

# STATE OF COLORADO

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## SOLID AND HAZARDOUS WASTE COMMISSION

Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department  
of Public Health  
and Environment

### NOTICE OF CONTINUATION OF PROPOSED RULE-MAKING HEARING BEFORE THE COLORADO SOLID AND HAZARDOUS WASTE COMMISSION

#### **SUBJECT:**

Continuation of the consideration of proposed amendments to the Solid Waste Regulations, 6 CCR 1007-2, Part 1. The following regulations (**as submitted by the Hazardous Materials and Waste Management Division on May 15, 2014**) will be considered for adoption:

**Revision to Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1) –Deletion and Replacement of Existing Section 5.5 Regulations (Management of Asbestos-Contaminated Soil) with New Section 5.5 Regulations (Management of Regulated Asbestos Contaminated Soil (RACS)); the Addition of Appendix 5A (Sample Collection Protocols and Analytical Methodologies) and the Associated Additions and Revisions to Section 1.2 Definitions**

This modification is made pursuant to the authority granted to the Solid and Hazardous Waste Commission in Sections 25-15-302 and 30-20-109 C.R.S. The purpose of this revision to Section 5.5 and the associated definitions are aimed at improving the management of asbestos contaminated soils (ACS), while maintaining protectiveness of human health and the environment.

The State Board of Health<sup>1</sup> promulgated a revision to Section 5 of the Solid Waste Regulations in 2006 in order to address asbestos contamination in the soil. The Air Quality Control Commission has promulgated Regulation No. 8, The Control of Hazardous Air Pollutants, Part B, The Control of Asbestos (Regulation No. 8), in order to protect public health and the environment during asbestos abatement and control projects dealing with facility components. Regulation No. 8 deals with Asbestos Containing Material (ACM) which is defined as containing greater than 1% asbestos. Revisions to Section 5 of the Solid Waste Regulations address sites contaminated with asbestos in soils and where the asbestos contamination is not related to the presence of a facility component, and thus not specifically regulated under Regulation No. 8. Any remaining ACM and/or soil impacted by asbestos are a solid

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<sup>1</sup> The Board of Health previously had authority to promulgate rules for solid waste disposal sites and facilities. This authority was transferred to the Solid and Hazardous Waste Commission in July of 2006.

waste under the Solid Waste Regulations. The purpose of the current Section 5.5 revision is to update the ACS regulations based on the Hazardous Material and Waste Management Division's and stakeholders' experience gained from implementing the regulation since its promulgation in 2006. These regulatory changes apply practical and implementable engineering controls to effectively control the release of asbestos fibers and improve the management of ACS while maintaining protectiveness of human health and the environment.

These regulation changes will create and update definitions, retain the standard operating procedures (SOPs) and pre-approved work plan options, and establish new minimum requirements (Section 5.5.7) that can be implemented in lieu of a work plan or SOP, thus eliminating the need for plan submittal.

**HEARING SCHEDULE:**

DATE: July 15, 2014  
TIME: 9:30 AM  
PLACE: Colorado Department of Public Health & Environment  
4300 Cherry Creek Drive South, Sabin Conference Room  
Denver, Colorado 80246

**PLEASE NOTE: The Commission heard testimony by accepted parties and members of the public during the December 12, 2013 and February 18, 2014 hearings. All parties and members of the public who have submitted written comments, alternative proposals, and oral testimony for either the December 12, 2013 or February 18, 2014 hearings are automatically included in the administrative record.**

**PUBLIC COMMENT:**

The parties to this rulemaking and members of the public may submit written comments to the Commission on or before June 17, 2014 at 5:00 p.m. Written comments should be sent electronically to Brandy Valdez Murphy, Commission Assistant at [brandy.valdezmurphy@state.co.us](mailto:brandy.valdezmurphy@state.co.us). Any person or party intending to present oral testimony during the hearing must include a request for time within their written comments. The Commission will prepare a briefing schedule prior to the July 15, 2014 hearing. Additional public testimony may be taken during the hearing as necessary and at the discretion of the Commission. Public testimony may be limited at the discretion of the Commission.

Pursuant to C.R.S. §24-4-103(3), a notice of proposed rule-making was originally submitted to the Secretary of State on August 15, 2013 and updated on October 15, 2013. A notice of continuation was submitted to the Secretary of State on December 23, 2013. The Commission moved to continue the hearing to July 15, 2014 during the February 18, 2014 hearing. Copies of the newly proposed rulemaking will be electronically mailed to all persons on the Solid and Hazardous Waste Commission's mailing list on or before the date of publication of the notice of continuation of proposed rule-making in the Colorado Register on May 25, 2014. The proposed rulemaking materials may also be accessed at <http://www.colorado.gov/cs/Satellite/CDPHE-Main/CBON/1251611209861> or the Solid and Hazardous Waste Commission Office, Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, 5<sup>th</sup> Floor, Building A, Denver, CO 80246-1530. Any information that is incorporated by reference in these proposed rules is available for review at the Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division and any state publications depository library.

*Michael Silverstein*

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Michael Silverstein, Commission Administrator

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**

6  
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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**

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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 Regulated  
24                   Asbestos Contaminated Soil (RACS) disturbance. For the purpose of this definition,  
25                   highways, streets, and roads without sidewalks, where only vehicles are permitted, are  
26                   considered to be areas of controlled access and therefore not adjacent receptor zones.  
27                   For the purpose of this definition "vehicle" means a device that is capable of moving  
28                   itself, or of being moved, from place to place upon wheels, including bicycles and  
29                   electrical assisted bicycles. For the purpose of this definition, an area for which access  
30                   is not ordinarily controlled that is closed to the public during soil disturbing activities in  
31                   the adjacent RWA is considered to be an area of controlled access and therefore not an  
32                   adjacent receptor zone.

33  
34                   \*\*\*\*\*

35  
36                   **“Air Monitoring Specialist” (“AMS”)** means a person trained and certified, in  
37                   accordance with the requirements of Air Quality Control Commission Regulation No. 8  
38                   (5 CCR 1001-10, Part B), for the collection of air samples to determine airborne  
39                   particulate and/or asbestos concentrations.

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41                   \*\*\*\*\*

43 **“Ancillary Worker”** means a worker that has not completed the training under Section  
44 5.5.3(A) and (B) of these regulations.

45 \*\*\*\*\*

46  
47 **“Area of Contamination” (“AOC”)** means a discrete, discernible area of known  
48 RACS.

49 \*\*\*\*\*

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51  
52 **“Certified Asbestos Building Inspector” (“CABI”)** means a person trained and  
53 certified in accordance with Air Quality Control Commission Regulation No. 8 (5 CCR  
54 1001-10, Part B), for the identification of asbestos-containing materials and the  
55 collection of samples to determine asbestos content, including qualified Department  
56 personnel.

57 \*\*\*\*\*

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59  
60 **“Debris”** means any discarded material that contains or consists of any of the  
61 following: construction, renovation and demolition debris (regardless of how it was  
62 generated), building or facility components, components of building systems (HVAC,  
63 plumbing, electrical, control, fire protection, roofing), components of pavement or  
64 drainage systems, industrial or machinery components, and/or mechanical components  
65 from motorized vehicles.

66 \*\*\*\*\*

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68  
69 **“Friable asbestos-containing material” (“Friable ACM”)** means any material that  
70 contains asbestos and when dry can be crumbled, pulverized, or reduced to powder by  
71 hand pressure and that contains more than one percent asbestos by weight, area, or  
72 volume. The term includes non-friable forms of asbestos after such previously non-  
73 friable material becomes damaged to the extent that when dry it can be crumbled,  
74 pulverized, or reduced to powder by hand pressure as determined in the field by a  
75 CABI.

76 \*\*\*\*\*

77  
78  
79 **“Geofabric”** for the purposes of Section 5.5 means a permeable fabric or synthetic  
80 material placed between RACS and other material that is not RACS to delineate, isolate  
81 and separate RACS (both visual and physical separation) from other material.

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85 **“Low Emissions Methods”** means soil disturbing activities that will not result in visible  
86 emissions without the use of wet methods.

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

- 1) Intact non-damaged, non-friable asbestos-containing materials (ACM); or,
- 2) Damaged non-friable ACM(s) that do not have a high probability to release fibers based on the forces expected to act upon the material during disturbance as determined in the field by a CABI(s) through a “RACS Determination”. The following ACM(s) are predetermined to be Non-RACS:
  - a. Resin based materials including but not limited to phenolic-plastic (Bakelite), used in electrical and mechanical parts
  - b. Resilient flooring (vinyl, asphalt, rubber) excluding non-tar impregnated friable felt backing on sheet vinyl flooring (linoleum)
  - c. Tar impregnated or asphaltic materials in good condition that have not 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 ACM(s) as approved by the Department at the request of the owner or person disturbing debris, to not have a high probability to release fibers.

\*\*\*\*\*

**"Project"** means any soil disturbing activity that involves Regulated Asbestos Contaminated Soil (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

131 project may include one or more Regulated Work Areas (RWAs), and start dates and  
132 stabilization dates for individual RWAs within a project may be different.

133  
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135  
136 **“Project Specific RACS Management Plan” (“PSRMP”)** means a Regulated  
137 Asbestos Contaminated Soil (RACS) management plan for a single project submitted in  
138 accordance with Section 5.5.5(A).

139  
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141  
142 **“Qualified Project Monitor” (“QPM”)** means an individual who has the training and/or  
143 experience necessary to identify materials suspected of containing asbestos and who  
144 has the authority to make prompt decisions relating to the management of such  
145 materials, and who meets the training requirements in Section 5.5.3.

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147 \*\*\*\*\*

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

- 150
- 151 1) Friable asbestos-containing materials (ACM) as determined in the field by a  
152 Certified Asbestos Building Inspector (CABI) through a RACS determination;
  - 153
  - 154 2) Previously non-friable ACM(s) that have been rendered friable as determined in  
155 the field by a CABI(s) through a RACS determination;
  - 156
  - 157 4) Non-friable ACM(s) that have a high probability of releasing fibers based on the  
158 forces expected to act upon the material during soil disturbance as determined in  
159 the field by a CABI(s) through a RACS determination;
  - 160
  - 161 5) Deteriorated non-friable ACM(s) that are in poor condition resulting in a high  
162 probability to release fibers due to weathering, historical mechanical impact, fire  
163 damage (by evidence of ACM within an ash layer) or other factors as determined  
164 in the field by a CABI(s) through a RACS determination;
  - 165
  - 166 6) The following broken, resized, or damaged ACM(s) are RACS:  
167
    - 168 a. Asbestos cement materials
    - 169 b. Plaster
    - 170 c. Brittle caulking, glazing and sealants
    - 171 d. Powdery Concrete Masonry Unit (CMU) sealant
    - 172 e. Powdery floor leveling compound
    - 173 f. Drywall/wallboard and associated joint compound material
    - 174 g. Firebrick

175 h. Other material as determined by the Department, at the request of the  
176 owner or person disturbing debris, to have a high probability to release  
177 fibers.

178  
179 7) Soil or ash known to contain non-visible asbestos based on documented  
180 evidence.

181  
182 \*\*\*\*\*

183  
184 **“RACS Determination”** for the purpose of Section 5.5 means a determination,  
185 conducted in the field by a Certified Asbestos Building Inspector (CABI), of the friability  
186 of Asbestos Containing Material (ACM) and the probability of non-friable ACM to  
187 release fibers based on the condition of the material and the forces that are expected to  
188 act on it during disturbance. Determinations of friability shall be based on the  
189 requirements for such determinations set forth in Air Quality Control Commission  
190 Regulation No. 8 (5 CCR 1001-10, Part B). Determinations of the probability for non-  
191 friable ACM to release fibers during disturbance shall be based on the following:

- 192  
193 1) The condition of the material prior to disturbance, based on observations of  
194 weathering, the integrity of the material, historical mechanical impact, or fire  
195 damage;  
196  
197 2) The potential for the material to be broken, resized or damaged during planned  
198 disturbance;  
199  
200 3) The material shall be considered RACS if the planned disturbance includes any  
201 of the following:  
202  
203 a. Augers  
204 b. Rotary style trenchers  
205 c. Driving on ACM lying on the surface (vehicles or equipment)  
206 d. Blasting or other detonation  
207 e. Intentional burning  
208 f. Other types of direct mechanical impact which are:  
209  
210 i. In direct contact with ACM or result in observation of ACM after  
211 disturbance, and  
212 ii. Causing damage to the ACM

213  
214 **“Regulated work area” (“RWA”)** as used in Section 5.5 of these regulations means  
215 the portion(s) of a site at which soil disturbing activities involving RACS occur.

