

1                   **DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT**

2                   **Solid and Hazardous Waste Commission/Hazardous Materials and**  
3                   **Waste Management Division**

4                   **6 CCR 1007-2**

5                   **PART 1 - REGULATIONS PERTAINING TO SOLID WASTE SITES AND FACILITIES**

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7  
8                   **Deletion and Replacement of Existing Section 5.5 Regulations (Management of**  
9                   **Asbestos-Contaminated Soil) with New Section 5.5 Regulations (Management of**  
10                  **Regulated Asbestos Contaminated Soil (RACS)); the Addition of Appendix 5A**  
11                  **(Sample Collection Protocols and Analytical Methodologies) and the Associated**  
12                  **Additions and Revision to Section 1.2 Definitions**  
13

14  
15                  **1) Section 1.2 is being amended by adding the following definitions in**  
16                  **alphabetical order to read as follows:**

17  
18                  **1.2 Definitions**

19  
20                  \*\*\*\*\*

21  
22                  **“Adjacent Receptor Zone”** means an area of uncontrolled access at a distance of 150’  
23                  or less from the nearest Regulated Work Area (RWA) boundary during active RACS  
24                  disturbance.

25  
26                  \*\*\*\*\*

27  
28                  **“Air Monitoring Specialist” (“AMS”)** means a person trained and certified, in  
29                  accordance with the requirements of Air Quality Control Commission Regulation No. 8  
30                  (5 CCR 1001-10, Part B), for the collection of air samples to determine airborne  
31                  particulate and/or asbestos concentrations.

32  
33                  \*\*\*\*\*

34  
35                  **“Ancillary Worker”** means a worker that has not completed the training under Section  
36                  5.5.3(C) and (D) of these Regulations.

37                  \*\*\*\*\*  
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39 **“Area of Contamination” (“AOC”)** means a discrete, discernible area of known  
40 RACS.

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42  
43  
44 **“Certified Asbestos Building Inspector” (“CABI”)** means a person trained and  
45 certified in accordance with Air Quality Control Commission Regulation No. 8 (5 CCR  
46 1001-10, Part B), for the identification of asbestos-containing materials and the  
47 collection of samples to determine asbestos content.

48 \*\*\*\*\*

49  
50  
51 **“Debris”** means the remains of any non-earthen material that has been discarded,  
52 broken down, destroyed, or burned.

53 \*\*\*\*\*

54  
55  
56 **“Friable asbestos-containing material”** means any material that contains asbestos  
57 and when dry can be crumbled, pulverized, or reduced to powder by hand pressure and  
58 that contains more than one percent asbestos by weight, area, or volume. The term  
59 includes non-friable forms of asbestos after such previously non-friable material  
60 becomes damaged to the extent that when dry it can be crumbled, pulverized, or  
61 reduced to powder by hand pressure as determined in the field by a CABI.

62 \*\*\*\*\*

63  
64 **“Non-Regulated Asbestos Contaminated Soil” (“Non-RACS”)** means soil or debris  
65 that contains only:

- 66
- 67 1) Intact non-damaged, non-friable asbestos-containing materials;
  - 68
  - 69 2) Non-friable asbestos-containing materials that do not have a high probability to  
70 release fibers based on the forces expected to act upon the material as  
71 determined in the field by a CABI. The following asbestos-containing materials  
72 are predetermined to be Non-RACS:  
73
    - 74 a. Resin based materials including but not limited to phenolic-plastic  
75 (Bakelite), used in electrical and mechanical parts  
76
    - 77 b. Resilient flooring (vinyl, asphalt, rubber) excluding non-tar impregnated  
78 friable felt backing on sheet vinyl flooring (linoleum)  
79
    - 80 c. Tar impregnated or asphaltic materials in good condition that have not  
81 become brittle

- d. Elastic, pliable, or rubberized materials, including but not limited to:
  - i. Pliable duct sealant
  - ii. Pliable fiberglass insulation sealant
  - iii. Pliable fire-stop caulking /sealants
  - iv. Pliable window and door caulking
- e. Extremely hard materials, coatings and sealants including but not limited to:
  - i. Laboratory countertops and sinks
  - ii. Epoxy type Concrete Masonry Unit (CMU) coatings
  - iii. Epoxy type panel adhesive
  - iv. Duct sealant
  - v. Ceiling tile adhesive
- f. Other asbestos-containing materials as approved by the Department.

\*\*\*\*\*

**"Project"** means any soil disturbing activity that involves RACS within a planned geographic area(s) of disturbance, as defined in the Notification of RACS Disturbance form submitted for that specific management or remediation scope, starting from the time of first RACS disturbance and continuing through final RACS removal or stabilization and final demobilization. A project may include one or more Regulated Work Areas (RWAs), and start dates and stabilization dates for individual RWAs within a project may be different.

\*\*\*\*\*

**"Qualified Project Monitor" ("QPM")** means an individual who has the training and/or experience necessary to identify materials suspected of containing asbestos fibers and who has the authority to make prompt decisions relating to the management of such materials, and who meets the training requirements in Section 5.5.3.

\*\*\*\*\*

125 **“Regulated Asbestos Contaminated Soil” (“RACS”)** means soil, ash or debris (plus  
126 6 inches in all directions of surrounding soil or other matrix material) containing:

- 127
- 128 1) Friable asbestos-containing materials;
  - 129
  - 130 2) Asbestos-containing materials that have been broken/resized/damaged, and  
131 have a high probability of becoming, crumbled, pulverized, reduced to powder, or  
132 releasing fibers from the forces expected to act upon the material, as determined  
133 by a CABI in the field. The following asbestos-containing materials are RACS:  
134
    - 135 a. Asbestos cement materials
    - 136
    - 137 b. Plaster
    - 138
    - 139 c. Brittle caulking, glazing and sealants
    - 140
    - 141 d. Powdery Concrete Masonry Unit (CMU) sealant
    - 142
    - 143 e. Powdery floor leveling compound
    - 144
    - 145 f. Drywall/wallboard and associated joint compound material
    - 146
    - 147 g. Firebrick
    - 148
    - 149 h. Deteriorated non-friable materials that are in poor condition due to  
150 weathering, mechanical impact, fire damage (by evidence of ACM within  
151 an ash layer) or other factors
    - 152
    - 153 i. Other material as determined by the Department, at the request of the  
154 person disturbing debris, to have a high probability to release fibers
    - 155
  - 156 3) Soil or ash known to contain non-visible asbestos based on documented  
157 evidence.

158 \*\*\*\*\*

160  
161 **“Regulated work area” (“RWA”)** as used in Section 5.5 of these Regulations means  
162 the portion(s) of a site at which soil disturbing activities involving RACS occur.

163 \*\*\*\*\*

165  
166 **“Staging”** for the purposes of Section 5.5, means the accumulation of RACS in the  
167 RWA for twelve (12) hours or less.

\*\*\*\*\*

**“Stockpiling”** for the purposes of Section 5.5, means the accumulation of RACS that will exist for more than 12 hours, up to and including ten (10) calendar days.

\*\*\*\*\*

**“Storage”** for the purposes of Section 5.5, means the accumulation of RACS greater than ten (10) days, but not exceeding six (6) months.

\*\*\*\*\*

**“Visible”** means capable of being seen with the unaided eye.

\*\*\*\*\*

**2) Section 1.2 is being amended by revising the following definitions to read as follows:**

## **1.2 Definitions**

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**“Adequately wet”** means sufficiently ~~mix or penetrate with liquid to completely prevent the release of particulate material and fibers into the ambient air. If visible emissions are observed coming from asbestos-contaminated soil or asbestos-containing material, then the material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.~~ **WET TO MINIMIZE OR ELIMINATE VISIBLE EMISSIONS OF DUST AND/OR DEBRIS WITHIN THE REGULATED WORK AREA AND PREVENT THE RELEASE OF VISIBLE EMISSIONS FROM LEAVING THE REGULATED WORK AREA (RWA) IN ACCORDANCE WITH SECTION 5.5 OF THESE REGULATIONS. THE OBSERVANCE OF VISIBLE EMISSIONS, OUTSIDE OF THE RWA, OF DUST AND/OR DEBRIS IS AN INDICATION THAT SOILS ARE NOT ADEQUATELY WET.**

\*\*\*\*\*

**“Asbestos”** means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), amosite (cummingtonite-grunerite), anthophyllite, ~~and~~ **actinolite=AND** tremolite.

**“Asbestos-containing material” (“ACM”)** means any material that contains more than one percent (1%) asbestos, ~~by weight, area or volume.~~

\*\*\*\*\*

211 **“Friable asbestos waste”** means any asbestos waste that HAS BEEN OR can be  
212 pulverized or reduced to powder by hand pressure when dry.

213 \*\*\*\*\*  
214

215  
216 **“Mechanical”** means operated or produced by mechanism or machine. ~~This may~~  
217 ~~include, but shall not be limited to, an excavator, backhoe, grader, tiller, auger, or hand~~  
218 ~~shovel.~~

219 \*\*\*\*\*  
220

221  
222 **“Soil-disturbing activities”** means ~~excavation, grading, tilling, or any other mechanical~~  
223 ~~activity used to disturb the soil.~~ DIGGING, EXCAVATING, STAGING, LOADING, STOCKPILING,  
224 BACKFILLING, COMPACTING, GRADING, TILLING, DRILLING, INTRUSIVE SAMPLING, AND  
225 EQUIPMENT OR VEHICLE MOVEMENT OR ANY OTHER MECHANICAL ACTIVITY, THAT WHEN USED,  
226 DISTURBS THE SURFACE AND/OR SUBSURFACE SOIL. FOR THE PURPOSES OF SECTION 5.5  
227 DISTURBANCE OR REMOVAL OF SOLID WASTE AND OR RACS IS CONSIDERED A SOIL  
228 DISTURBING ACTIVITY. FOR THE PURPOSES OF SECTION 5.5 HAND DISTURBANCE OR REMOVAL  
229 OF RACS IS SUBJECT TO THIS REGULATION, BUT IS NOT CONSIDERED TO BE A MECHANICAL  
230 DISTURBANCE.

