24 hours of the receipt of verbal results. A consultation with the Department is required if this timeframe cannot be met by the laboratory.
 - (d) Upon receipt of a laboratory report indicating a “cannot be read (CBR)”, or a “not analyzed (NA) or rejected” due to loose debris or uneven loading, analysis result:
 - i. The AMS shall evaluate the lab report and any field documentation to determine a possible cause for the CBR or “not analyzed (NA) or rejected” result; and
 - ii. If the CBR or “not analyzed (NA) or rejected” cannot be correlated to a specific field event that compromised the sample (e.g. the sample was blown over, the

- filter of the sample was sprayed with water) then the sample shall be prepared for indirect TEM presence/absence analysis to determine potential asbestos content in accordance with Appendix 5A; and
- iii. If the CBR or “not analyzed (NA) or rejected”, analysis result can be correlated to a compromised sample, then preparation for indirect TEM presence/absence analysis is not required as long as adequate air monitoring data is available to evaluate the effectiveness of engineering controls. However, overloading of a sample with particulate matter does not constitute a compromised sample, and will require indirect preparation for TEM presence/absence analysis; and
 - iv. Field personnel shall evaluate why the sample was compromised and modify field procedures as necessary to avoid future samples from being compromised; and
 - v. The Department project manager shall be notified by phone or email of instances of CBR or “not analyzed (NA) or rejected” analysis results within 24 hours of receipt of verbal results.
- (e) TEM presence/absence analysis is required (analysis providing fiber counts/concentrations is always optional) as described in paragraphs (i) through (iv) below. The laboratory shall be requested to provide verbal results by the start of the next working day, or as soon as possible after the start of the next working day, with written results within 24 hours of the receipt of verbal results.
- i. All samples, required by this Section 5.5, with PCM results having fiber concentrations greater than 0.01f/cc shall be submitted for TEM analysis.
 - ii. During the first five (5) days of RACS disturbance – A minimum of 25% of the samples collected from each RWA, inclusive of the downwind floating samples as described in 5.5.7(E)(2), shall be submitted for TEM analysis. The sample(s) selected for TEM analysis shall have the highest PCM result(s) based on fiber concentration. If all PCM results are Below Detectable Limit (BDL) for fiber concentration, then the sample(s) selected for TEM analysis shall be determined by highest fiber count. If all samples have no fiber counts (i.e. zero (0) fibers counted, not a “below detection limit” fiber concentration) then no TEM analysis is required.
 - iii. After five (5) days of RACS disturbance with no asbestos detections by TEM analysis, the frequency of analysis by TEM, on the highest 25% of PCM results(s), may be reduced to once every five (5) days of RACS disturbance, or portions thereof, using the same selection criteria as in paragraphs (i) and (ii) above. The samples submitted for TEM analysis during the period of reduced frequency TEM analysis shall be either the first occurrence of: 1) high winds exceeding wind shut down criteria, or 2) visible emissions. In the absence of high wind events or visible emissions the selected day for TEM analysis may be random, as determined by the AMS.
 - iv. If there are any asbestos detections during the random once every five (5) days of RACS disturbance analysis by TEM, then TEM analysis shall be conducted