216  
217 \*\*\*\*\*

218

219 **“Risk-Based Air Threshold”** for the purpose of Section 5.5 means one of the following  
220 thresholds based on project duration and receptor population, or as approved by the  
221 Department, as determined based on the sampling, analytical, and data evaluation  
222 procedures provided in Appendix 5A:

- 223
- 224 a. an average of 0.003 fibers per cubic centimeter (f/cc) for projects with durations  
225 of thirty (30) working days or less with child receptors;
- 226
- 227 b. an average of 0.0003 f/cc for projects with durations between thirty (30) working  
228 days and one calendar year with child receptors;
- 229
- 230 c. an average of 0.006 f/cc for projects with durations of thirty (30) working days or  
231 less with only adult receptors, including commercial workers and non-OSHA  
232 workers;
- 233
- 234 d. an average of 0.0006 f/cc for projects with durations between thirty (30) working  
235 days and one calendar year with only adult receptors excluding commercial  
236 workers and non-OSHA workers;
- 237
- 238 e. an average of 0.0009 f/cc for projects with durations of between thirty (30)  
239 working days and one calendar year with only commercial worker receptors;
- 240
- 241 f. an average of 0.001 f/cc for projects with durations between 30 days and one  
242 year with only non-OSHA worker receptors;
- 243
- 244 g. if the total duration of the project exceeds, or is anticipated to exceed, one year,  
245 the owner/operator shall contact the Department for a project specific risk-based  
246 threshold.

247  
248 \*\*\*\*\*

249  
250 **“Staging”** for the purposes of Section 5.5, means the accumulation of RACS in the  
251 RWA for twelve (12) hours or less.

252  
253 \*\*\*\*\*

254  
255 **“Standard Operating Procedure” (“SOP”)** means a RACS management plan for  
256 multiple projects submitted in accordance with Section 5.5.5(B).

257  
258 \*\*\*\*\*

259  
260 **“Stockpiling”** for the purposes of Section 5.5, means the accumulation of RACS that  
261 will exist for more than twelve (12) hours, up to and including ten (10) calendar days.

262  
263 \*\*\*\*\*

264  
265 **“Storage”** for the purposes of Section 5.5, means the accumulation of RACS greater  
266 than ten (10) days, but not exceeding six (6) months unless a longer timeframe is  
267 approved by the Department and complies with local governing authority requirements.

268 \*\*\*\*\*

269  
270  
271 **“Visible”** means capable of being seen with the unaided eye.

272  
273 **“Visual Inspection”** for the purposes of Section 5.5 means observation with sufficient  
274 proximity to identify discrete visible materials, while maintaining the safety of the  
275 inspector.

276 \*\*\*\*\*

277  
278  
279 **2) Section 1.2 is being amended by revising the following definitions to read as**  
280 **follows:**

281  
282 **1.2 Definitions**

283 \*\*\*\*\*

284  
285 **“Adequately wet”** means sufficiently ~~mix or penetrate with liquid to completely prevent~~  
286 ~~the release of particulate material and fibers into the ambient air. If visible emissions~~  
287 ~~are observed coming from asbestos-contaminated soil or asbestos-containing material,~~  
288 ~~then the material has not been adequately wetted. However, the absence of visible~~  
289 ~~emissions is not sufficient evidence of being adequately wet.~~ WET TO MINIMIZE VISIBLE  
290 EMISSIONS OF DUST AND/OR DEBRIS WITHIN THE REGULATED WORK AREA (RWA) AND EITHER:

- 291  
292 **a. PREVENT THE RELEASE OF VISIBLE EMISSIONS FROM LEAVING THE RWA, TO MINIMIZE**  
293 **THE RELEASE OF ASBESTOS FIBERS IN ACCORDANCE WITH SECTION 5.5 OF THESE**  
294 **REGULATIONS; OR**  
295  
296 **b. DEMONSTRATE THAT ASBESTOS FIBERS ARE NOT LEAVING THE RWA ABOVE RISK-**  
297 **BASED AIR THRESHOLDS.**

298  
299 **THE OBSERVANCE OF VISIBLE EMISSIONS, OUTSIDE OF THE RWA, OF DUST AND/OR DEBRIS**  
300 **MAY BE AN INDICATION THAT SOILS ARE NOT ADEQUATELY WET.**

301 \*\*\*\*\*

302  
303  
304 **“Asbestos”** means the asbestiform varieties of serpentinite (chrysotile), riebeckite  
305 (crocidolite), amosite (cummingtonite-grunerite), anthophyllite, ~~and~~ actinolite **AND**  
306 tremolite.

307

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

310  
311 \*\*\*\*\*

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

314  
315 \*\*\*\*\*

316  
317 **“Mechanical”** means operated or produced by mechanism, tool or machine. ~~This may~~  
318 ~~include, but shall not be limited to, an excavator, backhoe, grader, tiller, auger, or hand~~  
319 ~~shovel.~~

320  
321 \*\*\*\*\*

322  
323 **“Soil-disturbing activities”** means ~~excavation, grading, tilling, or any other mechanical~~  
324 ~~activity used to disturb the soil.~~ DIGGING, EXCAVATING, STAGING, LOADING, STOCKPILING,  
325 BACKFILLING, COMPACTING, GRADING, TILLING, DRILLING, INTRUSIVE SAMPLING, AND  
326 EQUIPMENT OR VEHICLE MOVEMENT OR ANY OTHER MECHANICAL ACTIVITY, THAT WHEN USED,  
327 DISTURBS THE SURFACE AND/OR SUBSURFACE SOIL. FOR THE PURPOSES OF SECTION 5.5  
328 DISTURBANCE OR REMOVAL OF DEBRIS AND/OR RACS IS CONSIDERED A SOIL DISTURBING  
329 ACTIVITY. FOR THE PURPOSES OF SECTION 5.5 HAND DISTURBANCE OR REMOVAL OF RACS IS  
330 SUBJECT TO THIS REGULATION, BUT IS NOT CONSIDERED TO BE A MECHANICAL DISTURBANCE.

331  
332 \*\*\*\*\*

333  
334 **“Visible emissions”** means ~~any emissions which are visually detectable without the~~  
335 ~~aid of instruments, coming from material containing asbestos, asbestos waste,~~  
336 ~~asbestos contaminated soil, or from handling and disposal of asbestos waste, material~~  
337 ~~containing asbestos or asbestos contaminated soil.~~ ANY AIRBORNE OR LIQUID EMISSIONS,  
338 COMING FROM, OR HAVING COME INTO CONTACT WITH RACS, WHICH ARE VISUALLY  
339 DETECTABLE WITHOUT THE AID OF INSTRUMENTS. PROPER DISPOSAL OF APPROPRIATELY  
340 FILTERED DECONTAMINATION WATER DOES NOT CONSTITUTE A VISIBLE EMISSION.

341  
342 \*\*\*\*\*

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

345  
346 **1.2 Definitions**

347  
348 \*\*\*\*\*

349  
350 ~~“Asbestos-contaminated soil” means soil containing any amount of asbestos.~~

351  
352  
353 **4) A Table of Contents for Section 5 (Asbestos Waste Management) is being**  
354 **added to the regulations to read as follows:**

355  
356 **SECTION 5**

357  
358 **ASBESTOS WASTE MANAGEMENT**

- 359  
360 5.1 General Provisions  
361  
362 5.2 Non-Friable Asbestos Waste Disposal Areas  
363  
364 5.3 Friable Asbestos Waste Disposal Areas  
365  
366 5.4 Storage of Asbestos Waste  
367  
368 5.5 Management of Regulated Asbestos-Contaminated Soil (RACS)  
369  
370 5.5.1 Scope and Applicability  
371 5.5.2 Exemptions  
372 5.5.3 Training  
373 5.5.4 Response to Unplanned RACS Discovery  
374 (A) Immediate Actions  
375 (B) 24-Hour Notification Requirements  
376 (C) Interim Actions  
377 5.5.5 Response to Planned RACS Management  
378 (A) Project Specific RACS Management Plan (PSRMP)  
379 (B) Standard Operating Procedures (SOPs)  
380 (C) Standard Requirements of Section 5.5.7  
381 (D) Risk Based Approach  
382 5.5.6 Remediation of Asbestos in Soil  
383 5.5.7 Standard Requirements for the Disturbance of RACS  
384 (A) Establishment and Control of a Regulated Work Area (RWA)  
385 (B) Personal Protective Equipment (PPE) for the Purposes of  
386 Preventing Cross-Contamination  
387 (C) Wetting

- 388 (D) Wind Speed Monitoring
- 389 (E) Air Monitoring
- 390 (F) Work Practices to be Followed During RACS Disturbance
- 391 (G) Loading and Placement of RACS
- 392 (H) Onsite Staging, Stockpiling, and Storage of RACS
- 393 (I) Decontamination
- 394 (J) RACS Spill Response
- 395 (K) Requirements for Exposed RACS Remaining in Place
- 396 (L) Documentation
- 397 5.5.8 Packaging and Disposition of Regulated Asbestos-Contaminated Soil
- 398 (RACS)
- 399 (A) Disposal of RACS
- 400 (B) Onsite Reuse of RACS
- 401 (C) Demonstration of Non-RACS
- 402 5.5.9 Fees

403  
404 Appendix 5A: Sample Collection Protocols and Analytical Methodologies

405  
406  
407 **5) The existing Section 5.5 Regulations (Management of Asbestos-Contaminated**  
408 **Soil) are being deleted in their entirety and replaced with new Section 5.5**  
409 **Regulations (Management of Regulated Asbestos-Contaminated Soil (RACS)) to**  
410 **read as follows:**

411  
412 **SECTION 5**

413  
414 **ASBESTOS WASTE MANAGEMENT**

415 \*\*\*\*\*

416 **5.5 MANAGEMENT OF REGULATED ASBESTOS-CONTAMINATED SOIL**  
417 **(RACS):**

418  
419 **5.5.1 SCOPE AND APPLICABILITY**

420  
421 The requirements of Section 5.5 apply to the owner or operator of any property with  
422 regulated asbestos contaminated soil (RACS) at which soil-disturbing activities are  
423 occurring or planned. The owner/operator may choose to follow the procedures set  
424 forth in Sections 5.5.1(A) and 5.5.1(B) below when debris is exposed or disturbed to  
425 determine if the debris is RACS. The requirements of Sections 5.5.1(C) and 5.5.1(D)  
426 apply when RACS is exposed or disturbed.

- 427  
428 (A) Any person who disturbs debris or exposes debris during a soil disturbing activity  
429 shall characterize debris to determine the applicability of Section 5.5, and have  
430 appropriate personnel to characterize debris. Any person who disturbs debris or  
431 exposes debris during a soil disturbing activity shall:

- 432  
433 (1) Conduct visual inspection of disturbed material;  
434  
435 (2) If debris is exposed during soil disturbing activities, and/or the soil or ash is  
436 known to contain asbestos fibers, through documented evidence, then Section  
437 5.5 is applicable. If there is no visible RACS or documented evidence of RACS  
438 at a site, an owner/operator does not have a duty under these regulations to  
439 sample or otherwise investigate for RACS prior to commencing soil disturbing  
440 activities;  
441  
442 (3) If debris is exposed that only contains green waste, and/or natural stone with no  
443 associated material suspected of containing asbestos fibers, then Section 5.5 is  
444 not applicable.  
445  
446 (4) In the event of an emergency in which a soil disturbing activity in an area of  
447 debris must continue or commence at once, a RACS determination in  
448 accordance with Section 5.5.1(B) may be postponed during the initial response to  
449 the immediate emergency. However, the RACS determination must be made  
450 within 48 hours of the initial emergency response.  
451  
452 (5) Any person who exposes but does not disturb debris during a soil disturbing  
453 activity shall have protocols to characterize debris as required by this section  
454 5.5.1(A) and stabilize any debris determined to be RACS as required by Section  
455 5.5.7(K), unless the debris is exempted by subsection 5.5.2(A) through (F).  
456  
457 (B) Any person who disturbs debris during soil disturbing activities, when the subject  
458 debris is not excluded within Section 5.5.1(A)(3), must inspect the debris, through  
459 continuous visual inspection during soil disturbing activities, to determine if the  
460 debris is, or contains, suspect asbestos-containing material (ACM). If debris is  
461 exposed that only contains metal, glass, plastic, wood, and/or bare concrete with no  
462 associated material suspected of being ACM (such as sealants, adhesives, mastics,  
463 coatings, adhered materials, or resins), then Section 5.5 is not applicable. The  
464 person(s) conducting the visual inspection must be a Qualified Project Monitor  
465 (QPM) or a Certified Asbestos Building Inspector (CABI).  
466  
467 All suspect ACM(s) must be:  
468  
469 (1) Assumed to be ACM; or  
470  
471 (2) Sampled by a CABI. The samples shall be analyzed by a National Voluntary  
472 Laboratory Accreditation Program (NVLAP) participating laboratory utilizing  
473 Polarized Light Microscopy (PLM) (EPA Method 600/R-93/116 or equivalent) to  
474 determine if it is ACM; or  
475