231 \*\*\*\*\*  
232

233  
234 **“Visible emissions”** means ~~any emissions which are visually detectable without the~~  
235 ~~aid of instruments, coming from material containing asbestos, asbestos waste,~~  
236 ~~asbestos-contaminated soil, or from handling and disposal of asbestos waste, material~~  
237 ~~containing asbestos or asbestos-contaminated soil.~~ ANY AIRBORNE OR LIQUID EMISSIONS,  
238 COMING FROM, OR HAVING COME INTO CONTACT WITH RACS, WHICH ARE VISUALLY  
239 DETECTABLE WITHOUT THE AID OF INSTRUMENTS. PROPER DISPOSAL OF APPROPRIATELY  
240 FILTERED DECONTAMINATION WATER TO A SANITARY SEWER DOES NOT CONSTITUTE A VISIBLE  
241 EMISSION.

242 \*\*\*\*\*  
243

244 **3) Section 1.2 is being amended by deleting the definition of “Asbestos-**  
245 **contaminated soil” as follows:**

246  
247 **1.2 Definitions**

248  
249 \*\*\*\*\*

250  
251 ~~“Asbestos-contaminated soil” means soil containing any amount of asbestos.~~

252  
253  
254 **4) A Table of Contents for Section 5 (Asbestos Waste Management) is being**  
255 **added to the regulations to read as follows:**

256  
257 **SECTION 5**

258  
259 **ASBESTOS WASTE MANAGEMENT**

260  
261 5.1 General Provisions

262  
263 5.2 Non-Friable Asbestos Waste Disposal Areas

264  
265 5.3 Friable Asbestos Waste Disposal Areas

266  
267 5.4 Storage of Asbestos Waste

268  
269 5.5 Management of Regulated Asbestos-Contaminated Soil (RACS)

270  
271 5.5.1 Scope and Applicability

272 5.5.2 Exemptions

273 5.5.3 Training and Outreach

274 5.5.4 Response for Unplanned RACS Discovery

275 (A) Immediate Actions

276 (B) 24-Hour Notification Requirements

277 (C) Interim Actions

278 5.5.5 Response for Planned RACS Management

279 (A) Project Specific RACS Management Plan (PSRMP)

280 (B) Standard Operating Procedures (SOPs)

281 (C) Minimum Requirements of Section 5.5.7

282 5.5.6 Remediation of Asbestos in Soil

283 5.5.7 Minimum Requirements for the Disturbance of RACS

284 (A) Establishment and Control of a Regulated Work Area (RWA)

285 (B) Personal Protective Equipment (PPE) for the Purposes of  
286 Preventing Cross-Contamination

- (C) Wetting
- (D) Wind Speed Monitoring
- (E) Air Monitoring
- (F) Work Practices to be Followed During RACS Disturbance
- (G) Loading and Placement of RACS
- (H) Onsite Staging, Stockpiling, and Storage of RACS
- (I) Decontamination
- (J) RACS Spill Response
- (K) Requirements for Exposed RACS Remaining in Place
- (L) Documentation
- 5.5.8 Disposition of Regulated Asbestos-Contaminated Soil
- 5.5.9 Fees

## Appendix 5A: Sample Collection Protocols and Analytical Methodologies

**5) The existing Section 5.5 Regulations (Management of Asbestos-Contaminated Soil) are being deleted in their entirety and replaced with new Section 5.5 Regulations (Management of Regulated Asbestos-Contaminated Soil (RACS)) to read as follows:**

## SECTION 5

### ASBESTOS WASTE MANAGEMENT

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## **5.5 MANAGEMENT OF REGULATED ASBESTOS-CONTAMINATED SOIL (RACS):**

### **5.5.1 SCOPE AND APPLICABILITY**

(A) Any person who disturbs debris or encounters debris during a soil disturbing activity shall have protocols to characterize waste for appropriate management, disposal, or re-use, and appropriate personnel to implement those protocols. Any person who disturbs debris or encounters debris during a soil disturbing activity shall:

(1) Conduct visual assessment of disturbed material;

(2) If debris is encountered, and/or the soil or ash is known to contain asbestos fibers, through documented evidence, then Section 5.5 is applicable. If there is no visible RACS or documented evidence of RACS at a site, an owner/operator does not have a duty under these regulations to sample or otherwise investigate for RACS prior to commencing soil disturbing activities;

(3) If debris is encountered that only contains metal, glass, plastic, wood, or stone with no associated material suspected of containing asbestos fibers, then Section 5.5 is not applicable.

(4) In the event of an emergency in which a soil disturbing activity in an area of debris must continue or commence at once, a RACS determination in accordance with Section 5.5.1(B) may be postponed during the initial response to the immediate emergency. However, the RACS determination must be made within 48 hours of the initial emergency response.

(B) Any person who disturbs debris or encounters debris during soil disturbing activities, when the subject debris is not excluded within 5.5.1(A)(3), must inspect the debris, through continuous visual observation, to determine if the debris is, or contains, suspect asbestos-containing material. The visual inspection shall be conducted in a manner sufficient to provide thorough inspection of the material being disturbed, while maintaining the safety of the inspector. The person(s) visually inspecting the debris must be a Qualified Project Monitor (QPM) or a Certified Asbestos Building Inspector (CABI). All suspect asbestos-containing materials must be:

(1) Assumed to be ACM; or

(2) Sampled by a CABI. The samples shall be analyzed by a National Voluntary Laboratory Accreditation Program (NVLAP) participating laboratory utilizing Polarized Light Microscopy (PLM) (EPA Method 600/R-93/116 or equivalent) to determine if it is ACM; or

(3) Determined to be ACM, or non-ACM, through the use of documentation unique to the material observed in the field establishing the asbestos content of the material (e.g. laboratory analysis results from previous encounters with the same material).

(4) The asbestos determination shall be made within seven (7) calendar days of discovery of the debris.

(a) Within 24 hours of discovery of debris, and until the asbestos determination is made, the debris shall be stabilized in accordance with Section 5.5.4(A)(3) of these regulations.

(b) No additional disturbance, other than necessary to perform the required stabilization in Section 5.5.4(A)(3), of the debris shall occur prior to the asbestos determination.

- 371 (5) A person who disturbs debris, determined or assumed to be ACM per 5.5.1(B),  
372 shall determine if the ACM is exempted in accordance with Section 5.5.2 of these  
373 regulations.  
374
- 375 (6) A person who disturbs debris, determined or assumed to be or contain ACM per  
376 5.5.1(B), shall make a RACS vs. Non-RACS determination, as the terms are  
377 defined in Section 1.2 of these regulations, by:  
378
- 379 (a) Assuming the debris containing asbestos is RACS and managing the RACS  
380 in accordance with Section 5 of these regulations; or  
381
- 382 (b) Applying site and material specific generator knowledge of the presence or  
383 absence of RACS based on observation and/or documented evidence about  
384 the nature of asbestos-containing material(s).  
385
- 386 (7) The owner/operator shall retain, or make available for inspection, records of all  
387 asbestos determinations for debris and RACS vs. Non-RACS determinations  
388 onsite for the duration of the debris disturbance, and retained by the  
389 owner/operator for a period of six months after the completion of debris  
390 disturbing activities.  
391
- 392 (C) Soil or ash known to contain non-visible asbestos, based on documented evidence,  
393 is RACS and shall be managed in accordance with these regulations.  
394
- 395 (D) If soil, ash, or debris is, or contains, RACS then:  
396
- 397 (1) RACS that is disturbed shall be managed, disposed of, or reused in accordance  
398 with these regulations.  
399
- 400 (2) Removal of asbestos-containing material that is on, or comprises, a facility  
401 component, that is located on or in soil that will be disturbed, shall be conducted  
402 under this Section 5.5, in accordance with work practices in Air Quality Control  
403 Commission Regulation No. 8 (5 CCR 1001-10, Part B), Section III.V, and is not  
404 subject to the permit requirements of 5 CCR 1001-10, Part B, if the total quantity  
405 of asbestos-containing material is below the following trigger levels:  
406
- 407 (a) 260 linear feet on pipes; or  
408
- 409 (b) 160 square feet on other surfaces; or  
410
- 411 (c) The volume of a 55-gallon drum.  
412

(3) RACS that is generated and not disposed of or reused in compliance with Section 5.5.8 of these Regulations is solid waste and shall be managed in accordance with the landfill requirements of the Colorado Solid Wastes Disposal Sites and Facilities Act (C.R.S. 30-20, Part 1) and the Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1).

(4) A person who disturbs RACS shall make the decision upon the initial discovery of RACS to either manage the RACS in accordance with Section 5.5, or cease soil disturbing activities and permanently stabilize the disturbed RACS to control the release of asbestos fibers in accordance with one of the following:

(a) Cover RACS with geofabric, or equivalent visible barrier, and restore the site to pre-disturbance conditions using fill suitable for unrestricted use; or

(b) Cover RACS with geofabric, or other visible barrier, followed by 18 inches of fill suitable for unrestricted use, and vegetation; or

(c) Cover RACS with geofabric, or other visible barrier, followed by 6 inches of fill suitable for unrestricted use, and concrete or asphalt; or

(d) Cover RACS with geofabric, or other visible barrier, followed by fill suitable for unrestricted use to grade for vertical excavation faces or trenches; or

(e) Alternate cover designs as approved by the Department.