- for the next three (3) consecutive days of RACS disturbance, or portions thereof, using the same procedures as in paragraph (i) and (ii) above. If there are no additional asbestos detections during the next three (3) consecutive days of RACS disturbance with samples submitted for TEM analysis, then the frequency of TEM analysis may return to random once every five (5) days of RACS disturbance.
- i. If site conditions, friability of the materials being managed, or work practices change, then the initial five (5) days of TEM analysis shall restart using the provisions set forth in this Section 5.5.7(E)(1)(e).
- (f) Detection or presence responses - For each detection of asbestos by TEM analysis, the following shall be conducted:
- i. Notify the Department project manager by phone or email, on the same calendar day as receipt of verbal or written results (whichever comes first) from the laboratory.
 - ii. Evaluate site conditions and engineering controls for each detection, and immediately implement any identified engineering control revisions necessary with the goal of preventing future detections of asbestos fibers.
 - iii. Submit an Emission Control Plan (ECP) to the Department project manager for each detection (days with multiple detections can be addressed by a single ECP). The ECP shall be submitted within 48 hours from the asbestos detection event and shall contain:
 1. The date of the detection.
 2. A written description of sample details (sample ID, number of structures detected, type of asbestos detected, PCM analytical result) and any potential cause of the release. Include a description of site activity (engineering controls being employed, equipment being used, size of excavation/soil disturbing activity, types of materials identified, etc.) and CABI observations at the work area before and during the presumed time of release.
 3. A diagram or write up of all air sample positions clearly indicating which sample received the TEM detection. Indicate, through illustration or description, prevailing wind direction and average wind speeds for the detection event; include any wind speed shutdowns for the date of detection. If applicable, indicate downwind floater air sample relocation times and new positions through illustration or description.
 4. Laboratory reports confirming the type and amount of fibers detected by TEM analysis.
 5. Other pertinent information that will additionally describe the release and/or will assist in the prevention of future releases from the RWA.
 6. A written description of actions taken and any other proposed actions with the goal of preventing future releases from the RWA.
 7. If the owner/operator believes fibers are coming from offsite and are not

under the control of the owner/operator, then, in addition to the information provided in the ECP, documentation shall be provided demonstrating additional sources of asbestos fibers.

- (g) If there are three (3) TEM detections on consecutive analysis events or ten (10) detections for a single project, consultation with the Department is required to determine if the standard requirements of Section 5.5.7 are being implemented appropriately and whether:
- i. Changes in the standard requirements of Section 5.5.7 are likely to prevent future releases; or
 - ii. Changes in the standard requirements of Section 5.5.7 are not likely to prevent future releases and a PSRMP is necessary per Section 5.5.5(A)(2); or
 - iii. If the owner/operator believes fibers are coming from offsite and are not under the control of the owner/operator, then, in addition to the information provided in the ECP, documentation shall be provided demonstrating additional sources of asbestos fibers. Air samples shall be collected and analyzed following the analytical procedures of Appendix 5A for the type of project being conducted; and
 - iv. Additional consultation with the Department is required to determine whether additional engineering controls for structures within the adjacent receptor zone are appropriate.

(3) Additional requirement for projects disturbing RACS containing friable ACM. Collect two (2) additional downwind floating samples for mechanical disturbance of RACS containing friable ACM. The samplers shall be moved based on prevailing wind direction and adjacent receptors. For example, if adjacent receptors are present on only one side of the RWA, one sample location should be maintained between the RWA and the adjacent receptor.

(F) WORK PRACTICES TO BE FOLLOWED DURING RACS DISTURBANCE

(1) Work practice requirements applicable to all management of RACS:

- (a) Prevent visible emissions from leaving the RWA, or demonstrate that asbestos is not leaving the RWA above risk based thresholds by:
- i. Excavating in lifts not to exceed the extent of wetting; or
 - ii. Conducting continuous wetting while mixing dry materials at the point of RACS disturbance to ensure all materials are adequately wet prior to removal from the excavation.
 - iii. Instances of visible emissions leaving the RWA shall be documented and addressed by changing or increasing controls (e.g. more effective wetting,

reduced speed of excavation).

(b) RACS on exposed excavation faces that will be disturbed and/or managed during the project shall either be kept adequately wet (in accordance with Section 5.5.7(C)), or be stabilized using any of the following in order to prevent visible emissions from leaving the RWA, or demonstrate that asbestos is not leaving the RWA above risk based thresholds:

- i. Polyethylene sheeting or geofabric with daily inspection, and inspection no later than twelve (12) hours following a storm event, and repair/replace sheeting as necessary to maintain stabilization; or
- ii. Chemical stabilizer demonstrated to be effective in the stabilization of RACS (e.g. magnesium chloride) with weekly inspection, and inspection no later than one (1) calendar day following a storm event, and re- application of chemical stabilizer as necessary to maintain stabilization; or
- iii. Minimum of three (3) inches of soil appropriate for unrestricted use.