- 476 (3) Determined to be ACM, or non-ACM, through the use of documentation specific  
477 to the material observed in the field establishing the asbestos content of the  
478 material (e.g. laboratory analysis results from previous encounters with the same  
479 material).
- 480
- 481 (4) The ACM determination shall be made within seven (7) calendar days of  
482 discovery of the debris.
- 483
- 484 (a) Within 24 hours of discovery of debris, and until the ACM determination is  
485 made, the debris shall be stabilized in accordance with Section 5.5.4(A)(3) of  
486 these regulations.
- 487 (b) No additional disturbance, other than necessary to perform the required  
488 stabilization in Section 5.5.4(A)(3), of the debris shall occur prior to the  
489 asbestos determination.
- 490
- 491 (5) A person who disturbs debris, determined or assumed to be or contain ACM per  
492 this 5.5.1(B), shall determine if the ACM is exempted in accordance with Section  
493 5.5.2 of these regulations.
- 494
- 495 (6) A person who disturbs debris, determined or assumed to be or contain ACM per  
496 this 5.5.1(B), shall make a RACS determination by:
- 497
- 498 (a) Assuming the debris containing ACM is RACS and managing the RACS in  
499 accordance with Section 5.5 of these regulations; or
- 500 (b) Applying site and material specific knowledge of the presence or absence of  
501 RACS based on observation and/or documented evidence about the nature of  
502 ACM(s).
- 503
- 504 (7) The owner/operator shall retain, or make available for inspection, records of all  
505 RACS determinations onsite for the duration of the debris disturbance, which  
506 shall be retained by the owner/operator for a period of six (6) months after the  
507 completion of debris disturbing activities.
- 508
- 509 (C) Soil or ash known to contain non-visible asbestos, based on documented evidence,  
510 is RACS and if exposed or disturbed shall be managed in accordance with these  
511 regulations.
- 512
- 513 (D) If soil, ash, or debris is, or contains, RACS then:
- 514
- 515 (1) RACS that is exposed or disturbed shall be managed, disposed of, or reused in  
516 accordance with these regulations.
- 517
- 518 (2) Removal of ACM that is on, or comprises, a facility component, that is located on  
519 or in soil that will be disturbed, shall be conducted under this Section 5.5, in  
520 accordance with work practices in Air Quality Control Commission Regulation

521 No. 8 (5 CCR 1001-10, Part B), Section III.V, and is not subject to the permit  
522 requirements of 5 CCR 1001-10, Part B, if the total quantity of ACM is below the  
523 following trigger levels:

- 524  
525 (a) 260 linear feet on pipes; or  
526 (b) 160 square feet on other surfaces; or  
527 (c) The volume of a 55-gallon drum.

528  
529 (3) RACS that is generated and not disposed of or reused in compliance with  
530 Section 5.5.8 of these regulations is solid waste and shall be managed in  
531 accordance with the landfill requirements of the Colorado Solid Wastes Disposal  
532 Sites and Facilities Act (C.R.S. 30-20, Part 1) and Sections 5.1 through 5.4 of  
533 these regulations.

534  
535 (4) A person who disturbs or exposes RACS shall make the decision upon the initial  
536 discovery of RACS to either manage the RACS in accordance with Section 5.5,  
537 or cease soil disturbing activities and permanently stabilize the disturbed or  
538 exposed RACS to control the release of asbestos fibers in accordance with one  
539 of the following:

- 540  
541 (a) Cover RACS with geofabric, or equivalent visible and physical barrier, and  
542 restore the site to pre-disturbance conditions using fill suitable for unrestricted  
543 use; or  
544 (b) Cover RACS with geofabric, or other visible and physical barrier, followed by  
545 eighteen (18) inches of fill suitable for unrestricted use, and vegetation; or  
546 (c) Cover RACS with geofabric, or other visible and physical barrier, followed by  
547 six (6) inches of fill suitable for unrestricted use, and concrete or asphalt; or  
548 (d) Cover RACS with geofabric, or other visible and physical barrier, followed by  
549 fill suitable for unrestricted use to grade for vertical excavation faces or  
550 trenches; or  
551 (e) Alternate cover designs as approved by the Department.

## 552 **5.5.2 EXEMPTIONS**

553  
554  
555 (A) Removal of ACM on a facility component with asbestos quantities above the trigger  
556 levels, as defined in 5.5.1(D)(2), is subject to the permit and abatement  
557 requirements of Air Quality Control Commission Regulation No. 8 (5 CCR 1001-10,  
558 Part B), and is therefore not subject to this Section 5.5., but shall still comply with  
559 Sections 5.1 through 5.4 of these regulations.

560  
561 (B) Spill response activities that are subject to the requirements of Air Quality Control  
562 Commission Regulation No. 8 (5 CCR 1001-10, Part B) are not subject to the  
563 requirements of Section 5.5, but shall still comply with Sections 5.1 through 5.4 of  
564 these regulations.

- 566 (C) Ambient occurrences of asbestos fibers in soil that are demonstrated to be the result  
567 of background conditions and not the result of site specific activities are not subject  
568 to the requirements of this Section 5.5. This background demonstration shall be  
569 submitted to, and approved by, the Department prior to the exemption being  
570 exercised.  
571
- 572 (D) During active solid waste disposal operations, asbestos waste disposal areas that  
573 have a certificate of designation are not subject to Section 5.5, but shall comply with  
574 the facility's Engineering Design and Operations Plan.  
575
- 576 (E) De minimis projects involving a total RACS disturbance of less than one (1) cubic  
577 yard, utilizing low-emission methods, are exempt from this Section 5.5, except for  
578 the decontamination procedures in Section 5.5.7(l) and the disposal requirements in  
579 Section 5.5.8.  
580
- 581 (F) Projects conducted directly by a homeowner on their residence not used for the  
582 purpose of generating of income, including residential landscaping projects and  
583 other private residential soil-disturbing projects conducted after the primary dwelling  
584 is built, such as planting trees, digging holes for fence posts, installing sign posts,  
585 gardening, other such projects conducted by homeowners on their residence, as  
586 described above, are not subject to this Section 5.5, but shall still comply with  
587 Sections 5.1 through 5.4 of these regulations.  
588
- 589 (G) Soil disturbing activities involving Non-RACS, where no RACS is present or  
590 generated, are not subject to the requirements of Section 5.5, but Non-RACS must  
591 be disposed as non-friable asbestos waste in accordance with the disposal  
592 requirements set forth in Section 5.2 of these regulations. If Non-RACS is not  
593 removed during a remediation project conducted under Section 5.5.6, an  
594 environmental covenant may be necessary to the extent that it is required by § 25-  
595 15-320 C.R.S.  
596
- 597 (H) Soil disturbing activities involving debris that only contains metal, glass, plastic,  
598 wood, and/or bare concrete with no associated material suspected of being ACM  
599 (such as sealants, adhesives, mastics, coatings, adhered materials, or resins), as  
600 determined by a CABI, QMP, or generator knowledge, are not subject to the  
601 requirements of Section 5.5.  
602
- 603 (I) Soil disturbing activities involving debris that only contains green waste or natural  
604 stone are not subject to the requirements of Section 5.5.  
605

### 606 **5.5.3 TRAINING**

607

- 608 (A) Personnel inside the regulated work area (RWA) during the disturbance of RACS  
609 shall have annual awareness training. Except as provided in Section 5.5.3(F), this  
610 training requirement applies to equipment operators and drivers of trucks carrying

611 contaminated material for offsite disposal or reuse. This training shall cover  
612 information necessary to comply with Section 5.5 requirements and the approved  
613 project specific RACS management plan (PSMRP) or standard operating procedure  
614 (SOP) (if any) including:

- 615 1) General asbestos awareness; including health effects; and
- 616 617
- 618 2) Overview of the requirements of Section 5.5; and
- 619
- 620 3) Overview of suspect ACM that requires further evaluation by a CABI; and
- 621
- 622 4) Overview of RACS and Non-RACS; and
- 623
- 624 5) Worker protection, including levels of personal protective equipment (PPE)
- 625 required for various activities and conditions; and
- 626
- 627 6) Decontamination requirements for equipment and personnel; and
- 628
- 629 7) Engineering controls in order to prevent visible emissions from leaving the RWA
- 630 to minimize the release of asbestos outside the RWA or demonstrate that
- 631 asbestos is not leaving the RWA above risk-based air thresholds; and
- 632
- 633 8) Overview of RACS handling procedures. This training shall be conducted by a
- 634 CABI or QPM who is familiar with the site specific plan and/or the Standard
- 635 Requirements in Section 5.5.7. Records of this training shall be retained, by the
- 636 trained individual, and be available for inspection, for a minimum of one year
- 637 from the date of the training.
- 638

639 (B) Personnel inside the RWA during the disturbance of RACS shall have per-project  
640 site-specific awareness training for personnel disturbing RACS. Except as provided  
641 in Section 5.5.3(F), this training requirement applies to equipment operators and  
642 drivers of trucks carrying contaminated material for offsite disposal or reuse. This  
643 training shall cover site-specific information necessary to comply with Section 5.5  
644 and the selected management approach for the project (PSRMP, SOPs, or the  
645 standard requirements of Section 5.5.7), including project chain-of-command and  
646 identification of authorized personnel with stop work authority, and identification of  
647 QPM(s). This training shall be provided by a CABI or QPM. Records of this training  
648 shall be retained, and be available for inspection, for the duration of the project for  
649 which the training was conducted.

650  
651 (C) Qualified Project Monitors shall have, at a minimum:

- 652 1) Annual awareness training and site specific awareness training under Section
- 653 5.5.3(A) and (B); and
- 654
- 655

- 656 2) Training from a CABI on identifying debris, exempted materials under Section  
657 5.5.1(A)(3), and the assumption of debris to be RACS as outlined in Section  
658 5.5.1; and  
659
  - 660 3) Training from a CABI on how to implement the standard requirements under  
661 Section 5.5.7 and how to perform the duties that a QPM may perform in lieu of a  
662 CABI; and  
663
  - 664 4) Training from a CABI on how to implement the provisions of the chosen RACS  
665 management approach (PSRMP, SOPs, or standard requirements of Section  
666 5.5.7) and how to perform the duties that a QPM may perform in lieu of a CABI;  
667 and  
668
  - 669 5) Forty (40) verifiable hours of direct experience implementing Section 5.5.  
670
- 671 (D) Visual Inspection and identification of RACS shall be conducted by a CABI, with  
672 forty (40) verifiable hours of on the job asbestos in soils experience on a minimum of  
673 three (3) different asbestos in soils projects, conducted under either AQCC  
674 Regulation No. 8 or Section 5.5. The CABI shall be independent of the general  
675 contractor (GC) and/or abatement contractor unless the CABI and the GC or  
676 abatement contractor are both direct employees of the property owner. However,  
677 the GC or abatement contractor may hire a subcontractor CABI, but the CABI shall  
678 not be a direct employee of the GC or abatement contractor.  
679
- 680 (E) Air monitoring conducted in accordance with this Section 5.5 shall be performed by  
681 an Air Monitoring Specialist (AMS).  
682
- 683 (F) Truck drivers who do not complete the training in 5.5.3(A) and (B) are ancillary  
684 workers. Soil disturbing activities must cease if the truck driver is present within the  
685 RWA unless the driver remains in the cab of the truck, the truck's windows and  
686 doors remain closed, and the air handling system remains off while the truck is  
687 inside the RWA.  
688

689 **5.5.4 RESPONSE TO UNPLANNED RACS DISCOVERY**

690  
691 Soil disturbing activities that expose RACS without previously approved plans are  
692 subject to the following requirements:  
693

- 694 (A) IMMEDIATE ACTIONS: Immediate actions shall be taken by the person conducting  
695 the soil disturbing activity, or representative of the owner or operator, to manage  
696 RACS in accordance with Section 5.5 and Section 1.2 definitions of these  
697 Regulations. These actions shall include, at a minimum, the following:  
698

  - 699 (1) Stopping all soil disturbing activities related to RACS, until the 24-hour  
700 notification requirements in Section 5.5.4(B), and the interim action requirements

701 in Section 5.5.4(C), are met. In the event of an emergency in which a soil  
702 disturbing activity must continue or commence at once, notification shall be made  
703 as soon as possible, but within 24 hours of identifying or assuming the presence  
704 of RACS within the soil disturbing area. During the initial response to the  
705 immediate emergency, the standard requirements of Section 5.5.7 shall be  
706 implemented to the extent possible. Within 48 hours, any disturbed and/or  
707 exposed RACS shall be managed in accordance with the standard requirements  
708 of Section 5.5.7, an approved PSRMP, or an approved SOP.

709  
710 (2) Establishing, and taking measures in order to prevent access to, the RWA by  
711 unauthorized persons. Instances of unauthorized access not under the control of  
712 the owner/operator shall be evaluated to determine if additional access controls  
713 are warranted. The unauthorized access, and the response actions taken, shall  
714 be documented and provided to the Department within 48 hours of the incident.