## **5.5.2 EXEMPTIONS**

(A) Removal of asbestos-containing material on a facility component with asbestos quantities above the trigger levels, as defined in 5.5.1(D)(2), is subject to the permit and abatement requirements of Air Quality Control Commission Regulation No. 8 (5 CCR 1001-10, Part B), and is therefore not subject to this Section 5.5., but shall still comply with Sections 5.1 through 5.4 of these regulations.

(B) Spill response activities that are subject to the requirements of Air Quality Control Commission Regulation No. 8 (5 CCR 1001-10, Part B) are not subject to the requirements of Section 5.5, but shall still comply with Sections 5.1 through 5.4 of these regulations.

(C) Ambient occurrences of asbestos fibers in soil that are demonstrated to be the result of background conditions and not the result of site specific activities are not subject to the requirements of this Section 5.5. This demonstration shall be submitted to, and approved by, the Department prior to the exemption being applicable.

- (D) During active solid waste disposal operations, asbestos waste disposal areas that have a certificate of designation are not subject to 5.5, but shall comply with the facility's Engineering Design and Operations Plan.
- (E) De minimis projects involving a total RACS disturbance of less than 1 cubic yard, using low-emission methods, are exempt from this Section 5.5, except for the decontamination procedures in 5.5.7(I) and the disposal requirements in 5.5.8. For the purpose of this Section 5.5, Low Emissions Methods means soil disturbing activities that will not result in visible emissions without the use of wet methods.
- (F) Projects conducted directly by a homeowner on their primary residence, including residential landscaping projects and other private residential soil-disturbing projects conducted after the primary dwelling is built, e.g. planting trees, digging holes for fence posts, installing sign posts, gardening, other projects done by private individuals on their primary place of residence are not subject to this Section 5.5, but shall still comply with Sections 5.1 through 5.4 of these regulations.
- (G) Soil disturbing activities involving Non-RACS, where no RACS is present or generated, are not subject to the requirements of Section 5.5, but Non-RACS must be disposed as non-friable asbestos waste in accordance with the disposal requirements set forth in Section 5.2 of these regulations. However, removal of Non-RACS from a project area is required if seeking a No Further Action or No Action Determination for a remediation project under Section 5.5.6, or an environmental covenant, in accordance with § 25-15-320 C.R.S., is required for Non-RACS left in place.

### **5.5.3 TRAINING AND OUTREACH**

- (A) Community outreach shall be conducted for projects involving mechanical disturbance of RACS containing friable ACM with an adjacent receptor zone present. In addition, ancillary worker awareness briefing(s) shall be conducted through the dissemination of fact sheets and/or informational meetings that discuss the presence of RACS that includes friable ACM and the measures being taken to prevent emissions and cross contamination.
- (B) Projects involving the disturbance of debris or soil/ash containing debris shall include at least one onsite QPM during active disturbance.
- (C) Personnel inside the RWA during the disturbance of RACS shall have annual awareness training. This training requirement applies to equipment operators and drivers of trucks carrying contaminated material for offsite disposal or reuse. Truck drivers who do not complete this training 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 and doors remain closed, and the air handling system remains off while the truck is inside the RWA. This training shall cover information necessary to comply with Section 5.5 including:

- 1) General asbestos awareness; including health effects; and
- 2) Overview of the requirements of Section 5.5; and
- 3) Overview of suspect ACM that requires further evaluation by a CABI; and
- 4) Overview of RACS and Non-RACS; and
- 5) Worker protection, including levels of personal protective equipment (PPE) required for various activities and conditions; and
- 6) Decontamination requirements for equipment and personnel; and
- 7) Engineering controls to prevent the release of asbestos outside the RWA; and
- 8) Overview of RACS handling procedures. This training shall be conducted by a CABI or QPM who is familiar with the site specific plan and/or the Minimum Requirements in Section 5.5.7. Records of this training shall be retained, by the trained individual, and be available for inspection, for a minimum of one year from the date of the training.

(D) Per-project site-specific awareness training for personnel disturbing RACS. This training shall cover site-specific information necessary to comply with Section 5.5 and the selected management approach for the project (project specific RACS management plan (PSRMP), standard operating procedures (SOPs), or the minimum requirements of Section 5.5.7, including project chain-of-command and identification of authorized personnel with stop work authority, and identification of QPM(s). This training shall be provided by a CABI or QPM. Records of this training shall be retained, and be available for inspection, for the duration of the project for which the training was conducted.

(E) Qualified Project Monitors shall have, at a minimum:

- 1) Annual awareness training and site specific awareness training under Section 5.5.3(C) and (D); and,
- 2) Training from a CABI on identifying debris, exempted materials under Section 5.5.1(A)(3), and the assumption of debris to be RACS as outlined in Section 5.5.1; and,
- 3) Training from a CABI on how to implement the minimum requirements under Section 5.5.7 and how to perform the duties that a QPM may perform in lieu of a CABI; and
- 4) Training from a CABI on how to implement the provisions of the chosen RACS management approach (PSRMP, SOPs, or minimum requirements of Section 5.5.7) and how to perform the duties that a QPM may perform in lieu of a CABI; and,
- 5) 40 verifiable hours of direct experience on projects conducted under Section 5.5.

(F) Inspection and identification of RACS shall be conducted by a CABI, with 40 verifiable hours of on the job asbestos in soils experience on a minimum of three (3) different asbestos in soils jobs, conducted under either AQCC Regulation No. 8 or Section 5.5. The CABI shall be independent of the general contractor (GC) and/or abatement contractor unless the CABI and the GC or abatement contractor are both direct employees of the property owner. However, the GC or abatement contractor may hire a subcontractor CABI, but the CABI shall not be a direct employee of the GC or abatement contractor.

(G) Air monitoring conducted in accordance with this Section 5.5 shall be performed by an Air Monitoring Specialist (AMS).

#### **5.5.4 RESPONSE FOR UNPLANNED RACS DISCOVERY**

Soil disturbing activities that encounter RACS without previously approved plans are subject to the following requirements:

(A) IMMEDIATE ACTIONS: Immediate actions shall be taken by the person conducting the soil disturbing activity, or representative of the owner or operator, to manage RACS in accordance with Section 5.5 and Section 1.2 definitions of these Regulations. These actions shall include, at a minimum, the following:

(1) Stopping all soil disturbing activities, related to RACS, until the 24-hour notification requirements in Section 5.5.4(B), and the interim action requirements in Section 5.5.4(C), are met. In the event of an emergency in which a soil disturbing activity must continue or commence at once, notification shall be made as soon as possible, but within 24 hours of identifying or assuming RACS within the soil disturbing area. During the initial response to the immediate emergency, the minimum requirements of Section 5.5.7 shall be implemented to the extent possible. Within 48 hours, any disturbed and/or exposed RACS shall be managed in accordance with the minimum requirements of Section 5.5.7, an approved PSRMP, or an approved SOP.

(2) Establishing, and taking measures to prevent access to, the regulated work area by unauthorized persons.

(3) Conducting interim surface soil stabilization to reduce emissions including:

- a. Polyethylene sheeting or geotechnical fabric with daily inspection, and inspection after storm events, and repair/replacement of sheeting as necessary to maintain stabilization; or
- b. Chemical stabilizer demonstrated to be effective in the stabilization of RACS (e.g. magnesium chloride) with weekly inspection, and inspection after storm events, and re-application of chemical stabilizer as necessary to maintain stabilization; or
- c. Minimum of 3 inches of soil appropriate for unrestricted use; or
- d. Other means of stabilization as approved by the Department.
- e. Stabilization is not required if RACS is kept adequately wet. Verification of adequately wet conditions shall be conducted at least every two hours, or RACS shall be stabilized.

(B) 24-HOUR NOTIFICATION REQUIREMENTS: The owner/operator, or owner/operator representative shall submit a completed Notification of RACS Disturbance form to the Department's Hazardous Materials and Waste Management Division within 24 hours of encountering RACS during a soil disturbing activity.

(C) INTERIM ACTIONS: In accordance with 5.5.5, the owner/operator, or owner/operator representative, shall submit to the Department's Hazardous Materials and Waste Management Division, for review and approval, within five (5) working days of the discovery, PSRMP, SOPs, or indicate the minimum requirements of Section 5.5.7 will be followed.

(D) Once the requirements of Sections 5.5.4(A), (B), and (C) are completed, any soil disturbing activities shall proceed in accordance with applicable requirements.