(c) Stormwater shall be managed in accordance with the Water Quality Control Commission's stormwater regulations (5 CCR 1002-61), which include specific stormwater permitting and management requirements for construction sites. The Water Quality Control Division should be contacted to determine the specific requirements for each project. Stormwater shall be managed in a manner that minimizes run on and runoff from RACS. Stormwater that comes into contact with RACS shall be treated as asbestos contaminated water in accordance with Section 5.5.7(J)(4), and other material(s) impacted by asbestos contaminated stormwater shall be managed as RACS in accordance with Section 5.5.7(J)(3).

(2) Work Practice requirements applicable to the management of RACS using hand methods on surfaces or in the subsurface:

a. Wet and remove the RACS and six (6) inches, in all directions, of surrounding soil or other material from the last occurrence of visible ACM; and

b. A CABI shall confirm that the visible extent of ACM and surrounding soil, or other material, has been removed (or extent of excavation has been reached). If RACS remains, it shall be managed for stabilization or future removal. If there is no documented evidence of non-visible RACS at the Site, then a visual inspection and clearance shall be sufficient to determine the removal of RACS. If there is documented evidence of non-visible RACS at the Site, sampling is required to confirm the removal of RACS. After the removal of the additional six (6) inches, and in the absence of any debris, a QPM may make the determination that RACS has been removed; and

c. If RACS remains in the RWA, it shall be managed for stabilization, per Section

5.5.7(K), or future removal.

- d. In lieu of stabilization or full removal, sampling may be performed per Section 2.2 of Appendix 5A to demonstrate that the material is not RACS.
- e. Dispose of RACS in accordance with Section 5.5.8.

(3) Work practice requirements applicable to management of RACS using mechanical methods:

- a. For surface occurrence of RACS - Wet and remove all RACS and a minimum of six (6) inches of soil, and/or other matrix material, in all directions from the last occurrence of visible ACM, with CABI confirmation that the visible extent of RACS has been removed.
- b. For subsurface occurrence of RACS - Wet and remove all RACS and a minimum of three (3) linear feet of soil or other matrix material, in the direction(s) of planned excavation, with CABI confirmation that the visible extent of RACS has been removed. If there is no documented evidence of non-visible RACS at the Site, then a visual inspection and clearance shall be sufficient to determine the removal of RACS. If there is documented evidence of non-visible RACS at the Site, sampling is required to confirm the removal of RACS. After the removal of the additional three (3) linear feet, and in the absence of any debris, a QPM may make the determination that RACS has been removed.
- c. If RACS remains in the RWA, it shall be managed for stabilization, per 5.5.7(K), or future removal.
- d. In lieu of stabilization or full removal, sampling may be performed per Appendix 5A to demonstrate that the material is not RACS.
- e. Package and dispose of RACS in accordance with Section 5.5.8.

(4) Soil or other matrix material that remains after removal of RACS in accordance with Section 5.5.7(F), Section 5.5.7(H)(1)(c)(i), or an approved plan, is not considered RACS, is not subject to Section 5.5, and may be appropriate for unrestricted use, onsite or offsite, as long as it does not contain any other regulated material.

(G)LOADING AND PLACEMENT OF RACS

(1) Requirements for the loading of RACS:

- (a) Protect clean surfaces (including loading surface and truck or disposal container surfaces that may come in contact with RACS) by covering or decontamination of surfaces prior to transport or removal of the truck or disposal container from

the RWA and/or loading zone.

(b) Spill prevention shall consist of:

- i. Minimization of spillage by not overfilling the excavator or loader bucket and returning the bucket to a closed position prior to moving from the loading point; and
- ii. Replacement of protective coverings when worn or damaged in order to prevent breaches; and
- iii. Control of runoff in order to prevent cross contamination from water containing asbestos; and
- iv. Mitigation of spills of RACS in accordance with Section 5.5.7(J).

(c) During the process of loading the container, the equipment operator shall lower the bucket as close as possible to the interior of the container before dumping, and dump the load slowly to allow adequate misting and in order to prevent visible emissions from leaving the RWA, or demonstrate that asbestos is not leaving the RWA above risk based thresholds.