715  
716 (3) Conducting interim surface soil stabilization to reduce emissions including:

- 717
- 718 a. Polyethylene sheeting or geofabric with daily inspection, and inspection after  
719 storm events, and repair/replacement of sheeting as necessary to maintain  
720 stabilization; or
  - 721 b. Chemical stabilizer demonstrated to be effective in the stabilization of RACS  
722 (e.g. magnesium chloride) with weekly inspection, and inspection after storm  
723 events, and re-application of chemical stabilizer as necessary to maintain  
724 stabilization; or
  - 725 c. Minimum of three (3) inches of soil appropriate for unrestricted use; or
  - 726 d. Other means of stabilization as approved by the Department.
  - 727 e. Stabilization is not required if RACS is kept adequately wet. Verification of  
728 adequately wet conditions shall be conducted at least every two (2) hours, or  
729 RACS shall be stabilized by one of the methods described in (3)(a-d) above.
- 730

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

735  
736 (C) INTERIM ACTIONS: In accordance with Section 5.5.5, the owner/operator, or  
737 owner/operator representative, shall submit to the Department's Hazardous  
738 Materials and Waste Management Division, for review and approval, within five (5)  
739 working days of the discovery, a PSRMP, SOPs, or indicate the standard  
740 requirements of Section 5.5.7 will be followed on the Notification of RACS  
741 Disturbance form submitted to the Department.

742  
743 (D) Once the requirements of Sections 5.5.4(A), (B), and (C) are completed, any soil  
744 disturbing activities shall proceed in accordance with applicable requirements.

745

746 **5.5.5 RESPONSE TO PLANNED RACS MANAGEMENT**

747  
748 Planned soil disturbing activities involving RACS shall be conducted in accordance with  
749 the standard requirements identified in Section 5.5.7, and with one of the following  
750 management strategies and the associated notification requirement:

751  
752 (A) PROJECT SPECIFIC RACS MANAGEMENT PLAN (PSRMP);

753  
754 (1) The owner/operator, or owner/operator representative, shall submit a completed  
755 Notification of RACS Disturbance form to the Department's Hazardous Materials  
756 and Waste Management Division at least ten (10) working days prior to any  
757 planned soil disturbing activity. This notification shall include submittal of a  
758 PSRMP conforming to the requirements of Section 5.5.5(A)(2). The Department  
759 will acknowledge receipt of a notification of the intent to utilize a PSRMP by mail  
760 or electronic correspondence. The PSRMP shall be approved by the Department  
761 prior to implementation.

762  
763 (2) If the owner/operator choose(s) management in accordance with this Section  
764 5.5.5(A), a PSRMP shall be developed and submitted to the Department's  
765 Hazardous Materials and Waste Management Division for review and approval  
766 prior to implementation. The Department will use its best efforts to review and  
767 respond to the plan within ten (10) working days of receipt. The PSRMP shall  
768 include the following:

- 769  
770 (a) Property representative's name and phone number; and  
771 (b) Property location; and  
772 (c) General site description, including a description of RACS and the types of  
773 known or assumed ACM(s), and the location(s) of these material on the site;  
774 and  
775 (d) Description of planned soil disturbing activities; and  
776 (e) Description of site management, emission control activities, and work  
777 practices to control the release of, and/or exposure to, asbestos outside of the  
778 RWA including:

- 779  
780 (i) Measures to assure that the soil is adequately wet (as that term is defined  
781 in Section 1.2 of these regulations), stabilized, or covered during soil  
782 disturbing activities; and  
783 (ii) Wind speed monitoring during RACS disturbance, including frequency of  
784 monitoring, and shutdown and start up criteria; and  
785 (iii) An air monitoring plan designed to detect asbestos at the perimeter of the  
786 RWA as an indication that the measures to control the release of, and/or  
787 exposure to, asbestos outside of the RWA are effective. The plan may  
788 include a tiered air monitoring approach providing less frequent air  
789 monitoring given demonstrated effectiveness of work practices; and

- 790 (iv) Work practices specific to mechanical and/or hand disturbance of RACS  
791 including measures in order to prevent the release of visible emissions  
792 outside of the RWA to minimize the release of asbestos fibers, or  
793 demonstrate that asbestos is not leaving the RWA above risk-based air  
794 thresholds; and  
795 (v) Work practices for the loading and placement of RACS including spill  
796 prevention procedures.  
797 (vi) The owner /operator has the option to erect a structure maintained at a  
798 negative pressure differential sufficient to contain all dust, with off-gas  
799 from the evacuation system treated with HEPA filtration. If this option is  
800 chosen, the requirement to submit an air monitoring plan, under Section  
801 5.5.5(A)(2)(e)(iii) is not applicable.

802 and

- 803  
804 (f) Description and location of any planned sampling. All sampling shall be  
805 performed in accordance with the procedures set forth in Appendix 5A. All  
806 investigation derived waste shall be managed in accordance with Section  
807 5.5.8.

- 808  
809 (3) A copy of the PSRMP shall be maintained on the site during RACS disturbing  
810 activities.

- 811  
812 (4) At the option of the owner/operator and upon notice to the Department, a Soil  
813 Characterization and Management Plan approved prior to the effective date of  
814 this amended Section 5.5, and that complies with the substantive requirements of  
815 the regulation prior to amendment, shall remain in effect until the completion of  
816 the subject project or until it is replaced by a PSRMP.

817  
818 (B) STANDARD OPERATING PROCEDURES (SOPs)

- 819  
820 (1) The owner/operator, or owner/operator representative, shall notify the  
821 Department's Hazardous Materials and Waste Management Division, by  
822 submitting a completed Notification of RACS Disturbance form, prior to  
823 implementation of the previously approved SOPs at a RWA. SOPs that conform  
824 to Section 5.5.5(B)(2) shall be approved by the Department prior to  
825 implementation. The Department will acknowledge receipt of a notification of the  
826 intent to utilize an SOP by mail or electronic correspondence.

- 827  
828 (2) If the owner/operator chooses management in accordance with this Section  
829 5.5.5(B), the owner/operator shall develop and submit to the Department's  
830 Hazardous Materials and Waste Management Division, for review and approval,  
831 thirty (30) calendar days in advance of any RACS disturbing activities, SOPs that  
832 conform with Section 5.5.5(A)(2)(a) – (f) that will be implemented, upon notice to  
833 the Department per Section 5.5.5(B)(1), at future RWA(s). A copy of the SOPs

834 shall be maintained on site during RACS disturbing activities for the duration of  
835 the Project.

836  
837 (3) At the option of the owner/operator and upon notice to the Department, a SOP  
838 approved prior to the effective date of this amended Section 5.5, and that  
839 complies with the substantive requirements of the regulation prior to amendment,  
840 shall remain in effect and may be used to comply with the amended regulation.

841  
842 (C) STANDARD REQUIREMENTS OF SECTION 5.5.7

843  
844 The owner/operator, or owner/operator representative, shall submit to the Department's  
845 Hazardous Materials and Waste Management Division a completed Notification of  
846 RACS Disturbance form indicating the intent to utilize the standard requirements of  
847 Section 5.5.7, as a default RACS management plan, prior to any planned soil disturbing  
848 activity. This notification shall include property location, general site description, and  
849 contact information for the owner/operator responsible for the RWA activities. The  
850 Department will acknowledge receipt of a notification of the intent to utilize the standard  
851 requirements of Section 5.5.7 by mail or electronic correspondence.

852  
853 (D) RISK BASED APPROACH

854  
855 The owner/operator may choose to submit, for Department review and approval, a site-  
856 specific risk assessment work plan to evaluate the risks of the proposed work practices  
857 associated with planned disturbance activities in an area or areas of RACS.

858  
859 **5.5.6 REMEDIATION OF ASBESTOS IN SOIL**

860  
861 (A) Remediation is not required of properties at which ACM, RACS, or asbestos waste  
862 is located. If the owner of a property chooses to remediate (rather than just  
863 manage) all or a portion of the property containing ACM, RACS, or asbestos waste  
864 and seeks a No Further Action or No Action Determination, a Remediation Plan shall  
865 be submitted to the Department's Hazardous Materials and Waste Management  
866 Division for review and approval prior to commencement of activities associated with  
867 the remediation. The Remediation Plan shall comply with this Section 5.5, and  
868 include the following:

- 869  
870 (1) The standard requirements in accordance with Section 5.5.7, and the plan  
871 requirements outlined in Section 5.5.5(A). Alternatively, a risk based approach  
872 pursuant to Section 5.5.5(D) may be proposed, for Department review and  
873 approval, for disturbance of RACS; and  
874  
875 (2) A detailed description of planned remediation activities, including proposed depth  
876 and areal extent of remediation, and work practices to be implemented; and  
877  
878 (3) The proposed use of the property and area of remediation; and

- 879
- 880 (4) Any planned engineering or institutional controls in order to prevent exposure to
- 881 any asbestos left in place, or minimize exposure below a risk-based
- 882 concentration approved by the Department, within the area covered by the
- 883 Remediation Plan, and
- 884
- 885 (5) A schedule for submittal of a Remediation Completion Report that incorporates
- 886 the information from Section 5.5.7(L) and any additional information necessary to
- 887 demonstrate that the remediation goals have been achieved.
- 888
- 889 (B) The Department shall use its best efforts to provide written notification that a
- 890 Remediation Plan has been approved or disapproved within no more than forty-five
- 891 (45) calendar days after a request by a property owner, unless the property owner
- 892 and the Department agree to an extension of the review to a date certain.
- 893
- 894 (C) If a remedial decision is made by the Department, the area subject to the remedial
- 895 decision may be subject to C.R.S. Section 25-15-320(2), and an environmental
- 896 covenant may be required for waste left in place.
- 897
- 898

#### 899 **5.5.7 STANDARD REQUIREMENTS FOR THE DISTURBANCE OF RACS**

900

901 The requirements of this section, if followed in their entirety, constitute a default RACS

902 management plan, eliminating the need to submit a PSRMP or SOP.

903

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

- 905
- 906 (1) Requirements for establishment and control of a RWA applicable to all projects
- 907 subject to this Regulation:
- 908
- 909 (a) Establish a RWA which is identifiable to all persons. Haul roads between
- 910 RWAs, where RACS is not present, are considered to be outside the RWA(s);
- 911 however, equipment decontamination [Section 5.5.7(I)] and spill response
- 912 procedures [Section 5.5.7(J)] shall be followed; and
- 913 (b) Stop all soil disturbing activities in the RWA if ancillary workers or members of
- 914 the public are present within the RWA. Truck drivers who do not complete
- 915 the training under Sections 5.5.3(A) and (B) are ancillary workers. Soil
- 916 disturbing activities must cease if the truck driver is present within the RWA
- 917 unless the driver remains in the cab of the truck, the truck's windows remain
- 918 closed, and the air handling system remains off while the truck is inside the
- 919 RWA; and
- 920 (c) Post labeling and signage to demarcate RWA(s). The RWA shall be
- 921 demarcated by visible means that fully defines the extent of the RWA.
- 922 Labeling and signage shall indicate the presence of asbestos, and that the
- 923 area is off limits to unauthorized personnel.

924  
925 (2) **Additional Requirement for Projects Disturbing RACS Containing Friable**  
926 **ACM.** Establish a secured work site (e.g., fencing with locks/zip-ties/chains).  
927 Personnel, or staff assigned to this duty, may be used to secure the RWA in lieu  
928 of fencing. If the RWA is located within a larger secure facility, fencing of the  
929 RWA is not necessary as long as the RWA is secured.

930  
931 (B) PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR THE PURPOSES OF  
932 PREVENTING CROSS-CONTAMINATION

933  
934 (1) Requirements applicable to all RWAs subject to this Regulation:

- 935  
936 (a) Use of disposable booties or impermeable footwear that will be  
937 decontaminated per Section 5.5.7(I); and  
938 (b) Use of disposable gloves or impermeable gloves that will be decontaminated  
939 per Section 5.5.7(I); and  
940 (c) Replace or decontaminate (per Section 5.5.7(I)) all PPE in all instances  
941 where the integrity of the PPE is compromised, and when workers exit the  
942 RWA; and  
943 (d) Decontaminate (per Section 5.5.7(I)) or dispose of all used PPE as asbestos  
944 contaminated waste.

945  
946 (2) **Additional Requirement Applicable to Projects at RWAs Containing Friable**  
947 **ACM.** Use of disposable impermeable suits or equivalent coveralls, remove suits  
948 or coveralls upon exiting the RWA, and dispose of used suits or coveralls as  
949 asbestos contaminated waste.