## **5.5.5 RESPONSE FOR PLANNED RACS MANAGEMENT**

Planned soil disturbing activities involving RACS in regulated work areas shall be conducted in accordance with the minimum requirements identified in Section 5.5.7, and with one of the following management strategies and the associated notification requirement:

### **(A) PROJECT SPECIFIC RACS MANAGEMENT PLAN (PSRMP);**

- (1) The owner/operator, or owner/operator representative, shall submit a completed Notification of RACS Disturbance form to the Department's Hazardous Materials and Waste Management Division at least 10 working days prior to any planned soil disturbing activity. This notification shall include submittal of a Project Specific RACS Management Plan (PSRMP) conforming to the requirements of Section 5.5.5(A)(2). The Division will acknowledge receipt of a notification of the intent to utilize a PSRMP by mail or electronic correspondence. The PSRMP shall be approved by the Department prior to implementation.
- (2) If the owner/operator choose(s) management in accordance with Section 5.5.5(A), a PSRMP shall be developed and submitted to the Department's Hazardous Materials and Waste Management Division for review and approval prior to implementation. The Department will use its best efforts to review and respond to the plan within ten (10) working days of receipt. The PSRMP shall include the following:
  - (a) Property representative's name and phone number; and
  - (b) Property location; and
  - (c) General site description, including a description of RACS and the types of known or assumed asbestos-containing material(s), and the location(s) of these material on the site; and
  - (d) Description of planned soil disturbing activities; and
  - (e) Description of site management, emission control activities, and work practices to control the release of, and/or exposure to, asbestos outside of the RWA including:

- (i) Measures to assure that the soil is adequately wet (as that term is defined in Section 1.2 of these regulations), stabilized, or covered during soil disturbing activities; and
- (ii) Wind speed monitoring during RACS disturbance, including frequency of monitoring, and shutdown and start up criteria; and,
- (iii) An air monitoring plan to verify that the measures to control the release of, and/or exposure to, asbestos outside of the RWA are effective. The plan may include a tiered air monitoring approach providing less frequent air monitoring given demonstrated effectiveness of work practices; and,
- (iv) Work practices specific to mechanical and/or hand disturbance of RACS including measures to prevent the release of visible emissions outside of the RWA; and,
- (v) Work practices for the loading and placement of RACS including spill prevention procedures.
- (vi) The owner /operator has the option to erect a structure maintained at a negative pressure differential sufficient to contain all dust, with off-gas from the evacuation system treated with HEPA filtration. If chosen, the requirement to submit an air monitoring plan, under 5.5.5(A)(2)(e)(iii) is not applicable.
- and,**
- (f) Description and location of any planned sampling. All sampling shall be performed in accordance with the procedures set forth in Appendix 5A. All investigation derived waste shall be managed in accordance with 5.5.8.

- (3) A copy of the PSRMP shall be maintained on the site during RACS disturbing activities.

**(B) STANDARD OPERATING PROCEDURES (SOPs)**

- (1) The owner/operator, or owner/operator representative, shall notify the Department's Hazardous Materials and Waste Management Division, by submitting a completed Notification of RACS Disturbance form, prior to implementation of the previously approved SOPs at a RWA. SOPs that conform to Section 5.5.5(B)(2) shall be approved by the Department prior to implementation. The Department will acknowledge receipt of a notification of the intent to utilize an SOP by mail or electronic correspondence.

(2) If the owner/operator chooses Section 5.5.5(B), the owner/operator shall develop and submit to the Department's Hazardous Materials and Waste Management Division, for review and approval, thirty (30) calendar days in advance of any RACS disturbing activities, SOPs that conform with Section 5.5.5(A)(2)(a) – (f) that will be implemented, upon notice to the Department per Section 5.5.5(B)(1), at future regulated work areas. A copy of the SOPs shall be maintained on site during RACS disturbing activities for the duration of the Project.

#### (C) MINIMUM REQUIREMENTS OF SECTION 5.5.7

The owner/operator, or owner/operator representative, shall submit to the Department's Hazardous Materials and Waste Management Division a completed Notification of RACS Disturbance form indicating the intent to utilize the minimum requirements of Section 5.5.7, as a default RACS management plan, prior to any planned soil disturbing activity. This notification shall include property location, general site description, and contact information for the owner/operator responsible for the regulated work area activities. The Department will acknowledge receipt of a notification of the intent to utilize the minimum requirements of Section 5.5.7 by mail or electronic correspondence.

#### **5.5.6 REMEDIATION OF ASBESTOS IN SOIL**

(A) Remediation is not required of properties at which asbestos-containing material, RACS, or asbestos waste is located. If the owner of a property chooses to remediate (rather than just manage) all or a portion of the property containing ACM, RACS, or asbestos waste and seeks a No Further Action or No Action Determination in accordance with the Voluntary Cleanup and Redevelopment Act (C.R.S. 25-16-301 et seq.), the Resource Conservation and Recovery Act Subtitle D (C.R.S. 30-20, Part 1) or the Resource Conservation and Recovery Act Subtitle C (C.R.S. 25-18-302 et seq.), as may be required by a final enforceable mechanism, a Remediation Plan shall be submitted to the Department's Hazardous Materials and Waste Management Division for review and approval prior to commencement of activities associated with the remediation. The Remediation Plan shall comply with this Section 5.5, and the governing regulatory authority and include the following:

- (1) The minimum requirements in accordance with Section 5.5.7, and the plan requirements outlined in 5.5.5(A). Alternatively, a risk based approach may be proposed, for Department review and approval, for disturbance of RACS; and
- (2) A detailed description of planned remediation activities, including proposed depth and areal extent of remediation, and work practices to be implemented; and
- (3) The proposed use of the property and area of remediation; and

- 749 (4) Any planned engineering or institutional controls to prevent exposure to any  
750 asbestos left in place within the area covered by the Remediation Plan, and  
751  
752 (5) A schedule for submittal of a Remediation Completion Report that incorporates  
753 the information from Section 5.5.7(L) and any additional information necessary to  
754 demonstrate that the remediation goals have been achieved.  
755  
756 (B) The Department shall use its best efforts to provide written notification that a  
757 Remediation Plan has been approved or disapproved within no more than forty-five  
758 (45) calendar days after a request by a property owner, unless the property owner  
759 and the Department agree to an extension of the review to a date certain.  
760  
761 (C) If a remedial decision is made by the Department, the area subject to the remedial  
762 decision is subject to C.R.S. Section 25-15-320(2), and an environmental covenant  
763 may be required for waste left in place.  
764  
765

#### 766 **5.5.7 MINIMUM REQUIREMENTS FOR THE DISTURBANCE OF RACS**

767

768 The requirements of this section, if followed in their entirety, constitute a default RACS  
769 management plan, eliminating the need to submit a PSRMP or SOP.  
770

##### 771 **(A) ESTABLISHMENT AND CONTROL OF A REGULATED WORK AREA (RWA)**

772

- 773 (1) Requirements for establishment and control of a RWA applicable to all projects  
774 subject to this Regulation:  
775  
776 (a) Establish a RWA which is identifiable to all persons. Haul roads between  
777 RWAs, where RACS is not present, are considered to be outside the RWA(s);  
778 however, equipment decontamination [5.5.7(I)] and spill response procedures  
779 [5.5.7(J)] shall be followed; and  
780  
781 (b) Stop all soil disturbing activities in the RWA if ancillary workers or members of  
782 the public are present within the RWA. Truck drivers who do not complete  
783 the training under 5.5.3(C) are ancillary workers. Soil disturbing activities  
784 must cease if the truck driver is present within the RWA unless the driver  
785 remains in the cab of the truck, the truck's windows remain closed, and the air  
786 handling system remains off while the truck is inside the RWA; and  
787  
788 (c) Post labeling and signage to demarcate RWA(s). The RWA shall be  
789 demarcated with a visual means that fully defines the extent of the RWA.  
790 Labeling and signage shall indicate the presence of asbestos, and that the  
791 area is off limits to unauthorized personnel.

- 792 (2) **Additional Requirement for Projects Disturbing RACS Containing Friable**  
793 **ACM.** Establish a secured work site (e.g., fencing/locks/zip-ties/chains).  
794 Personnel, or staff assigned to this duty, may be used to secure the RWA in lieu  
795 of fencing. If the RWA is located within a larger secure facility, fencing of the  
796 RWA is not necessary as long as the RWA is secured.  
797

798 (B) PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR THE PURPOSES OF  
799 PREVENTING CROSS-CONTAMINATION  
800

- 801 (1) Requirements applicable to all RWAs subject to this Regulation:  
802

- 803 (a) Use disposable booties or impermeable footwear that will be decontaminated  
804 per 5.5.7(I); and  
805  
806 (b) Use disposable gloves or impermeable gloves that will be decontaminated  
807 per 5.5.7(I); and  
808  
809 (c) Replace or decontaminate (per 5.5.7(I)) all PPE as necessary to prevent  
810 contamination from leaving the RWA via cross contamination. This  
811 requirement applies to all instances where the integrity of the PPE is  
812 compromised, and when workers exit the RWA; and  
813  
814 (d) Decontaminate (per 5.5.7(I)) or dispose of all used PPE as asbestos  
815 contaminated waste.  
816

- 817 (2) **Additional Requirement Applicable to Projects at RWAs Containing Friable**  
818 **ACM.** Use disposable impermeable suits or equivalent coveralls, remove suits or  
819 coveralls upon exiting the RWA, and dispose of used suits or coveralls as  
820 asbestos contaminated waste.  
821

822 (C) WETTING  
823

- 824 (1) Wetting requirements applicable to all RACS disturbance:  
825

- 826 (a) Adequately wet all RACS and soils, or other materials, containing RACS, on  
827 the surface and in the sub-surface (as defined in Section 1.2 of the Solid  
828 Waste Regulations) prior to and during RACS disturbance, except as  
829 provided in 5.5.7(F)(1)(b)(ii). Pre-wetting is not necessary if soils are already  
830 adequately wet. Apply water or amended water (as required in 5.5.7(C)(2)) at  
831 low pressure in order to prevent dust generation and splattering.  
832

(b) Continuously mist RACS and soils, or other materials, containing RACS during placement using equipment mounted spray bars, or additional hose operator(s).