(2) Requirements for the transportation of RACS:

(a) Onsite transportation of RACS between the RWA and an onsite area of staging, stockpiling, storage, disposal or reuse shall comply with the following:

- i. The packaging requirements for RACS set forth in Section 5.5.8(A) of these regulations are not applicable; however, the decontamination requirements of Section 5.5.7(I) shall be followed at the end of disposal operations, or before disposal equipment is removed from the Site; and
- ii. Driving speeds shall not exceed 12 miles per hour or RACS shall be covered during transport; and
- iii. For transportation between the RWA and a non-contiguous onsite staging, stockpiling, storage, disposal, or reuse area:
 1. Transportation equipment tires shall not contact RACS; or
 2. RACS that is driven upon is a RWA and shall be kept adequately wet in order to prevent visible emissions from leaving the RWA, or demonstrate that asbestos is not leaving the RWA above risk based thresholds, and all equipment surfaces that have come into contact with RACS shall be decontaminated per Section 5.5.7(I) before leaving the RWA; or
 3. The haul road shall be managed as RACS for stabilization, per Section 5.5.7(F)(1), and future removal of a minimum of three (3) inches of soil, or other matrix material. If the road is constructed of a durable surface such as concrete or asphalt, the surface shall be decontaminated in accordance with Section 5.5.7(I)(1)(b) using wet methods, followed by

CABI inspection verifying that all soil and debris has been removed from the surface. Rinsate/runoff shall be collected and filtrated to less than 5 microns (or applicable local requirements) and discharged to a sanitary sewer or other Department-approved disposal facility or re- applied to RACS that will be managed under these regulations.

(H) ONSITE STAGING, STOCKPILING, AND STORAGE OF RACS

(1) Staging, as defined in Section 1.2 of these regulations, is the accumulation and temporary storage of RACS in the RWA for 12 hours or less. The following requirements shall apply to the staging of RACS:

(a) Staged RACS shall be kept adequately wet.

(b) Staging of RACS shall be on 6 mil, or greater, polyethylene sheeting or shall include removal, and management as RACS, of a minimum of three (3) inches of material, from below the staging pile/area prior to demobilization; with visual or measured confirmation of removal. If polyethylene sheeting is placed on top of a durable surface such as concrete or asphalt, the surface must be decontaminated using wet methods, followed by CABI inspection verifying that all soil and debris has been removed from the surface. Rinsate/runoff shall be collected and filtrated to less than 5 microns (or applicable local requirements) and discharged to a sanitary sewer or other Department-approved disposal facility or re-applied to RACS that will be managed under these regulations.

(c) Material determined to be clean during generation shall be inspected during placement for staging. Staging of clean material with incidental discovery of RACS shall be managed as follows:

i. If a CABI was continually inspecting the material during generation, remove the piece of ACM and one (1) foot of material in all directions, with CABI confirmation that the visible extent of RACS has been removed. If more than one (1) piece of ACM, or a pocket of ACM is discovered, remove the pocket of ACM plus one (1) foot of material in all directions, with CABI confirmation that the visible extent of RACS has been removed. Material that remains after removal of RACS, and CABI visible confirmation, is not considered RACS, is not subject to Section 5.5, and may be appropriate for unrestricted reuse, onsite or offsite, as long as it does not contain any other regulated material.

ii. If a CABI was not continually inspecting the material during generation, an intrusive inspection of the pile shall be conducted to determine the extent of RACS contamination, followed by the removal of the visible extent of contamination plus removal of one (1) foot of material in all directions. Alternatively, the entire pile, plus three (3) inches of material below the pile, shall be removed and managed as RACS. If the pile was placed on top of a

durable surface such as concrete or asphalt, the surface shall be decontaminated using wet methods, followed by CABI inspection verifying that all soil and debris has been removed from the surface. Rinsate/runoff shall be collected and filtrated to less than 5 microns (or applicable local requirements) and discharged to a sanitary sewer or other Department- approved disposal facility or re-applied to RACS that will be managed under these regulations.