950  
951 (C) WETTING

952  
953 (1) Wetting requirements applicable to all RACS disturbance:

- 954  
955 (a) Adequately wet all RACS and soils, or other materials containing RACS, on  
956 the surface and in the sub-surface prior to and during RACS disturbance,  
957 except as provided in Section 5.5.7(F)(1)(b)(ii). Pre-wetting is not necessary  
958 if soils are already adequately wet. Apply water or amended water (as  
959 required in Section 5.5.7(C)(2)) at low pressure in order to minimize dust  
960 generation and splattering to prevent visible emissions from leaving the  
961 RWA, in order to minimize the release of asbestos fibers, or demonstrate that  
962 asbestos is not leaving the RWA above risk-based thresholds.  
963 (b) Continuously mist RACS and soils, or other materials, containing RACS  
964 during placement as needed to maintain the material in an adequately wet  
965 condition using equipment mounted spray bars, or additional hose  
966 operator(s).  
967 (c) Except as provided in (d) below, incidental occurrences of visible emissions  
968 leaving the RWA shall be managed by evaluating site conditions and

969 engineering controls for each occurrence of visible emissions, and  
970 immediately implementing any identified engineering control revisions  
971 necessary in order to prevent future occurrences of visible emissions. All  
972 instances of visible emissions leaving the RWA shall be documented as  
973 required in Section 5.5.7(L) of this regulation.

974 (d) When utilizing the risk-based air monitoring threshold approach to evaluate  
975 the effectiveness of adequately wetting, visible emissions are allowed to leave  
976 the RWA as long as the risk-based air threshold is not exceeded.

977  
978 (2) **Additional requirement for RACS that contains friable ACM.** Use amended  
979 water containing a wetting agent, such as a 50:50 mixture of polyoxyethylene  
980 ester and polyoxyethylene ether, or the equivalent, in a 0.16 percent solution (1  
981 ounce to 5 gallons) of water, or as per manufacturer recommendations for the  
982 wetting of asbestos. This requirement may be waived by the Department for  
983 emergency situations where the work must occur immediately and wetting agents  
984 are not available.

985  
986 (D) WIND SPEED MONITORING

987  
988 (1) Requirements applicable to all projects involving mechanical disturbance of  
989 RACS, and hand disturbance of RACS containing friable ACM:

990  
991 (a) Take wind measurements from within the RWA using a hand held  
992 anemometer. Alternatively, or in conjunction with hand held measurements,  
993 an onsite weather station may be used within a quarter mile of the RWA as  
994 long as the conditions measured by the weather station are representative of  
995 conditions in the RWA.

996  
997 i. Collect wind speed measurements at a minimum of thirty (30) minute  
998 intervals and during wind gust(s). Average wind speed measurements  
999 shall be obtained manually by taking ten readings at one minute intervals  
1000 and averaging the ten readings, or through the use of instrumentation that  
1001 provides a ten minute average wind speed reading.

1002 ii. If wind break barriers are used, wind speed measurements may be taken  
1003 from within barriers; however, wind speed measurements shall also be  
1004 taken outside the wind break barriers if any RACS disturbing activities,  
1005 such as loading, are taking place outside or above the barriers. Wind  
1006 speed shut-down criteria shall be based on measurements taken that are  
1007 representative of the area of active RACS disturbance.

1008  
1009 (b) Immediate stoppage of all RACS disturbance shall occur based on results of  
1010 wind speed monitoring conducted in accordance with subsection (a) and  
1011 exceedance of the following criteria:

1012  
1013 i. Wind gust(s) in excess of 20 mph, or

- 1014 ii. Sustained winds in excess of 12 mph, averaged over ten (10) minutes, or
- 1015 iii. Winds are interfering with the ability of engineering controls to work as
- 1016 intended, or
- 1017 iv. Winds are creating visible emissions that leave the RWA.

1018  
1019 (c) RACS disturbance may resume when all of the following criteria are met:

- 1020
- 1021 i. No gust(s) in excess of 20 mph occur for twenty (20) minutes, and
- 1022 ii. No sustained winds in excess of 12 mph occur for twenty (20) minutes,
- 1023 based on a ten (10) minute average wind speed measurement, and
- 1024 iii. Winds are not interfering with the ability of engineering controls to function
- 1025 as intended, and
- 1026 iv. Winds are not creating visible emissions that leave the RWA.

1027  
1028 (E) AIR MONITORING

1029  
1030 (1) If using the risk-based air threshold approach to monitor the effectiveness of

1031 adequately wetting:

- 1032
- 1033 (a) Air monitoring to determine asbestos content of visible emissions allowed to
- 1034 leave the RWA, for comparison to the risk-based air thresholds shall not be
- 1035 utilized for projects that are less than ten (10) days in duration.
- 1036 (b) Air monitoring to determine asbestos content of visible emissions allowed to
- 1037 leave the RWA, for comparison to the risk-based air thresholds, shall begin
- 1038 on the first day of the project.
- 1039 (c) A minimum of four (4) air samples per day shall be collected for TEM
- 1040 analysis.
- 1041 (d) Sample collection, analysis, and data evaluation shall be conducted in
- 1042 accordance with Appendix 5A.

1043  
1044 (2) If preventing visible emissions leaving the RWA as an indication of the

1045 effectiveness of work practices, not for risk evaluation, air monitoring is required

1046 during mechanical disturbance of RACS in RWAs with an adjacent receptor

1047 zone:

- 1048
- 1049 (a) No air monitoring is required for RACS disturbance that will not exceed a
- 1050 duration of two (2) days. However, the requirements for adequate wetting
- 1051 (Section 5.5.7(C)) and no visible emissions leaving the RWA (Section
- 1052 5.5.7(F)) shall be adhered to on all RACS disturbance projects. Dividing
- 1053 projects into multiple two (2) day or shorter components shall not be used as
- 1054 a mechanism to avoid air monitoring requirements.
- 1055
- 1056 (b) Area monitoring shall consist of a minimum of four (4) samples collected on
- 1057 the perimeter of the RWA at appropriate intervals to provide representative
- 1058 information regarding potential releases of asbestos fibers to the adjacent

1059 receptor zone(s). Additional samples shall be collected for large perimeter  
1060 RWAs (greater than one (1) acre). RWAs greater than one (1) acre shall  
1061 require additional perimeter monitoring points be added at a rate of one (1)  
1062 sample for every 200 linear feet (or approximately each additional ¼ acre). If  
1063 representative information about potential releases to the adjacent receptor  
1064 zone(s) can be collected using less than the minimum number of samples,  
1065 the remaining sample locations shall be at the discretion of the AMS.  
1066

1067 (c) PCM analysis is required on all samples collected (unless all samples will be  
1068 analyzed by Transmission Electron Microscope (TEM) by default). The  
1069 laboratory shall be requested to provide verbal results to the AMS or the QPM  
1070 by the start of the next working day, or as soon as possible after the start of  
1071 the next working day, with written results within 24 hours of the receipt of  
1072 verbal results. A consultation with the Department is required If this  
1073 timeframe cannot be met by the laboratory.  
1074

1075 (d) Upon receipt of a laboratory report indicating a “cannot be read (CBR)”, or a  
1076 “not analyzed (NA) or rejected” due to loose debris or uneven loading,  
1077 analysis result:  
1078

- 1079 i. The AMS shall evaluate the lab report and any field documentation to  
1080 determine a possible cause for the CBR or “not analyzed (NA) or rejected”  
1081 result; and
- 1082 ii. If the CBR or “not analyzed (NA) or rejected” cannot be correlated to a  
1083 specific field event that compromised the sample (e.g. the sample was  
1084 blown over, the filter of the sample was sprayed with water) then the  
1085 sample shall be prepared for indirect TEM presence/absence analysis to  
1086 determine potential asbestos content in accordance with Appendix 5A;  
1087 and
- 1088 iii. If the CBR or “not analyzed (NA) or rejected”, analysis result can be  
1089 correlated to a compromised sample, then preparation for indirect TEM  
1090 presence/absence analysis is not required as long as adequate air  
1091 monitoring data is available to evaluate the effectiveness of engineering  
1092 controls. However, overloading of a sample with particulate matter does  
1093 not constitute a compromised sample, and will require indirect preparation  
1094 for TEM presence/absence analysis; and
- 1095 iv. Field personnel shall evaluate why the sample was compromised and  
1096 modify field procedures as necessary to avoid future samples from being  
1097 compromised; and
- 1098 v. The Department project manager shall be notified by phone or email of  
1099 instances of CBR or “not analyzed (NA) or rejected” analysis results within  
1100 24 hours of receipt of verbal results.  
1101

1102 (e) TEM presence/absence analysis is required (analysis providing fiber  
1103 counts/concentrations is always optional) as described in paragraphs (i)

1104 through (iv) below. The laboratory shall be requested to provide verbal  
1105 results by the start of the next working day, or as soon as possible after the  
1106 start of the next working day, with written results within 24 hours of the receipt  
1107 of verbal results.

- 1108
- 1109 i. All samples, required by this Section 5.5, with PCM results having fiber  
1110 concentrations greater than 0.01f/cc shall be submitted for TEM analysis.
  - 1111 ii. During the first five (5) days of RACS disturbance – A minimum of 25% of  
1112 the samples collected from each RWA, inclusive of the downwind floating  
1113 samples as described in 5.5.7(E)(3), shall be submitted for TEM analysis.  
1114 The sample(s) selected for TEM analysis shall have the highest PCM  
1115 result(s) based on fiber concentration. If all PCM results are Below  
1116 Detectable Limit (BDL) for fiber concentration, then the sample(s) selected  
1117 for TEM analysis shall be determined by highest fiber count. If all samples  
1118 have no fiber counts (i.e. zero (0) fibers counted, not a “below detection  
1119 limit” fiber concentration) then no TEM analysis is required.
  - 1120 iii. After five (5) days of RACS disturbance with no asbestos detections by  
1121 TEM analysis, the frequency of analysis by TEM, on the highest 25% of  
1122 PCM results(s), may be reduced to once every five (5) working days, or  
1123 portions thereof, using the same selection criteria as in paragraphs (i) and  
1124 (ii) above. The samples submitted for TEM analysis during the period of  
1125 reduced frequency TEM analysis shall be either the first occurrence of: 1)  
1126 high winds exceeding wind shut down criteria, or 2) visible emissions. In  
1127 the absence of high wind events or visible emissions the selected day for  
1128 TEM analysis may be random, as determined by the AMS.
  - 1129 iv. If there are any asbestos detections during the random once every five (5)  
1130 days analysis by TEM, then TEM analysis shall be conducted for the next  
1131 three (3) consecutive work days, or portions thereof, using the same  
1132 procedures as in paragraph (i) and (ii) above. If there are no additional  
1133 asbestos detections during the next three (3) consecutive working days  
1134 with samples submitted for TEM analysis, then the frequency of TEM  
1135 analysis may return to random once every five (5) working days.
  - 1136 v. If site conditions, friability of the materials being managed, or work  
1137 practices change, then the initial five (5) days of TEM analysis shall restart  
1138 using the provisions set forth in this Section 5.5.7(E)(2)(e).

1139

1140 (f) Detection or presence responses - For each detection of asbestos by TEM  
1141 analysis, the following shall be conducted:

- 1142
- 1143 i. Notify the Department project manager by phone or email, on the same  
1144 calendar day as receipt of verbal or written results (whichever comes first)  
1145 from the laboratory.
  - 1146 ii. Evaluate site conditions and engineering controls for each detection, and  
1147 immediately implement any identified engineering control revisions  
1148 necessary with the goal of preventing future detections of asbestos fibers.

1149           iii. Submit an Emission Control Plan (ECP) to the Department project  
1150 manager for each detection (days with multiple detections can be  
1151 addressed by a single ECP). The ECP shall be submitted within 48 hours  
1152 from the asbestos detection event and shall contain:

- 1153
- 1154           1. The date of the detection.
  - 1155           2. A written description of sample details (sample ID, number of  
1156 structures detected, type of asbestos detected, PCM analytical result)  
1157 and any potential cause of the release. Include a description of site  
1158 activity (engineering controls being employed, equipment being used,  
1159 size of excavation/soil disturbing activity, types of materials identified,  
1160 etc.) and CABI observations at the work area before and during the  
1161 presumed time of release.
  - 1162           3. A diagram or write up of all air sample positions clearly indicating  
1163 which sample received the TEM detection. Indicate, through  
1164 illustration or description, prevailing wind direction and average wind  
1165 speeds for the detection event; include any wind speed shutdowns for  
1166 the date of detection. If applicable, indicate downwind floater air  
1167 sample relocation times and new positions through illustration or  
1168 description.
  - 1169           4. Laboratory reports confirming the type and amount of fibers detected  
1170 by TEM analysis.
  - 1171           5. Other pertinent information that will additionally describe the release  
1172 and/or will assist in the prevention of future releases from the RWA.
  - 1173           6. A written description of actions taken and any other proposed actions  
1174 with the goal of preventing future releases from the RWA.
  - 1175           7. If the owner/operator believes fibers are coming from offsite and are  
1176 not under the control of the owner/operator, then, in addition to the  
1177 information provided in the ECP, documentation shall be provided  
1178 demonstrating additional sources of asbestos fibers.