(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 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 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 the following criteria:

i. Wind gust(s) in excess of 20 mph, or

ii. Sustained winds in excess of 12 mph, averaged over 10 minutes, or

- 876                   iii. Winds are interfering with the ability of engineering controls to work as  
877                   intended, or  
878  
879                   iv. Winds are creating visible emissions that leave the RWA.  
880  
881       (c) RACS disturbance may resume when all of the following criteria are met:  
882  
883                   i. No gust(s) in excess of 20 mph occur for 20 minutes, and  
884  
885                   ii. No sustained winds in excess of 12 mph occur for 20 minutes, based on a  
886                   10 minute average wind speed measurement, and  
887  
888                   iii. Winds are not interfering with the ability of engineering controls to function  
889                   as intended, and  
890  
891                   iv. Winds are not creating visible emissions that leave the RWA.  
892

893 (E) AIR MONITORING  
894

895       (1) Air monitoring is required for all projects involving Mechanical Disturbance in  
896       RWAs with an Adjacent Receptor Zone (to demonstrate effectiveness of work  
897       practices, not for risk evaluation):  
898

- 899       (a) No air monitoring is required for projects with durations of 2 days or less.  
900       However, the requirements for adequate wetting (5.5.7(C)) and no visible  
901       emissions leaving the RWA (5.5.7(F)) shall be adhered to on all RACS  
902       disturbance projects. Dividing projects into multiple 2 day or shorter  
903       components shall not be used as a mechanism to avoid air monitoring  
904       requirements.  
905  
906       (b) Area monitoring shall consist of a minimum of four samples collected on the  
907       perimeter of the RWA at appropriate intervals to provide representative  
908       information regarding potential releases of asbestos fibers to the adjacent  
909       receptor zone(s). Additional samples shall be collected for large perimeter  
910       RWAs (greater than 1 acre). RWAs greater than 1 acre shall require  
911       additional perimeter monitoring points be added at a rate of one sample for  
912       every 200 linear feet (or approximately each additional ¼ acre). If  
913       representative information about potential releases to the adjacent receptor  
914       zone(s) can be collected using less than the minimum number of samples,  
915       the remaining sample locations shall be at the discretion of the AMS.  
916  
917       (c) PCM analysis is required on all samples collected (unless all samples will be  
918       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, etc.) 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 prevent 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.

- 962 i. All samples, required by this Section 5.5, with PCM results having fiber  
963 concentrations greater than 0.01f/cc shall be submitted for TEM analysis.  
964
- 965 ii. During the first five (5) days of RACS disturbance – A minimum of 25% of  
966 the samples collected from each RWA, inclusive of the downwind floating  
967 samples as described in 5.5.7(E)(2), shall be submitted for TEM analysis.  
968 The sample(s) selected for TEM analysis shall have the highest PCM  
969 result(s) based on fiber concentration. If all PCM results are Below  
970 Detectable Limit (BDL) for fiber concentration, then the sample(s) selected  
971 for TEM analysis shall be determined by highest fiber count. If all samples  
972 have no fiber counts (i.e. zero fibers counted, not a “below detection limit”  
973 fiber concentration) then no TEM analysis is required.  
974
- 975 iii. After five (5) days of RACS disturbance with no asbestos detections by  
976 TEM analysis, the frequency of analysis by TEM, on the highest 25% of  
977 PCM results(s), may be reduced to once every five (5) working days, or  
978 portions thereof, using the same selection criteria as in paragraph i above.  
979 The samples submitted for TEM analysis during the period of reduced  
980 frequency TEM analysis shall be either the first occurrence of: 1) high  
981 winds exceeding wind shut down criteria, or 2) visible emissions. In the  
982 absence of high wind events or visible emissions the selected day for TEM  
983 analysis may be random, as determined by the AMS.  
984
- 985 iv. If there are any asbestos detections during the random once every five  
986 days analysis by TEM, then TEM analysis shall be conducted for the next  
987 three (3) consecutive work days, or portions thereof, using the same  
988 procedures as in paragraph i above. If there are no additional asbestos  
989 detections during the next three (3) consecutive working days with  
990 samples submitted for TEM analysis, then the frequency of TEM analysis  
991 may return to random once every five (5) working days. If site conditions,  
992 friability of the materials being managed, or work practices change, then  
993 the initial 5 days of TEM analysis shall restart using the provisions set  
994 forth in 5.5.7(E)(1)(e).  
995
- 996 (f) Detection responses - For each detection of asbestos by TEM analysis, the  
997 following shall be conducted:  
998
- 999 i. Notify the Department project manager by phone or email, on the same  
1000 calendar day as receipt of verbal or written results (whichever comes first)  
1001 from the laboratory.  
1002

- 1003 ii. Evaluate site conditions and engineering controls for each detection, and  
1004 immediately implement any identified engineering control revisions  
1005 necessary to prevent future detections of asbestos fibers.  
1006
- 1007 iii. Submit an Emission Control Plan (ECP) to the Department project  
1008 manager for each detection (days with multiple detections can be  
1009 addressed by a single ECP). The ECP shall be submitted within 48 hours  
1010 from the asbestos detection event and shall contain:  
1011
- 1012 1. The date of the detection.  
1013
- 1014 2. A written description of sample details (sample ID, number of  
1015 structures detected, type of asbestos detected, PCM analytical result)  
1016 and any potential cause of the release. Include a description of site  
1017 activity (engineering controls being employed, equipment being used,  
1018 size of excavation/soil disturbing activity, types of materials  
1019 encountered, etc.) and CABI observations at the work area before and  
1020 during the presumed time of release.  
1021
- 1022 3. Include a diagram or write up of all air sample positions clearly  
1023 indicating which sample received the TEM detection. Indicate, through  
1024 illustration or description, prevailing wind direction and average wind  
1025 speeds for the detection event; include any wind speed shutdowns for  
1026 the date of detection. If applicable, indicate through illustration or  
1027 description downwind floater air sample relocation times and new  
1028 positions.  
1029
- 1030 4. Attach laboratory reports confirming the type and amount of fibers  
1031 detected by TEM analysis.  
1032
- 1033 5. Include any other pertinent information that will additionally describe  
1034 the release and/or will assist in the prevention of future releases from  
1035 the RWA.  
1036
- 1037 6. Provide a written description of actions taken and any other proposed  
1038 actions to prevent future releases from the RWA.  
1039
- 1040 (g) If there are three (3) TEM detections on consecutive analysis events or ten  
1041 (10) detections for a single project, consultation with the Department is  
1042 required to determine if the minimum requirements of Section 5.5.7 are being  
1043 implemented appropriately and whether;  
1044

- i. Changes in the minimum requirements of Section 5.5.7 are likely to prevent future releases; or
- ii. Changes in the minimum 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 possible additional sources of asbestos fibers; or
- iv. Consultation with the Department is required to develop criteria for the evaluation of additional engineering controls for structures within the adjacent receptor zone.

(2) **Additional requirement for projects disturbing RACS containing friable ACM.** Collect two 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 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 to prevent visible emissions from leaving the RWA:

- 1088 i. Polyethylene sheeting or geotechnical fabric with daily inspection, and  
1089 inspection after storm events immediately or within 12 hours, and  
1090 repair/replace sheeting as necessary to maintain stabilization; or  
1091
- 1092 ii. Chemical stabilizer demonstrated to be effective in the stabilization of  
1093 RACS (e.g. magnesium chloride) with weekly inspection, and inspection  
1094 after storm events immediately or within 1 calendar day, and re-application  
1095 of chemical stabilizer as necessary to maintain stabilization; or  
1096
- 1097 iii. Minimum of 3 inches of soil appropriate for unrestricted use.  
1098
- 1099 (c) Stormwater shall be managed in accordance with the Water Quality Control  
1100 Commission's stormwater regulations (5 CCR 1002-61), which include  
1101 specific stormwater permitting and management requirements for  
1102 construction sites. The Water Quality Control Division should be contacted to  
1103 determine the specific requirements for each project. Stormwater shall be  
1104 managed in a manner that minimizes run on and runoff from RACS.  
1105 Stormwater that comes into contact with RACS shall be treated as asbestos  
1106 contaminated water in accordance with Section 5.5.7(J)(4), and other  
1107 material(s) impacted by asbestos contaminated stormwater shall be managed  
1108 as RACS in accordance with Section 5.5.7(J)(3).  
1109
- 1110 (2) Work Practice requirements applicable to the management of RACS using hand  
1111 methods:  
1112
- 1113 a. Wet and remove the RACS and 6 inches, in all directions, of surrounding  
1114 soil or other material from the last occurrence of visible ACM; and,  
1115
- 1116 b. A CABI shall confirm that the visual extent of ACM and surrounding soil, or  
1117 other material, has been removed (or extent of excavation has been  
1118 reached). If RACS remains, it shall be managed for stabilization or future  
1119 removal. If there is no documented evidence of non-visible RACS at the  
1120 site, then a visual clearance shall be sufficient to determine the removal of  
1121 RACS. If there is documented evidence of non-visible RACS at the site,  
1122 sampling is required to confirm the removal of RACS; and,  
1123
- 1124 c. For the purpose of disposal, containerize non-friable asbestos-containing  
1125 materials and associated soil and/or other matrix material using a single  
1126 layer of 6 mil leak tight packaging, or containerize friable asbestos-  
1127 containing materials and associated soil and/or other matrix material using  
1128 a double layer of 6 mil leak tight packaging. Rigid leak tight containers are  
1129 also acceptable as packaging for asbestos waste. Dispose of materials  
1130 properly in accordance with 5.5.2 or 5.5.3 as applicable.