(2) Stockpiling, as defined in Section 1.2 of these regulations, is the accumulation and storage of RACS that will exist for more than twelve (12) hours, up to and including ten (10) calendar days. The following requirements shall apply to stockpiled RACS:

(a) Stockpiled RACS shall be placed on a minimum of 6 mil polyethylene sheeting or shall include removal, and management as RACS, of a minimum of three (3) inches of soil, or other matrix material, from under the entire area of RACS stockpiling after stockpile removal. If the stockpile was placed on top of a durable surface such as concrete or asphalt, the surface must be decontaminated using wet methods, followed by CABI inspection verifying that all soil and debris has been removed from the surface. Rinsate/runoff shall be collected and filtrated to less than 5 microns (or applicable local requirements) and discharged to a sanitary sewer or other Department- approved disposal facility or re-applied to RACS that will be managed under these regulations.

(b) RACS shall be adequately wet during disturbance.

(c) Stockpiled RACS shall be controlled per Section 5.5.7(A).

(d) Stockpiled RACS shall be stabilized by:

- i. Polyethylene sheeting or geotechnical fabric with daily inspection, and inspection no later than twelve (12) hours following storm events, and repair/replace sheeting as necessary to maintain stabilization; or
- ii. Chemical stabilizer demonstrated to be effective in the stabilization of RACS (e.g. magnesium chloride) with weekly inspection, and inspection no later than one (1) calendar day after storm events, and re-application of chemical stabilizer as necessary to maintain stabilization; or Minimum of three (3) inches of soil appropriate for unrestricted use.

(e) For stockpile areas that are non-contiguous with the RWA, transportation of RACS shall be conducted in accordance with the following:

- i. Transportation equipment tires shall not contact RACS; or
- ii. The tires shall be decontaminated per Section 5.5.7(I) before leaving the RWA; or
- iii. The haul road shall be managed as RACS for stabilization, per Section

5.5.7(H)(2)(d), and future removal of a minimum of three (3) inches of soil, or other matrix material. If the road is constructed of a durable surface such as concrete or asphalt, the surface shall be decontaminated using wet methods, followed by CABI inspection verifying that all soil and debris has been removed from the surface. Rinsate/runoff shall be collected and filtrated to less than 5 microns (or applicable local requirements) and discharged to a sanitary sewer or other Department-approved disposal facility or re-applied to RACS that will be managed under these regulations.

- (f) For a stockpile that was previously thought to be free of RACS, but where RACS is subsequently identified, the procedure outlined in Section 5.5.7 (H)(1)(c) shall be followed.

(3) Storage of RACS exceeding ten calendar days shall require the submission of a RACS Storage Plan. Storage of RACS shall not commence prior to approval of the RACS Storage Plan by the Department's Hazardous Materials and Waste Management Division. The RACS Storage Plan shall include:

- (a) Approval of storage with signature from the property owner; and
- (b) Volume of RACS intended for storage; and
- (c) Liner design or provisions for removal of a minimum of three (3) inches of underlying material; and
- (d) Storm water design including protections for run-on and run-off; and
- (e) Cover design or use of an equivalent durable stabilizer; and
- (f) Access control and signage; and
- (g) Storage timeframe (shall not exceed six (6) months unless an extended storage timeframe is approved by the Department and complies with local governing authority requirements); and
- (h) Inspection and maintenance schedule; and
- (i) Closure and removal requirements; and
- (j) Documentation and reporting; and
- (k) Certification of any designed elements by a Colorado registered Professional Engineer.

(4) Temporary sub-surface storage of RACS in areas of future planned RACS removal

shall not exceed six (6) months and shall comply with the following:

- (a) RACS may only be placed within the Area of Contamination (AOC) that it was originally removed from.
 - (b) Placement of RACS utilizing standard RACS management requirements in accordance with the standard requirements of Section 5.5.7, an approved PSRMP, or an approved SOP.
 - (c) Cover RACS in accordance with the requirements of Section 5.5.7(K).
 - (d) RACS not removed within six (6) months (unless an extended storage timeframe is approved by the Department), shall be considered disposal in accordance with Section 5.5.8(A), or reuse within an AOC and will require an environmental covenant in accordance with Section 5.5.8(B)(1).
- (5) Offsite staging, stockpiling, and storage of RACS are allowed as long as they comply with the disposition requirements of Section 5.5.8.