1179

1180           (g) If there are three (3) TEM detections on consecutive analysis events or ten  
1181 (10) detections for a single project, consultation with the Department is  
1182 required to determine if the standard requirements of Section 5.5.7 are being  
1183 implemented appropriately and whether:

- 1184
- 1185           i. Changes in the standard requirements of Section 5.5.7 are likely to  
1186 prevent future releases; or
  - 1187           ii. Changes in the standard requirements of Section 5.5.7 are not likely to  
1188 prevent future releases and a PSRMP is necessary per Section  
1189 5.5.5(A)(2); or
  - 1190           iii. If the owner/operator believes fibers are coming from offsite and are not  
1191 under the control of the owner/operator, then, in addition to the information  
1192 provided in the ECP, documentation shall be provided demonstrating  
1193 additional sources of asbestos fibers. Air samples shall be collected and

1194 analyzed following the analytical procedures of Appendix 5A for the type  
1195 of project being conducted; and  
1196 iv. Additional consultation with the Department is required to determine  
1197 whether additional engineering controls for structures within the adjacent  
1198 receptor zone are appropriate.  
1199

1200 (3) **Additional requirement for projects disturbing RACS containing friable**  
1201 **ACM.** Collect two (2) additional downwind floating samples for mechanical  
1202 disturbance of RACS containing friable ACM. The samplers shall be moved  
1203 based on prevailing wind direction and adjacent receptors. For example, if  
1204 adjacent receptors are present on only one side of the RWA, one sample location  
1205 should be maintained between the RWA and the adjacent receptor.  
1206

1207 (F) WORK PRACTICES TO BE FOLLOWED DURING RACS DISTURBANCE

1208 (1) Work practice requirements applicable to all management of RACS:

1209 (a) Prevent visible emissions from leaving the RWA, to minimize the release of  
1210 asbestos outside the RWA, or demonstrate that asbestos is not leaving the RWA  
1211 above risk based thresholds by:  
1212  
1213

- 1214 i. Excavating in lifts not to exceed the extent of wetting; or
- 1215 ii. Conducting continuous wetting while mixing dry materials at the point of  
1216 RACS disturbance to ensure all materials are adequately wet prior to  
1217 removal from the excavation.
- 1218 iii. Instances of visible emissions leaving the RWA shall be documented and  
1219 addressed by changing or increasing controls (e.g. more effective wetting,  
1220 reduced speed of excavation).  
1221

1222 (b) RACS on exposed excavation faces that will be disturbed and/or managed  
1223 during the project shall either be kept adequately wet (in accordance with  
1224 Section 5.5.7(C)), or be stabilized using any of the following in order to  
1225 prevent visible emissions from leaving the RWA, to minimize the release of  
1226 asbestos outside the RWA, or demonstrate that asbestos is not leaving the  
1227 RWA above risk based thresholds:  
1228

- 1229 i. Polyethylene sheeting or geofabric with daily inspection, and inspection no  
1230 later than twelve (12) hours following a storm event, and repair/replace  
1231 sheeting as necessary to maintain stabilization; or
- 1232 ii. Chemical stabilizer demonstrated to be effective in the stabilization of  
1233 RACS (e.g. magnesium chloride) with weekly inspection, and inspection  
1234 no later than one (1) calendar day following a storm event, and re-  
1235 application of chemical stabilizer as necessary to maintain stabilization; or  
1236 iii. Minimum of three (3) inches of soil appropriate for unrestricted use.  
1237  
1238

1239 (c) Stormwater shall be managed in accordance with the Water Quality Control  
1240 Commission's stormwater regulations (5 CCR 1002-61), which include  
1241 specific stormwater permitting and management requirements for  
1242 construction sites. The Water Quality Control Division should be contacted to  
1243 determine the specific requirements for each project. Stormwater shall be  
1244 managed in a manner that minimizes run on and runoff from RACS.  
1245 Stormwater that comes into contact with RACS shall be treated as asbestos  
1246 contaminated water in accordance with Section 5.5.7(J)(4), and other  
1247 material(s) impacted by asbestos contaminated stormwater shall be managed  
1248 as RACS in accordance with Section 5.5.7(J)(3).  
1249

1250 (2) Work Practice requirements applicable to the management of RACS using hand  
1251 methods on surfaces or in the subsurface:  
1252

- 1253 a. Wet and remove the RACS and six (6) inches, in all directions, of  
1254 surrounding soil or other material from the last occurrence of visible ACM;  
1255 and  
1256
- 1257 b. A CABI shall confirm that the visible extent of ACM and surrounding soil,  
1258 or other material, has been removed (or extent of excavation has been  
1259 reached). If RACS remains, it shall be managed for stabilization or future  
1260 removal. If there is no documented evidence of non-visible RACS at the  
1261 site, then a visual inspection and clearance shall be sufficient to determine  
1262 the removal of RACS. If there is documented evidence of non-visible  
1263 RACS at the site, sampling is required to confirm the removal of RACS.  
1264 After the removal of the additional six (6) inches, and in the absence of  
1265 any debris, a QPM may make the determination that RACS has been  
1266 removed; and  
1267
- 1268 c. If RACS remains in the RWA, it shall be managed for stabilization, per  
1269 Section 5.5.7(K), or future removal.  
1270
- 1271 d. In lieu of stabilization or full removal, sampling may be performed per  
1272 Appendix 5A to demonstrate that the material is not RACS.  
1273
- 1274 e. Dispose of RACS in accordance with Section 5.5.8.  
1275

1276 (3) Work practice requirements applicable to management of RACS using  
1277 mechanical methods:  
1278

- 1279 a. For surface occurrence of RACS - Wet and remove all RACS and a minimum  
1280 of six (6) inches of soil, and/or other matrix material, in all directions from the  
1281 last occurrence of visible ACM, with CABI confirmation that the visible extent  
1282 of RACS has been removed.  
1283

- 1284 b. For subsurface occurrence of RACS - Wet and remove all RACS and a  
1285 minimum of three (3) linear feet of soil or other matrix material, in the  
1286 direction(s) of planned excavation, with CABI confirmation that the visible  
1287 extent of RACS has been removed. If there is no documented evidence of  
1288 non-visible RACS at the site, then a visual inspection and clearance shall be  
1289 sufficient to determine the removal of RACS. If there is documented evidence  
1290 of non-visible RACS at the site, sampling is required to confirm the removal of  
1291 RACS. After the removal of the additional three (3) linear feet, and in the  
1292 absence of any debris, a QPM may make the determination that RACS has  
1293 been removed.  
1294
- 1295 c. If RACS remains in the RWA, it shall be managed for stabilization, per  
1296 5.5.7(K), or future removal.  
1297
- 1298 d. In lieu of stabilization or full removal, sampling may be performed per  
1299 Appendix 5A to demonstrate that the material is not RACS.  
1300
- 1301 e. Package and dispose of RACS in accordance with Section 5.5.8.  
1302
- 1303 (4) Soil or other matrix material that remains after removal of RACS in accordance  
1304 with Section 5.5.7(F), Section 5.5.7(H)(1)(c)(i), or an approved plan, is not  
1305 considered RACS, is not subject to Section 5.5, and may be appropriate for  
1306 unrestricted use, onsite or offsite, as long as it does not contain any other  
1307 regulated material.  
1308

#### 1309 (G)LOADING AND PLACEMENT OF RACS

##### 1310 (1) Requirements for the loading of RACS:

- 1311 (a) Protect clean surfaces (including loading surface and truck or disposal  
1312 container surfaces that may come in contact with RACS) by covering or  
1313 decontamination of surfaces prior to transport or removal of the truck or  
1314 disposal container from the RWA and/or loading zone.  
1315  
1316  
1317
- 1318 (b) Spill prevention shall consist of:  
1319
- 1320 i. Minimization of spillage by not overfilling the excavator or loader bucket  
1321 and returning the bucket to a closed position prior to moving from the  
1322 loading point; and
  - 1323 ii. Replacement of protective coverings when worn or damaged in order to  
1324 prevent breaches; and
  - 1325 iii. Control of runoff in order to prevent cross contamination from water  
1326 containing asbestos; and
  - 1327 iv. Mitigation of spills of RACS in accordance with Section 5.5.7(J).  
1328

1329 (c) During the process of loading the container, the equipment operator shall  
1330 lower the bucket as close as possible to the interior of the container before  
1331 dumping, and dump the load slowly to allow adequate misting and in order to  
1332 prevent visible emissions from leaving the RWA, to minimize the release of  
1333 asbestos outside the RWA, or demonstrate that asbestos is no leaving the  
1334 RWA above risk based thresholds.  
1335

1336 (2) Requirements for the transportation of RACS:  
1337

1338 (a) Onsite transportation of RACS between the RWA and an onsite area of  
1339 staging, stockpiling, storage, disposal or reuse shall comply with the following:  
1340

- 1341 i. The packaging requirements for RACS set forth in Section 5.5.8(A) of  
1342 these regulations are not applicable; however, the decontamination  
1343 requirements of Section 5.5.7(I) shall be followed at the end of disposal  
1344 operations, or before disposal equipment is removed from the site; and
- 1345 ii. Driving speeds shall not exceed 12 miles per hour or RACS shall be  
1346 covered during transport; and
- 1347 iii. For transportation between the RWA and a non-contiguous onsite staging,  
1348 stockpiling, storage, disposal, or reuse area:

- 1349 1. Transportation equipment tires shall not contact RACS; or
- 1350 2. RACS that is driven upon is a RWA and shall be kept adequately wet  
1351 in order to prevent visible emissions from leaving the RWA, to  
1352 minimize the release of asbestos outside the RWA, or demonstrate  
1353 that asbestos is not leaving the RWA above risk based thresholds, and  
1354 all equipment surfaces that have come into contact with RACS shall be  
1355 decontaminated per Section 5.5.7(I) before leaving the RWA; or
- 1356 3. The haul road shall be managed as RACS for stabilization, per Section  
1357 5.5.7(F)(1), and future removal of a minimum of three (3) inches of soil,  
1358 or other matrix material. If the road is constructed of a durable surface  
1359 such as concrete or asphalt, the surface shall be decontaminated in  
1360 accordance with Section 5.5.7(I)(1)(b) using wet methods, followed by  
1361 CABI inspection verifying that all soil and debris has been removed  
1362 from the surface. Rinsate/runoff shall be collected and filtrated to less  
1363 than 5 microns (or applicable local requirements) and discharged to a  
1364 sanitary sewer or other Department-approved disposal facility or re-  
1365 applied to RACS that will be managed under these regulations.  
1366

1367 (H) ONSITE STAGING, STOCKPILING, AND STORAGE OF RACS  
1368

1369 (1) Staging, as defined in Section 1.2 of these regulations, is the accumulation and  
1370 temporary storage of RACS in the RWA for 12 hours or less. The following  
1371 requirements shall apply to the staging of RACS:  
1372  
1373

- 1374 (a) Staged RACS shall remain adequately wet.  
1375
- 1376 (b) Staging of RACS shall be on 6 mil, or greater, polyethylene sheeting or shall  
1377 include removal, and management as RACS, of a minimum of three (3)  
1378 inches of material, from below the staging pile/area prior to demobilization;  
1379 with visual or measured confirmation of removal. If polyethylene sheeting is  
1380 placed on top of a durable surface such as concrete or asphalt, the surface  
1381 must be decontaminated using wet methods, followed by CABI inspection  
1382 verifying that all soil and debris has been removed from the surface.  
1383 Rinsate/runoff shall be collected and filtrated to less than 5 microns (or  
1384 applicable local requirements) and discharged to a sanitary sewer or other  
1385 Department-approved disposal facility or re-applied to RACS that will be  
1386 managed under these regulations.  
1387
- 1388 (c) Material determined to be clean during generation shall be inspected during  
1389 placement for staging. Staging of clean material with incidental discovery of  
1390 RACS shall be managed as follows:  
1391
- 1392 i. If a CABI was continually inspecting the material during generation,  
1393 remove the piece of ACM and one (1) foot of material in all directions, with  
1394 CABI confirmation that the visible extent of RACS has been removed. If  
1395 more than one (1) piece of ACM, or a pocket of ACM is discovered,  
1396 remove the pocket of ACM plus one (1) foot of material in all directions,  
1397 with CABI confirmation that the visible extent of RACS has been removed.  
1398 Material that remains after removal of RACS, and CABI visible  
1399 confirmation, is not considered RACS, is not subject to Section 5.5, and  
1400 may be appropriate for unrestricted reuse, onsite or offsite, as long as it  
1401 does not contain any other regulated material.
- 1402 ii. If a CABI was not continually inspecting the material during generation, an  
1403 intrusive inspection of the pile shall be conducted to determine the extent  
1404 of RACS contamination, followed by the removal of the visible extent of  
1405 contamination plus removal of one (1) foot of material in all directions.  
1406 Alternatively, the entire pile, plus three (3) inches of material below the  
1407 pile, shall be removed and managed as RACS. If the pile was placed on  
1408 top of a durable surface such as concrete or asphalt, the surface shall be  
1409 decontaminated using wet methods, followed by CABI inspection verifying  
1410 that all soil and debris has been removed from the surface. Rinsate/runoff  
1411 shall be collected and filtrated to less than 5 microns (or applicable local  
1412 requirements) and discharged to a sanitary sewer or other Department-  
1413 approved disposal facility or re-applied to RACS that will be managed  
1414 under these regulations.  
1415
- 1416 (2) Stockpiling, as defined in Section 1.2 of these regulations, is the accumulation  
1417 and storage of RACS that will exist for more than twelve (12) hours, up to and

1418 including ten (10) calendar days. The following requirements shall apply to  
1419 stockpiled RACS:

1420  
1421 (a) Stockpiled RACS shall be placed on a minimum of 6 mil polyethylene  
1422 sheeting or shall include removal, and management as RACS, of a minimum  
1423 of three (3) inches of soil, or other matrix material, from under the entire area  
1424 of RACS stockpiling after stockpile removal. If the stockpile was placed on  
1425 top of a durable surface such as concrete or asphalt, the surface must be  
1426 decontaminated using wet methods, followed by CABI inspection verifying  
1427 that all soil and debris has been removed from the surface. Rinsate/runoff  
1428 shall be collected and filtrated to less than 5 microns (or applicable local  
1429 requirements) and discharged to a sanitary sewer or other Department-  
1430 approved disposal facility or re-applied to RACS that will be managed under  
1431 these regulations.