- 1131 d. In-situ sub-surface hand removal of a single location RACS pocket shall  
1132 consist of:  
1133  
1134 i. Removal of the pocket of RACS and associated soil or other material,  
1135 plus removal of an additional 6 inches in the direction of planned  
1136 disturbance; and  
1137  
1138 ii. CABI confirmation that the visual extent of RACS and surrounding soil  
1139 and/or other matrix material has been removed. If RACS remains, it  
1140 shall be managed for stabilization or future removal. If there is no  
1141 documented evidence of non-visible RACS in the project area, then a  
1142 visual clearance shall be sufficient to determine the removal of RACS.  
1143 If there is documented evidence of non-visible RACS in the project  
1144 area, sampling is required to confirm the removal of RACS; and  
1145  
1146 iii. For the purpose of disposal, containerize non-friable asbestos-  
1147 containing materials and associated soil and/or other matrix material  
1148 using a single 6 mil leak tight bag, or containerize friable asbestos-  
1149 containing materials and associated soil and/or other matrix material  
1150 using a double 6 mil leak tight bag. Dispose of materials properly in  
1151 accordance with 5.5.8(A).  
1152
- 1153 (3) Work practice requirements applicable to management of RACS using  
1154 mechanical methods:  
1155
- 1156 a. For surface occurrence of RACS - Wet and remove all RACS and a minimum  
1157 of 6 inches of soil, and/or other matrix material, in all directions from the last  
1158 occurrence of visible ACM, with CABI confirmation that the visual extent of  
1159 RACS has been removed; and/or  
1160
- 1161 b. For subsurface occurrence of RACS - Wet and remove all RACS and a  
1162 minimum of three (3) linear feet of soil or other matrix material, in the  
1163 direction(s) of planned excavation, with CABI confirmation that the visual  
1164 extent of RACS has been removed; and  
1165
- 1166 c. If RACS remains in the RWA, it shall be managed for stabilization, per  
1167 5.5.7(K), or future removal.  
1168
- 1169 d. In lieu of stabilization or full removal, sampling may be performed per  
1170 Appendix 5A to demonstrate that the material is not RACS.  
1171
- 1172 e. Package and dispose of RACS in accordance with Section 5.5.8.  
1173

1174 (G)LOADING AND PLACEMENT OF RACS

1175  
1176 (1) Requirements for the loading of RACS:

- 1177  
1178 (a) Protect clean surfaces (including loading surface and truck or disposal  
1179 container surfaces that may come in contact with RACS) by covering or  
1180 decontamination of surfaces prior to transport or removal of the truck or  
1181 disposal container from the RWA and/or loading zone.  
1182  
1183 (b) Spill prevention shall consist of:  
1184  
1185 i. Minimization of spillage by not overfilling the excavator or loader bucket  
1186 and returning the bucket to a closed position prior to moving from the  
1187 loading point; and  
1188  
1189 ii. Replacement of protective coverings when worn or damaged to prevent  
1190 breaches; and  
1191  
1192 iii. Control of runoff to prevent cross contamination from water containing  
1193 asbestos; and  
1194  
1195 iv. Mitigation of spills of RACS in accordance with 5.5.7(J).  
1196  
1197 (c) During the process of loading the container, the equipment operator shall  
1198 lower the bucket as close as possible to the interior of the container before  
1199 dumping, and dump the load slowly to allow adequate misting and to prevent  
1200 emissions.  
1201

1202 (2) Requirements for the transportation of RACS:

- 1203  
1204 (a) Onsite transportation of RACS between the RWA and an onsite area of  
1205 disposal or reuse shall comply with the following:  
1206  
1207 i. The packaging requirements for RACS set forth in Section 5.5.8(A) of  
1208 these Regulations are not applicable; however, the decontamination  
1209 requirements of Section 5.5.7(I) shall be followed at the end of disposal  
1210 operations, or before disposal equipment is removed from the site; and  
1211  
1212 ii. Driving speeds shall not exceed 12 miles per hour or RACS shall be  
1213 covered during transport; and  
1214  
1215 iii. For transportation between the RWA and a non-contiguous onsite  
1216 disposal or stockpile area:

1. Transportation equipment tires shall kept off RACS; or
2. RACS that is driven upon shall be kept adequately wet to prevent visible emissions and all equipment surfaces that have come into contact with RACS shall be decontaminated per 5.5.7(l) before leaving the RWA; or
3. The haul road shall be managed as RACS for stabilization, per 5.5.7(F)(1), and future removal of a minimum of 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 5.5.7(l)(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 re-applied to RACS that will be removed.

#### (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 remain 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 3 inches of material, from below the staging pile/area prior to demobilization; with visual or measured confirmation of removal. If poly 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 re-applied to RACS that will be managed under this Regulation.

- (c) 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 foot of material in all directions, with CABI confirmation that the visual extent of RACS has been removed. If more than one piece of ACM, or a pocket of ACM is discovered, remove

the pocket of ACM plus one foot of material in all directions, with CABI confirmation that the visual extent of RACS has been removed. Material that remains after removal of RACS, and CABI visual 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 visual extent of contamination plus removal of one foot of material in all directions. Alternatively, the entire pile, plus 3 inches of material below the pile, shall be removed and managed as RACS. If the pile was placed on top 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 re-applied to RACS that will be removed.

(2) Stockpiling, as defined in Section 1.2 of these regulations, is the accumulation and storage of RACS that will exist for more than 12 hours, up to and including 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 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 re-applied to RACS that will be removed.
- (b) RACS shall be adequately wet during disturbance.
- (c) Stockpiled RACS shall be controlled per 5.5.7(A)
- (d) Stockpiled RACS shall be stabilized by:

- 1301 i. Polyethylene sheeting or geotechnical fabric with daily inspection, and  
1302 inspection after storm events, and repair/replace sheeting as necessary to  
1303 maintain stabilization; or  
1304  
1305 ii. Chemical stabilizer demonstrated to be effective in the stabilization of  
1306 RACS (e.g. magnesium chloride) with weekly inspection, and inspection  
1307 after storm events, and re-application of chemical stabilizer as necessary  
1308 to maintain stabilization; or  
1309  
1310 iii. Minimum of 3 inches of soil appropriate for unrestricted use.  
1311  
1312 (e) The maximum duration that RACS may be stockpiled shall not exceed 10  
1313 calendar days  
1314  
1315 (f) For stockpile areas that are non-contiguous with the RWA, transportation of  
1316 RACS shall be conducted in accordance with the following:  
1317  
1318 i. Transportation equipment tires shall kept off RACS; or  
1319  
1320 ii. The tires shall be decontaminated per 5.5.7(I) before leaving the RWA; or  
1321  
1322 iii. The haul road shall be managed as RACS for stabilization, per  
1323 5.5.7(H)(2)(d), and future removal of a minimum of 3 inches of soil, or  
1324 other matrix material. If the road is constructed of a durable surface such  
1325 as concrete or asphalt, the surface shall be decontaminated using wet  
1326 methods, followed by CABI inspection verifying that all soil and debris has  
1327 been removed from the surface. Rinsate/runoff shall be collected and  
1328 filtrated to less than 5 microns (or applicable local requirements) and  
1329 discharged to a sanitary sewer or re-applied to RACS that will be  
1330 removed.  
1331  
1332 (g) For a stockpile that was previously thought to be free of RACS, but where  
1333 RACS is subsequently identified, follow the procedure outlined in 5.5.7  
1334 (H)(1)(c).  
1335  
1336 (3) Storage of RACS exceeding ten calendar days shall require the submission of a  
1337 RACS Storage Plan. Storage of RACS shall not exceed 6 months or the duration  
1338 of the project, whichever is shorter. Storage of RACS shall not commence prior  
1339 to approval of the RACS Storage Plan by the Department's Hazardous Materials  
1340 and Waste Management Division. The RACS Storage Plan shall include:  
1341  
1342 (a) Approval of storage with signature from the property owner; and  
1343

- 1344 (b) Volume of RACS intended for storage; and  
1345  
1346 (c) Liner design or provisions for removal of a minimum of 3 inches of underlying  
1347 material; and  
1348  
1349 (d) Storm water design including protections for run-on and run-off; and  
1350  
1351 (e) Cover design or use of an equivalent durable stabilizer; and  
1352  
1353 (f) Access control and signage; and  
1354  
1355 (g) Storage timeframe (shall not exceed 6 months unless an extended storage  
1356 timeframe is approved by the Department); and  
1357  
1358 (h) Inspection and maintenance schedule; and  
1359  
1360 (i) Closure and removal requirements; and  
1361  
1362 (j) Documentation and reporting; and  
1363  
1364 (k) Certification by an independent, qualified, and registered Professional  
1365 Engineer.  
1366  
1367 (4) Temporary sub-surface storage of RACS in areas of future planned RACS  
1368 removal shall not exceed 6 months and shall comply with the following:  
1369  
1370 (a) RACS may only be placed within the Area of Contamination (AOC) that it  
1371 was originally removed from.  
1372  
1373 (b) Placement of RACS utilizing standard RACS management requirements in  
1374 accordance with the minimum requirements of Section 5.5.7, an approved  
1375 PSRMP, or an approved SOP.  
1376  
1377 (c) Cover RACS in accordance with the requirements of Section 5.5.7(K).  
1378  
1379 (d) RACS not removed within 6 months shall be considered disposal in  
1380 accordance with Section 5.5.8(A), or reuse within an area of contamination  
1381 and will require an environmental covenant in accordance with 5.5.8(B)(1).  
1382  
1383 (5) Offsite staging, stockpiling, and storage of RACS must comply with the  
1384 disposition requirements of Section 5.5.8.  
1385  
1386

(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 re-applied to RACS that will be removed;

**Note:** 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

- 1430 ii. Protect clean surfaces from coming in contact with RACS by covering  
1431 equipment surfaces or RACS surfaces with polyethylene sheeting or  
1432 equivalent durable impermeable covering. For onsite movement of  
1433 excavation equipment between RWAs, where only the excavator bucket  
1434 has come in contact with RACS, the bucket shall be wrapped in  
1435 polyethylene sheeting (minimum 6 mil) prior to movement. Protective  
1436 coverings shall be cleaned, repaired, or replaced as necessary. If  
1437 protective coverings are breached and RACS or asbestos contaminated  
1438 water comes into contact with underlying material, the provisions of  
1439 section 5.5.7(J) shall be followed. Coverings that have come in contact  
1440 with RACS shall be disposed as asbestos contaminated waste.