(I) DECONTAMINATION

(1) Requirements applicable to all projects subject to Section 5.5:

(a) Personnel Decontamination:

- i. Remove booties and/or gloves before exiting RWA and dispose as asbestos contaminated waste; or
- ii. If not using disposable PPE, decontaminate boots in a boot wash station, remove gloves after exiting the boot wash station, and dispose of gloves as asbestos contaminated waste. Rinsate from the boot wash station shall be collected, filtrated to less than 5 microns (or applicable local requirements) and discharged to a sanitary sewer or other Department- approved disposal facility, or re-applied to RACS that will be managed under these regulations.

(b) Decontamination of Equipment or Surfaces that have come into Contact with RACS

i. For equipment that comes into contact with RACS:

- 1. Wet decontamination on a decontamination pad (minimum 10 mil poly or other durable non-permeable barrier) followed by CABI inspection and verification of equipment decontamination before it leaves the decontamination area. All decontamination liquids and solids shall be contained, and run-on and run-off shall be prevented. Rinsate/runoff shall be collected, filtrated to less than 5 microns (or applicable local requirements) and discharged to a sanitary sewer or other Department-

approved disposal facility or re-applied to RACS that will be managed under these regulations. For breaches in the decontamination pad where RACS or water contaminated with asbestos may have impacted the material below the decontamination pad, implement the provisions of Section 5.5.7(J);

and/or

2. Decontamination using HEPA vacuums followed by CABI inspection and verification of equipment decontamination before it leaves the decontamination area.

(c) Protection of Clean Equipment and Surfaces:

- i. Keep all equipment off of RACS; or
- ii. Protect clean surfaces from coming in contact with RACS by covering equipment surfaces or RACS surfaces with polyethylene sheeting or equivalent durable impermeable covering. For onsite movement of excavation equipment between RWAs, where only the excavator bucket has come in contact with RACS, the bucket shall be wrapped in polyethylene sheeting (minimum 6 mil) prior to movement. Protective coverings shall be cleaned, repaired, or replaced as necessary. If protective coverings are breached and RACS or asbestos contaminated water comes into contact with underlying material, the provisions of Section 5.5.7(J) shall be followed. Coverings that have come in contact with RACS shall be disposed as asbestos contaminated waste.

(2) Additional Requirements for Projects Disturbing RACS Containing Friable ACM:

- (a) Remove disposable impermeable suits or equivalent coveralls before exiting RWA and dispose as asbestos contaminated waste, or
- (b) After removal of suits or coveralls, conduct full wet decontamination prior to exiting RWA with collection of rinsate and filtration to less than 5 microns and discharge to a sanitary sewer or other Department-approved disposal facility. Re-application of decontamination shower water is prohibited.

(J) RACS SPILL RESPONSE

- (1) Areas where RACS is spilled are RWAs until clean up is completed.
- (2) Spilled material shall be cleaned up immediately and not allowed to dry out or accumulate on any surface. The Department's Hazardous Materials and Waste Management Division shall be notified, through the spill reporting hotline, in the event that spills of RACS cannot be cleaned up within 24 hours of spill identification.