1432  
1433 (b) RACS shall be adequately wet during disturbance.

1434  
1435 (c) Stockpiled RACS shall be controlled per Section 5.5.7(A).

1436  
1437 (d) Stockpiled RACS shall be stabilized by:

- 1438  
1439 i. Polyethylene sheeting or geotechnical fabric with daily inspection, and  
1440 inspection no later than twelve (12) hours following storm events, and  
1441 repair/replace sheeting as necessary to maintain stabilization; or  
1442 ii. Chemical stabilizer demonstrated to be effective in the stabilization of  
1443 RACS (e.g. magnesium chloride) with weekly inspection, and inspection  
1444 no later than one (1) calendar day after storm events, and re-application of  
1445 chemical stabilizer as necessary to maintain stabilization; or  
1446 iii. Minimum of three (3) inches of soil appropriate for unrestricted use.

1447  
1448 (e) For stockpile areas that are non-contiguous with the RWA, transportation of  
1449 RACS shall be conducted in accordance with the following:

- 1450  
1451 i. Transportation equipment tires shall not contact RACS; or  
1452 ii. The tires shall be decontaminated per Section 5.5.7(I) before leaving the  
1453 RWA; or  
1454 iii. The haul road shall be managed as RACS for stabilization, per Section  
1455 5.5.7(H)(2)(d), and future removal of a minimum of three (3) inches of soil,  
1456 or other matrix material. If the road is constructed of a durable surface  
1457 such as concrete or asphalt, the surface shall be decontaminated using  
1458 wet methods, followed by CABI inspection verifying that all soil and debris  
1459 has been removed from the surface. Rinsate/runoff shall be collected and  
1460 filtrated to less than 5 microns (or applicable local requirements) and  
1461 discharged to a sanitary sewer or other Department-approved disposal

- 1462 facility or re-applied to RACS that will be managed under these  
1463 regulations.
- 1464
- 1465 (f) For a stockpile that was previously thought to be free of RACS, but where  
1466 RACS is subsequently identified, the procedure outlined in Section 5.5.7  
1467 (H)(1)(c) shall be followed.
- 1468
- 1469 (3) Storage of RACS exceeding ten calendar days shall require the submission of a  
1470 RACS Storage Plan. Storage of RACS shall not commence prior to approval of  
1471 the RACS Storage Plan by the Department's Hazardous Materials and Waste  
1472 Management Division. The RACS Storage Plan shall include:
- 1473
- 1474 (a) Approval of storage with signature from the property owner; and
- 1475
- 1476 (b) Volume of RACS intended for storage; and
- 1477
- 1478 (c) Liner design or provisions for removal of a minimum of three (3) inches of  
1479 underlying material; and
- 1480
- 1481 (d) Storm water design including protections for run-on and run-off; and
- 1482
- 1483 (e) Cover design or use of an equivalent durable stabilizer; and
- 1484
- 1485 (f) Access control and signage; and
- 1486
- 1487 (g) Storage timeframe (shall not exceed six (6) months unless an extended  
1488 storage timeframe is approved by the Department and complies with local  
1489 governing authority requirements); and
- 1490
- 1491 (h) Inspection and maintenance schedule; and
- 1492
- 1493 (i) Closure and removal requirements; and
- 1494
- 1495 (j) Documentation and reporting; and
- 1496
- 1497 (k) Certification of any designed elements by a Colorado registered Professional  
1498 Engineer.
- 1499
- 1500 (4) Temporary sub-surface storage of RACS in areas of future planned RACS  
1501 removal shall not exceed six (6) months and shall comply with the following:
- 1502
- 1503 (a) RACS may only be placed within the Area of Contamination (AOC) that it  
1504 was originally removed from.
- 1505

- 1506 (b) Placement of RACS utilizing standard RACS management requirements in  
1507 accordance with the standard requirements of Section 5.5.7, an approved  
1508 PSRMP, or an approved SOP.  
1509  
1510 (c) Cover RACS in accordance with the requirements of Section 5.5.7(K).  
1511  
1512 (d) RACS not removed within six (6) months (unless an extended storage  
1513 timeframe is approved by the Department), shall be considered disposal in  
1514 accordance with Section 5.5.8(A), or reuse within an AOC and will require an  
1515 environmental covenant in accordance with Section 5.5.8(B)(1).  
1516  
1517 (5) Offsite staging, stockpiling, and storage of RACS are allowed as long as they  
1518 comply with the disposition requirements of Section 5.5.8.  
1519

1520 (I) DECONTAMINATION

1521  
1522 (1) Requirements applicable to all projects subject to Section 5.5:

1523  
1524 (a) Personnel Decontamination:

- 1525  
1526 i. Remove booties and/or gloves before exiting RWA and dispose as  
1527 asbestos contaminated waste; or  
1528 ii. If not using disposable PPE, decontaminate boots in a boot wash station,  
1529 remove gloves after exiting the boot wash station, and dispose of gloves  
1530 as asbestos contaminated waste. Rinsate from the boot wash station  
1531 shall be collected, filtrated to less than 5 microns (or applicable local  
1532 requirements) and discharged to a sanitary sewer or other Department-  
1533 approved disposal facility, or re-applied to RACS that will be managed  
1534 under these regulations.  
1535

1536 (b) Decontamination of Equipment or Surfaces that have come into Contact with  
1537 RACS

1538  
1539 i. For equipment that comes into contact with RACS:

- 1540  
1541 1. Wet decontamination on a decontamination pad (minimum 10 mil poly  
1542 or other durable non-permeable barrier) followed by CABI inspection  
1543 and verification of equipment decontamination before it leaves the  
1544 decontamination area. All decontamination liquids and solids shall be  
1545 contained, and run-on and run-off shall be prevented. Rinsate/runoff  
1546 shall be collected, filtrated to less than 5 microns (or applicable local  
1547 requirements) and discharged to a sanitary sewer or other  
1548 Department-approved disposal facility or re-applied to RACS that will  
1549 be managed under these regulations. For breaches in the  
1550 decontamination pad where RACS or water contaminated with

1551 asbestos may have impacted the material below the decontamination  
1552 pad, implement the provisions of Section 5.5.7(J);

1553  
1554 and/or

1555  
1556 2. Decontamination using HEPA vacuums followed by CABI inspection  
1557 and verification of equipment decontamination before it leaves the  
1558 decontamination area.

1559  
1560 (c) Protection of Clean Equipment and Surfaces:

- 1561  
1562 i. Keep all equipment off of RACS; or  
1563 ii. Protect clean surfaces from coming in contact with RACS by covering  
1564 equipment surfaces or RACS surfaces with polyethylene sheeting or  
1565 equivalent durable impermeable covering. For onsite movement of  
1566 excavation equipment between RWAs, where only the excavator bucket  
1567 has come in contact with RACS, the bucket shall be wrapped in  
1568 polyethylene sheeting (minimum 6 mil) prior to movement. Protective  
1569 coverings shall be cleaned, repaired, or replaced as necessary. If  
1570 protective coverings are breached and RACS or asbestos contaminated  
1571 water comes into contact with underlying material, the provisions of  
1572 Section 5.5.7(J) shall be followed. Coverings that have come in contact  
1573 with RACS shall be disposed as asbestos contaminated waste.

1574  
1575 (2) Additional Requirements for Projects Disturbing RACS Containing Friable ACM:

- 1576  
1577 (a) Remove disposable impermeable suits or equivalent coveralls before exiting  
1578 RWA and dispose as asbestos contaminated waste, or  
1579  
1580 (b) After removal of suits or coveralls, conduct full wet decontamination prior to  
1581 exiting RWA with collection of rinsate and filtration to less than 5 microns and  
1582 discharge to a sanitary sewer or other Department-approved disposal facility.  
1583 Re-application of decontamination shower water is prohibited.

1584  
1585 (J) RACS SPILL RESPONSE

- 1586  
1587 (1) Areas where RACS is spilled are RWAs until clean up is completed.  
1588  
1589 (2) Spilled material shall be cleaned up immediately and not allowed to dry out or  
1590 accumulate on any surface. The Department's Hazardous Materials and Waste  
1591 Management Division shall be notified, through the spill reporting hotline, in the  
1592 event that spills of RACS cannot be cleaned up within 24 hours of spill  
1593 identification.

1594

- 1595 (3) Where there are breaches in ground coverings that have the potential to allow  
1596 RACS or water contaminated with asbestos to impact the material below the  
1597 covering, a minimum of three (3) inches of soil, or other matrix material, shall be  
1598 removed from beneath the breached ground coverings. Visual or measured (e.g.  
1599 survey) confirmation that three (3) inches of soil and/or other matrix material from  
1600 beneath the breached covering has been removed shall be conducted. If ground  
1601 coverings are placed on top of a durable surface such as concrete or asphalt, the  
1602 surface shall be decontaminated using wet methods, followed by CABI inspection  
1603 that all soil and debris has been removed from the surface.  
1604
- 1605 (4) Rinsate, runoff, or any other water that has come into contact with RACS shall be  
1606 considered to be asbestos contaminated water and shall be collected and  
1607 filtrated to less than 5 microns and discharged to a sanitary sewer or other  
1608 Department-approved disposal facility or re-applied to RACS that will be  
1609 managed under these regulations.  
1610
- 1611 (5) Surfaces that are contacted by asbestos contaminated water shall be managed  
1612 as RACS as per Section 5.5.7(J)(3) or permanently stabilized as per Section  
1613 5.5.7(K).  
1614
- 1615 (6) If work practices in an RWA are causing an ongoing spill outside the RWA, the  
1616 work practices shall cease or be modified to prevent additional releases.  
1617

1618 (K) REQUIREMENTS FOR EXPOSED RACS REMAINING IN PLACE  
1619

- 1620 (1) Any remaining RACS that has been exposed by the soil disturbing activity, but is  
1621 not disturbed, such as an excavation side-wall or bottom shall be covered or  
1622 stabilized using one of the following:  
1623
- 1624 (a) Cover RACS with geofabric, followed by eighteen (18) inches of fill suitable  
1625 for unrestricted use, and vegetation; or  
1626
- 1627 (b) Cover RACS with geofabric, followed by six (6) inches of fill suitable for  
1628 unrestricted use, and concrete or asphalt; or  
1629
- 1630 (c) Cover RACS with geofabric, followed by fill suitable for unrestricted use to  
1631 grade or six (6) inches, whichever is greater, for vertical excavation faces or  
1632 trenches; or  
1633
- 1634 (d) Alternate cover designs as approved by the Department.  
1635

1636 (L) DOCUMENTATION  
1637

- 1638 (1) The documents listed below shall be maintained during a project and available  
1639 for Department review upon request. However, this documentation need not be

1640 submitted to the Department unless requested. CABI and AMS notes may be  
1641 collected by one individual if they possess both certifications; however, if no AMS  
1642 is onsite the CABI shall provide items listed in the AMS notes section (e.g. wind  
1643 monitoring and shutdown events). CABI and AMS notes may be taken by  
1644 another individual, but shall be reviewed, approved, and signed by the CABI or  
1645 AMS for whom the notes are being taken. Other appropriate personnel may also  
1646 provide the following documentation.