1441  
1442 (2) Additional Requirements for Projects Disturbing RACS Containing Friable ACM:  
1443

- 1444 (a) Remove disposable impermeable suits or equivalent coveralls before exiting  
1445 RWA and dispose as asbestos contaminated waste, or  
1446  
1447 (b) After removal of suits or coveralls, conduct full wet decontamination prior to  
1448 exiting RWA with collection of rinsate and filtration to less than 5 microns and  
1449 discharge to a sanitary sewer. Re-application of decontamination shower  
1450 water is prohibited.  
1451

1452 (J) RACS SPILL RESPONSE  
1453

- 1454 (1) Areas where RACS is spilled are RWAs until clean up is completed.  
1455  
1456 (2) Spilled material shall be cleaned up immediately and not allowed to dry out or  
1457 accumulate on any surface. The Department's Hazardous Materials and Waste  
1458 Management Division shall be notified, through the spill reporting hotline, in the  
1459 event that spills of RACS cannot be cleaned up within 24 hours of spill  
1460 identification.  
1461  
1462 (3) Where there are breaches in ground coverings that have the potential to allow  
1463 RACS or water contaminated with asbestos to impact the material below the  
1464 covering, a minimum of 3 inches of soil, or other matrix material, shall be  
1465 removed from beneath the breached ground coverings. Visual or measured (e.g.  
1466 survey) confirmation that 3 inches of soil and/or other matrix material from  
1467 beneath the breached covering has been removed shall be conducted. If ground  
1468 coverings are placed on top a durable surface such as concrete or asphalt, the  
1469 surface shall be decontaminated using wet methods, followed by CABI inspection  
1470 that all soil and debris has been removed from the surface.  
1471

(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 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 5.5.7(J)(3) or permanently stabilized as per 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 18 inches of fill suitable for unrestricted use, and vegetation; or

(b) Cover RACS with geofabric, followed by 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 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 it may be necessary for the CABI to provide items listed in the AMS notes section (e.g. wind monitoring and shutdown events). CABI and AMS notes may be taken by a scribe, but shall be reviewed and approved 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 encountered; and
- vi. Descriptions of suspect material encountered; and
- vii. Friability of ACM encountered (As determined by a CABI); and
- viii. Sampling, if conducted (All sampling shall be conducted by a CABI); and
- ix. Decontamination visual clearances; and
- x. Excavation visual clearances; and
- xi. Spill response activities; and
- xii. Observations of visible emissions and responses; and
- xiii. Observations 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 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 5.5.3(C) and 5.5.3(D)

- x. Records demonstrating the QPM(s) meet the training and experience requirements set forth in Section 5.5.3(E).

## **5.5.8 DISPOSITION OF REGULATED ASBESTOS CONTAMINATED SOIL**

### **(A) Disposal of RACS**

- (1) RACS containing one percent (1%), or one pound, or greater of friable ACM (as determined in the field by a CABI) by volume per load or container, based on visual estimation through continuous inspection or other Department-approved quantifiable means of measurement, shall be packaged in a leak tight container and disposed as friable asbestos waste, in accordance with Section 5.3 of these regulations. Alternatively, no friable ACM determination by a CABI is required if the disposal load is assumed to be RACS containing 1% or greater of friable ACM and is disposed of in accordance with Section 5.3 of these regulations. Documentation shall accompany each load of RACS removed from the site stating that soil originating from this site shall not be used as daily cover or reused offsite.

### **(2) For RACS containing**

- (a) Less than one percent (1%), and less than one pound, of friable ACM (as determined in the field by a CABI) by volume, per load or container, based on visual estimation through continuous inspection, or other Department-approved quantifiable means of measurement, shall be packaged in a leak tight container and disposed in a manner similar to non-friable asbestos waste, as described in Section 5.2 of these regulations. Documentation must accompany each load of RACS removed from the site stating that soil originating from this site shall not be used as daily cover or reused offsite.
- (b) Only visible non-friable ACM (as determined in the field by a CABI) that has not been rendered friable, or RACS that contains no visible ACM, shall be packaged in a leak tight container and disposed of as non-friable asbestos in accordance with Section 5.2 of this Part 5. Documentation shall accompany each load of RACS removed from the site stating that soil originating from this site shall not be used as daily cover or reused offsite.
- (c) A total volume of debris that is less than 1% of the disposal load, based on visual estimation through continuous inspection, and the debris is all assumed to be RACS, then a CABI is not required to make a friable ACM determination.

(3) A Design and Operations (D&O) plan shall be submitted to, and approved by, the Department for onsite disposal of RACS outside of the AOC, in accordance with the Colorado Solid Wastes Disposal Sites and Facilities Act (C.R.S. 30-20, Part 1) and these regulations. The packaging requirements set forth above in 5.5.8(A)(1-2) are not required for onsite disposal, but the requirements of Section 5.5.5(A)(2) (e) are applicable. An environmental covenant, in accordance with 25-15-320, C.R.S., is required for onsite RACS disposal, and a Certificate of Designation shall be required, in accordance with Section 1.6 of these regulations, unless exempt under Section 1.4.

(B) Onsite reuse of RACS:

(1) Reuse of RACS within the footprint of the AOC shall comply with 5.5.5(A)(2)(e), and the following cover requirements:

(a) Cover RACS with geofabric, followed by 18 inches of fill suitable for unrestricted use, and vegetation; or

(b) Cover RACS with geofabric, followed by 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 for vertical excavation faces or trenches; and

(d) The final grades shall promote surface water run-off and minimize erosion, and shall have slopes no less than 5% (20:1) and no greater than 25% (4:1); or

(e) Alternate cover designs as approved by the Department; and

(f) An environmental covenant, in accordance with 25-15-320, C.R.S., is required for onsite reuse of RACS.

(2) A plan for beneficial reuse of RACS outside the footprint of the AOC, in accordance with Section 8.6, shall be submitted to the Department for review and approval prior to its implementation. The plan shall include provisions for covering RACS to prevent direct exposure, and shall comply with the management requirements of Section 5.5.5(A)(2)(e). Additionally, the cover requirements outlined in Section 5.5.4(A)(3) shall be adhered to. An environmental covenant, in accordance with 25-15-320 C.R.S. is required for beneficial reuse of RACS.

(C) Soil or other matrix material initially determined to be RACS may be demonstrated not to be RACS based on visual inspection, removal of all ACM, and sampling and analysis of the remaining material showing no detectable asbestos. Sampling and analysis shall be conducted in accordance with Appendix 5A. If there is no detectable asbestos, this material is no longer 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.

(D) Soil or other matrix material that remains after removal of RACS in accordance with 5.5.7(F), 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.

#### **5.5.9 FEES.**

The Department shall collect fees, from the owner, operator, or person conducting the soil disturbing activity, based on total documented costs, in accordance with Section 1.7

**6) Appendix 5A (Sample Collection Protocols and Analytical Methodologies) is being added to Section 5 to read as follows:**

## **APPENDIX 5A SAMPLE COLLECTION PROTOCOLS AND ANALYTICAL METHODOLOGIES**

### **Purpose**

The purpose of this appendix is to establish standard sample collection requirements and analytical methods and procedures for use in identifying and quantifying asbestos fibers in air, bulk material, and environmental media such as soil or ash.

### **Sample Collection Requirements**

The following sample collection requirements shall be followed when collecting samples for the purpose of determining the applicability of Section 5.5, and when collecting samples necessary to comply with the requirements of Section 5.5. Remediation plans submitted in accordance with Section 5.5.6 shall include a site specific sampling and analysis plan that incorporates the sample collection methodologies and analytical procedures in this Appendix, or proposes alternatives, and includes site specific clearance criteria.

#### **Bulk Samples**

Bulk samples shall be collected, in a manner sufficient to determine whether the material is asbestos-containing material (ACM) or not ACM, from each type of suspect ACM. Bulk samples shall be collected by a State of Colorado certified Asbestos Building Inspector. In the absence of bulk sample collection, any suspect ACMs must be assumed to be ACMs.

Bulk samples shall be collected by homogenous type based on color, pattern, texture, thickness, associated materials, or by other identifying characteristics. Additionally, the quantity and location of a suspect material shall be used to determine the number of bulk samples required to characterize the asbestos content of each homogeneous suspect material. For the purpose of determining that a homogeneous suspect material does not contain asbestos, a minimum of three bulk samples shall be collected from the homogeneous material unless there is insufficient material to constitute three samples. If one of the collected samples of a homogeneous bulk material is determined to be ACM, then the homogeneous material shall be considered ACM.

1696 Soil Samples

1697 Samples collected to determine asbestos content in soil shall be 10 point aliquot  
1698 composite samples collected from a maximum area of 1,250 square feet (representing  
1699 0-6 inches beyond the exposed surface) or a maximum volume of 40 cubic yards.  
1700 Individual aliquots shall be approximately 1/10 of the entire sample volume. At each  
1701 aliquot location approximately one tablespoon of soil shall be collected. The total  
1702 volume of the 10 aliquots should equal roughly a half cup. The total collected sample  
1703 volume should be greater than one quarter cup, but should not exceed one cup. Aliquot  
1704 locations shall be randomly selected but shall be representative of the entire sample  
1705 area or volume (to be inclusive of the interior of soil piles in addition to the surface).  
1706 However, aliquots shall be co-located with any areas where friable ACM was formerly  
1707 present. All samples collected to determine asbestos content shall be collected by a  
1708 State of Colorado Certified Asbestos Building Inspector.