- (3) Where there are breaches in ground coverings that have the potential to allow RACS or water contaminated with asbestos to impact the material below the covering, a minimum of three (3) inches of soil, or other matrix material, shall be removed from beneath the breached ground coverings. Visual or measured (e.g. survey) confirmation that three (3) inches of soil and/or other matrix material from beneath the breached covering has been removed shall be conducted. If ground coverings are placed on top of a durable surface such as concrete or asphalt, the surface shall be decontaminated using wet methods, followed by CABI inspection that all soil and debris has been removed from the surface.
- (4) Rinsate, runoff, or any other water that has come into contact with RACS shall be considered to be asbestos contaminated water and shall be collected and filtrated to less than 5 microns and discharged to a sanitary sewer or other Department-approved disposal facility or re-applied to RACS that will be managed under these regulations.
- (5) Surfaces that are contacted by asbestos contaminated water shall be managed as RACS as per Section 5.5.7(J)(3) or permanently stabilized as per Section 5.5.7(K).
- (6) If work practices in an RWA are causing an ongoing spill outside the RWA, the work practices shall cease or be modified to prevent additional releases.

(K) REQUIREMENTS FOR EXPOSED RACS REMAINING IN PLACE

- (1) Any remaining RACS that has been exposed by the soil disturbing activity, but is not disturbed, such as an excavation side-wall or bottom shall be covered or stabilized using one of the following:
 - (a) Cover RACS with geofabric, followed by eighteen (18) inches of fill suitable for unrestricted use, and vegetation; or
 - (b) Cover RACS with geofabric, followed by six (6) inches of fill suitable for unrestricted use, and concrete or asphalt; or
 - (c) Cover RACS with geofabric, followed by fill suitable for unrestricted use to grade or six (6) inches, whichever is greater, for vertical excavation faces or trenches; or
 - (d) Alternate cover designs as approved by the Department.

(L) DOCUMENTATION

- (1) The documents listed below shall be maintained during a project and available for Department review upon request. However, this documentation need not be

submitted to the Department unless requested. CABI and AMS notes may be collected by one individual if they possess both certifications; however, if no AMS is onsite the CABI shall provide items listed in the AMS notes section (e.g. wind monitoring and shutdown events). CABI and AMS notes may be taken by another individual, but shall be reviewed, approved, and signed by the CABI or AMS for whom the notes are being taken. Other appropriate personnel may also provide the following documentation.

(a) CABI/QPM Notes shall include documentation of:

- i. Site description including location; and
- ii. Descriptions of site activities; and
- iii. Descriptions of equipment in use; and
- iv. Descriptions of hand removals (including locations); and
- v. Descriptions of types of debris identified; and
- vi. Descriptions of suspect material identified; and
- vii. Friability of ACM identified (as determined by a CABI); and
- viii. Sampling, if conducted (all sampling shall be conducted by a CABI); and
- ix. Decontamination visual inspection and clearances; and
- x. Excavation visual inspection and clearances; and
- xi. Spill response activities; and
- xii. Observations of visible emissions and responses; and
- xiii. Observations of non-earthen material or the appearance of fill; and
- xiv. Observations of other indicators of impact to soils.

(b) AMS notes shall include documentation of:

- i. Wind speed measurements; and
- ii. Prevailing wind direction(s); and
- iii. Wind shut down event(s); and
- iv. Initial air sample locations; and
- v. Air sample relocation notes; and
- vi. Observations of visible emissions and responses; and
- vii. Notes pertaining to sample malfunctions (pump faults, overloading, etc.); and
- viii. Instances of samples being compromised (samples knocked over, sample filters being sprayed with water, samples physically impacted by equipment, etc.); and
- ix. Air sample data (flow rates, time of sampling, volumes, calibration method, etc.).

(c) General documentation shall include:

- i. Disposal records; and

- ii. Analytical reports including chain of custody forms; and
- iii. Evaluations of any samples with a “cannot be read” analysis result and the notifications of these events to the Department; and
- iv. Location of known remaining RACS; and
- v. Creation and removal dates for, and locations of, staged, stockpiled, and/or stored RACS; and
- vi. Stockpile and staging pile inspection logs and documentation of weather events requiring inspection; and
- vii. Logs of all site personnel with access to the RWA; and
- viii. Certification records for all CABIs and AMSs utilized on the project, and
- ix. Records for training conducted in accordance Sections 5.5.3(A) and 5.5.3(B); and
- x. Records demonstrating the QPM(s) meet the training and experience requirements set forth in Section 5.5.3(C); and
- xi. ECP(s) generated during the project.