1709  
1710 Sampling for clearance purposes of any exposed horizontal or vertical surface shall  
1711 have the following additional requirements:

- 1712 A) The aliquots of a clearance sample shall not be collected until after the RACS,  
1713 and the required amount of associated material, has been removed.
- 1714 B) A visual inspection shall be performed and passed (i.e., no visible ACM present)  
1715 by a State of Colorado certified Asbestos Building Inspector prior to the collection  
1716 of soil samples. Visual inspections shall include the following:
- 1717 a. The area to be cleared shall be designated before the visual inspection;  
1718 and,
  - 1719 b. Former locations of friable materials shall be designated; and,
  - 1720 c. The surface being inspected shall be dry enough to allow identification of  
1721 suspect ACM; and,
  - 1722 d. The visual inspection shall be conducted in adequate lighting; and,
  - 1723 e. The area to be cleared shall be free of visual impediments (e.g. snow  
1724 cover, plastic sheeting, standing water, etc.); and,
  - 1725 f. At a minimum the area to be cleared shall be inspected in at least two  
1726 perpendicular directions; and,
  - 1727 g. Single or multiple inspectors may be used to perform a visual clearance.  
1728 However, a single inspector shall visually inspect no more than a five foot  
1729 width with each pass [i.e. for a clearance area that is 25' x 50' a single  
1730 inspector would be required to make at least 5 passes in one direction (25'  
1731 length) and at least 10 passes in the other direction (50' length)]; and,
  - 1732 h. Detailed close examination of the area being cleared is required. The  
1733 inspector(s) should use limited invasive inspection techniques, such as

periodically sifting the surface being cleared and closely inspecting the disturbed area.

- C) If sidewalls with 6" or greater of vertical height are present, independent 10 point aliquot composite samples shall be collected from each of the sidewalls and the floor of the excavation.

#### Ash Samples

Ash that contains, and/or is comingled with, suspect asbestos containing material and/or construction and demolition debris shall be considered to be RACS unless the ash is sampled, and analysis demonstrates that the ash is not RACS. Representative samples of each type of ash materials shall be sampled and analyzed in the same manner as soil (including area/volumetric limitations of sampling). Ash samples shall be collected by homogenous strata, location, content of other surrounding material, or other observations indicating heterogeneity of the ash present. All samples collected to determine asbestos content shall be collected by a State of Colorado Certified Asbestos Building Inspector. In the absence of suspect asbestos containing materials or construction and demolition debris, and in the absence of documented evidence of non-visible asbestos, ash material may be treated as non-RACS.

#### Cross Contamination Prevention

All sample collection equipment shall be decontaminated in a manner sufficient to prevent cross contamination between individual samples or individual composite samples. Decontamination is not required between the collection of aliquots comprising a single composite sample.

#### Air Samples

Air samples shall be collected by drawing air through 0.8-micron ( $\mu\text{m}$ ), 25-millimeter (mm), mixed cellulose ester (MCE) filters, using an open-faced cowl extension oriented face down at an angle of 45°. Sample flow rate shall be between 0.5-10 liters per minute depending on the anticipated duration of sampling and the specified detection sensitivity. If the minimum air volume required by the method being utilized cannot be met, the AMS shall request that the laboratory prepare the sample using an indirect preparation method, for TEM presence/absence analysis. Air samples shall be collected at a height that is representative of the disturbance activity taking place. However, air samples shall be located at a height between 3' above the ground surface but not to exceed 20 feet above the ground surface. Air samples shall be collected by a State of Colorado trained and certified Air Monitoring Specialist.

1771 Documentation

1772 All of the following sampling and analytical documentation shall be maintained during a  
1773 project and available for Department review upon request. This documentation need  
1774 not be submitted to CDPHE unless requested or as required in a project specific plan.

1775 1) Bulk, soil, and ash samples:

- 1776 a. Description of the material being sampled including friability
  - 1777 i. For samples collected for characterization purposes also include
  - 1778 an estimate of the quantity of visible suspected RACS present
  - 1779 ii. For samples of ash, also include a brief description of the ash
  - 1780 layer, and any associated identifiable debris
- 1781 b. Name of person collecting the sample(s)
- 1782 c. Date and time of sample collection
- 1783 d. Location of sample collection (A map, drawing, or diagram showing
- 1784 sample locations in relation to the work area and surrounding area)
- 1785 e. The boundary/limits that are represented by the collected sample
- 1786 f. Chain of custody documentation
- 1787 g. Laboratory analysis reports
- 1788 h. Log of characterized homogeneous bulk materials including material
- 1789 descriptions, photographic documentation, and asbestos content

1790 2) Air samples:

- 1791 a. Name of person collecting the sample(s)
- 1792 b. Date and time(s) of sample collection
- 1793 c. Locations of air sample collection
- 1794 d. Any relocations of air samples
- 1795 e. A map, drawing, or diagram showing air sample locations (initial and
- 1796 relocations) in relation to the work area and the surrounding area
- 1797 f. Chain of custody documentation
- 1798 g. Laboratory analysis reports
- 1799 h. Explanation of any air sample malfunctions and any voided air samples
- 1800 i. Air sample data (flow rates, time of sampling, volumes, calibration
- 1801 method, etc.)
- 1802 j. Wind speed measurements
- 1803 k. Prevailing wind directions
- 1804 l. Wind shut down events
- 1805 m. Observations of visible emissions and responses

## **Analytical Requirements**

The following analytical methods shall be used to evaluate the presence of asbestos and/or to determine asbestos content when analyzing samples for the purpose of determining the applicability of Section 5.5, and when analyzing samples collected in accordance with Section 5.5:

### **Bulk Samples**

Samples of suspect asbestos-containing material shall be analyzed by polarized light microscopy (PLM), according to United States Environmental Protection Agency (USEPA) Method EPA/600/R-93/116 or equivalent method, to determine if any asbestos fibers are present. If the asbestos content of a sample is estimated to be 1% asbestos or less, but greater than 0%, by a method other than point counting (such as visual estimation), the determination shall be repeated using the point counting technique with PLM. Alternatively, the material may be assumed to be ACM. Analysis shall be conducted by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.

### **Soil Samples and Ash Samples**

Prior to preparation of a soil or ash sample, bulk materials shall be separated from the soil or ash sample for independent analysis. Any bulk materials identified in a soil or ash sample that contain any amount of asbestos shall be reported as independent layers of the whole sample. The samples shall be adequately prepared (crushed and dried) to facilitate stereomicroscopic analysis by the laboratory. The goal of the preparation process should be to produce dried conglomerates of approximately one eighth inch (1/8") to one quarter inch (1/4") size. Rock and/or stone material does not need to be crushed (this process is not intended to be homogenization). Soil and ash samples shall be analyzed by PLM according to USEPA Method EPA/600/R-93/116 to determine if any asbestos fibers are present. Analysis shall be conducted by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory. During the stereomicroscopic analysis (10X – 50X) of the soil/ash sample the analyst shall sift through the sample at a rate of approximately one tablespoon per minute. At the end of the stereomicroscopic analysis the sample shall be agitated or shaken as a final check for asbestos prior to the preparation of PLM grab mounts. At no time during the stereomicroscopic analysis shall a sub sample be collected. The entire sample shall be analyzed and the results reported. If no asbestos was identified by PLM after the initial stereomicroscopic examination, then three random grab mount preparations shall be analyzed by PLM to determine if the sample is none detected for asbestos content. If

any asbestos is found by the laboratory it shall be reported even in the absence of a second detection (i.e. there does not need to be a second detection to qualify a trace level of asbestos in the sample). Quantification of asbestos content shall be based on the entire sample volume, and be reported as such.

#### Air Sample Collection

Air samples submitted for Phase Contrast Microscopy (PCM) shall be analyzed according to NIOSH Method 7400 by a laboratory showing successful participation in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program or individual(s) certified through the AIHA Asbestos Analysts Registry (AAR) Program.

Air samples submitted for Transmission Electron Microscopy (TEM), for which quantification of asbestos is desired, shall be prepared and analyzed according to the standard Asbestos Hazard Emergency Response Act (AHERA) method (AHERA; 40 CFR Part 763, Subpart E, Appendix A). All TEM analysis shall be performed by a NVLAP accredited laboratory. If a presence/absence analysis is desired, the analysis shall be performed using the AHERA method modified in the following manner:

- A minimum of two preparations shall be prepared and utilized for each sample
- Analysis shall be conducted on a minimum of four grid openings or until three or more structures are identified, whichever comes first
- Any structure (adhering to the AHERA counting rules) identified during analysis shall be reported
  - Identification of less than three structures shall be reported as present
  - Identification of three or greater structures shall be reported as detected

Any air sample analysis that results in a “cannot be read (CBR)” determination from the analyst, or a “not analyzed (NA) or rejected” due to loose debris or uneven loading, shall be evaluated by the AMS to determine if a cause of the CBR or NA can be ascertained. If it is determined that the CBR is a result of overloading from airborne emissions, then the AMS shall request that the laboratory prepare the sample, using an indirect preparation method, for TEM presence/absence analysis.

Deviation from this sampling and analysis appendix shall only be allowed upon consultation with, review by, and approval from, the Department.