1647

1648 (a) CABI/QPM Notes shall include documentation of:

1649

- 1650 i. Site description including location; and
- 1651 ii. Descriptions of site activities; and
- 1652 iii. Descriptions of equipment in use; and
- 1653 iv. Descriptions of hand removals (including locations); and
- 1654 v. Descriptions of types of debris identified; and
- 1655 vi. Descriptions of suspect material identified; and
- 1656 vii. Friability of ACM identified (as determined by a CABI); and
- 1657 viii. Sampling, if conducted (all sampling shall be conducted by a CABI); and
- 1658 ix. Decontamination visual inspection and clearances; and
- 1659 x. Excavation visual inspection and clearances; and
- 1660 xi. Spill response activities; and
- 1661 xii. Observations of visible emissions and responses; and
- 1662 xiii. Observations non-earthen material or the appearance of fill; and
- 1663 xiv. Observations of other indicators of impact to soils.

1664

1665 (b) AMS notes shall include documentation of:

1666

- 1667 i. Wind speed measurements; and
- 1668 ii. Prevailing wind direction(s); and
- 1669 iii. Wind shut down event(s); and
- 1670 iv. Initial air sample locations; and
- 1671 v. Air sample relocation notes; and
- 1672 vi. Observations of visible emissions and responses; and
- 1673 vii. Notes pertaining to sample malfunctions (pump faults, overloading, etc.);  
1674 and
- 1675 viii. Instances of samples being compromised (samples knocked over,  
1676 sample filters being sprayed with water, samples physically impacted by  
1677 equipment, etc.); and
- 1678 ix. Air sample data (flow rates, time of sampling, volumes, calibration method,  
1679 etc.).

1680

1681 (c) General documentation shall include:

1682

- 1683 i. Disposal records; and
- 1684 ii. Analytical reports including chain of custody forms; and

- 1685           iii. Evaluations of any samples with a “cannot be read” analysis result and the
- 1686                notifications of these events to the Department; and
- 1687           iv. Location of known remaining RACS; and
- 1688           v. Creation and removal dates for, and locations of, staged, stockpiled,
- 1689                and/or stored RACS; and
- 1690           vi. Stockpile and staging pile inspection logs and documentation of weather
- 1691                events requiring inspection; and
- 1692           vii. Logs of all site personnel with access to the RWA; and
- 1693           viii. Certification records for all CABIs and AMSs utilized on the project, and
- 1694           ix. Records for training conducted in accordance Sections 5.5.3(A) and
- 1695                5.5.3(B); and
- 1696           x. Records demonstrating the QPM(s) meet the training and experience
- 1697                requirements set forth in Section 5.5.3(C); and
- 1698           xi. ECP(s) generated during the project.
- 1699

1700 **5.5.8 PACKAGING AND DISPOSITION OF REGULATED ASBESTOS**

1701 **CONTAMINATED SOIL (RACS)**

1702

1703 (A) Disposal of RACS

1704

1705           (1) RACS containing one percent (1%), or one (1) pound, or greater of friable ACM

1706                (as determined in the field by a CABI) by volume per load or container, based on

1707                visual estimation through continuous visual inspection or other Department-

1708                approved quantifiable means of measurement, shall be packaged in a leak tight

1709                container and disposed as friable asbestos waste, in accordance with Section 5.3

1710                of these regulations. Alternatively, a friable ACM determination by a CABI is not

1711                required if the disposal load is assumed to be RACS containing 1% or greater of

1712                friable ACM and is packaged and disposed of in accordance with Section 5.3 of

1713                these regulations. Documentation shall accompany each load of RACS removed

1714                from the site stating that soil originating from this site shall not be used as daily

1715                cover or reused offsite.

1716

1717           (2) For RACS containing:

1718

1719                (a) Less than one percent (1%), and less than one (1) pound, of friable ACM (as

1720                    determined in the field by a CABI) by volume, per load or container, based on

1721                    visual estimation through continuous visual inspection, or other Department-

1722                    approved quantifiable means of measurement, shall be packaged in a leak

1723                    tight container and disposed in a manner similar to non-friable asbestos

1724                    waste, as described in Section 5.2 of these regulations. Documentation must

1725                    accompany each load of RACS removed from the site stating that soil

1726                    originating from this site shall not be used as daily cover or reused offsite.

1727

1728                (b) Except as provided by Section 5.5.8(A)(3), only visible non-friable ACM (as

1729                    determined in the field by a CABI) that has not been rendered friable, or

1730 RACS that contains no visible ACM, shall be packaged in a leak tight  
1731 container and disposed of as non-friable asbestos waste in accordance with  
1732 Section 5.2 of this Part 5. Documentation shall accompany each load of  
1733 RACS removed from the site stating that soil originating from this site shall  
1734 not be used as daily cover or reused offsite.  
1735

1736 (c) A total volume of debris that is less than 1% of the disposal load, based on  
1737 visual estimation through continuous visual inspection, and the debris is all  
1738 assumed to be RACS, then a CABI is not required to make a friable ACM  
1739 determination.  
1740

1741 (3) Owners/operators may propose pilot projects to demonstrate that alternative  
1742 packaging for RACS, that contains only non-friable ACM and/or asbestos fibers  
1743 in soil, is equivalently protective. Pilot project work plans shall be submitted to  
1744 the Department for review and approval prior to implementation. The alternate  
1745 packaging must be capable of ensuring that there are no visible emissions during  
1746 transport, including the transportation of containers that cannot be  
1747 decontaminated at the disposal facility. The alternative packaging must also be  
1748 approved by the disposal facility accepting the waste.  
1749

1750 (4) A Design and Operations (D&O) plan shall be submitted to, and approved by, the  
1751 Department for onsite disposal of RACS outside of the AOC, in accordance with  
1752 the Colorado Solid Wastes Disposal Sites and Facilities Act (C.R.S. 30-20, Part  
1753 1) and these regulations. The packaging requirements set forth above in Section  
1754 5.5.8(A)(1-2) are not required for onsite disposal, but the requirements of Section  
1755 5.5.5(A)(2)(e) are applicable. An environmental covenant, in accordance with  
1756 25-15-320, C.R.S., is required for onsite RACS disposal, and a Certificate of  
1757 Designation shall be required, in accordance with Section 1.6 of these  
1758 regulations, unless exempt under Section 1.4.  
1759

1760 (B) Onsite reuse of RACS:  
1761

1762 (1) A plan for reuse of RACS within the footprint of the AOC shall be submitted to the  
1763 Department for review and approval prior to implementation and shall comply  
1764 with Section 5.5.5(A)(2)(e), and the following cover requirements:  
1765

1766 (a) Cover RACS with geofabric, followed by eighteen (18) inches of fill suitable  
1767 for unrestricted use, and vegetation; or  
1768

1769 (b) Cover RACS with geofabric, followed by six (6) inches of fill suitable for  
1770 unrestricted use, and concrete or asphalt; or  
1771

1772 (c) Cover RACS with geofabric, followed by fill suitable for unrestricted use to  
1773 grade or six (6) inches, whichever is greater, for vertical excavation faces or  
1774 trenches; and

- 1775  
1776 (d) The final grades shall promote surface water run-off and minimize erosion,  
1777 and shall have slopes no less than 5% (20:1) and no greater than 25% (4:1);  
1778 or  
1779  
1780 (e) Alternate cover designs as approved by the Department; and  
1781  
1782 (f) An environmental covenant, in accordance with 25-15-320, C.R.S., may be  
1783 required for onsite reuse of RACS.

1784  
1785 (2) A plan for beneficial reuse of RACS outside the footprint of the AOC, in  
1786 accordance with Section 8.6, shall be submitted to the Department for review and  
1787 approval prior to its implementation. The plan shall include provisions for  
1788 covering RACS and shall comply with the management requirements of Section  
1789 5.5.5(A)(2)(e). Additionally, the cover requirements outlined in Section 5.5.7(K)  
1790 shall be adhered to. An environmental covenant, in accordance with 25-15-320  
1791 C.R.S. may be required for beneficial reuse of RACS.

1792  
1793 (C) Demonstration of Non-RACS

1794  
1795 (1) Soil or other matrix material initially determined to be RACS may be  
1796 demonstrated not to be RACS based on visual inspection, removal of all ACM,  
1797 and sampling and analysis of the remaining material showing no detectable  
1798 asbestos. Sampling and analysis shall be conducted in accordance with  
1799 Appendix 5A. If there is no detectable asbestos, this material is no longer  
1800 subject to Section 5.5 and may be appropriate for unrestricted use, onsite or  
1801 offsite, as long as it does not contain any other regulated material.

1802  
1803 **5.5.9 FEES**

1804  
1805 The Department shall collect fees, from the owner, operator, or person conducting the  
1806 soil disturbing activity, based on total documented costs, in accordance with Section 1.7  
1807

1808  
1809  
1810  
1811

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

1812 **1.0 Purpose**

1813 (A) The purpose of this appendix is to establish standard sample collection  
1814 requirements and analytical methods and procedures for use in identifying  
1815 and quantifying asbestos fibers in air, bulk material, and environmental media  
1816 such as soil or ash.

1817 **2.0 Sample Collection Requirements**

1818 (A) The following sample collection requirements shall be followed when  
1819 collecting samples for the purpose of determining the applicability of Section  
1820 5.5, and when collecting samples necessary to comply with the requirements  
1821 of Section 5.5. Remediation plans submitted in accordance with Section  
1822 5.5.6 shall include a site specific sampling and analysis plan that incorporates  
1823 the sample collection methodologies and analytical procedures in this  
1824 Appendix, or proposes alternatives, and include site specific clearance  
1825 criteria.

1826  
1827 2.1 Bulk Samples

1828  
1829 (A) Bulk samples shall be collected, in a manner sufficient to determine whether  
1830 the material is asbestos-containing material (ACM) or not ACM, from each  
1831 type of suspect ACM. Bulk samples shall be collected by a State of Colorado  
1832 certified Asbestos Building Inspector (CABI). In the absence of bulk sample  
1833 collection, any suspect ACMs must be assumed to be ACMs.

1834  
1835 (B) Bulk samples shall be collected by homogenous type based on color, pattern,  
1836 texture, thickness, associated materials, or by other identifying  
1837 characteristics. Additionally, the quantity and location of a suspect material  
1838 shall be used to determine the number of bulk samples required to  
1839 characterize the asbestos content of each homogeneous suspect material.  
1840 For the purpose of determining that a homogeneous suspect material does  
1841 not contain asbestos, a minimum of three (3) bulk samples shall be collected  
1842 from the homogeneous material unless there is insufficient material to  
1843 constitute three (3) samples. If one of the collected samples of a

1844 homogeneous bulk material is determined to be ACM, then the homogeneous  
1845 material shall be considered ACM.

1846  
1847 2.2 Soil Samples

1848  
1849 (A) Samples collected to determine asbestos content in soil shall be ten (10)  
1850 point aliquot composite samples collected from a maximum area of 1,250  
1851 square feet (representing 0-6 inches beyond the exposed surface) or a  
1852 maximum volume of forty (40) cubic yards. Individual aliquots shall be  
1853 approximately 1/10 of the entire sample volume. At each aliquot location  
1854 approximately one (1) tablespoon of soil shall be collected. The total volume  
1855 of the ten (10) aliquots should equal roughly a half cup. The total collected  
1856 sample volume should be greater than one quarter (¼) cup, but should not  
1857 exceed one cup. Aliquot locations shall be randomly selected but shall be  
1858 representative of the entire sample area or volume (to be inclusive of the  
1859 interior of soil piles in addition to the surface). However, aliquots shall be co-  
1860 located with any areas where friable ACM was formerly present. All samples  
1861 collected to determine asbestos content shall be collected by a CABI.

1862  
1863 (B) Sampling for clearance purposes of any exposed horizontal or vertical surface  
1864 shall have the following additional requirements:

- 1865  
1866 1) The aliquots of a clearance sample shall not be collected until after the  
1867 RACS, and the required amount of associated material, has been  
1868 removed.
- 1869  
1870 2) A visual inspection shall be performed and passed (i.e., no visible ACM  
1871 present) by a CABI prior to the collection of soil samples. Visual  
1872 inspections shall include the following:
- 1873  
1874 a) The area to be cleared shall be designated before the visual  
1875 inspection; and
- 1876 b) Former locations of friable materials shall be designated; and
- 1877 c) The surface being inspected shall be dry enough to allow identification  
1878 of suspect ACM; and
- 1879 d) The visual inspection shall be conducted in adequate lighting; and
- 1880 e) The area to be cleared shall be free of visual impediments (e.g. snow  
1881 cover, plastic sheeting, standing water, etc.); and
- 1882 f) At a minimum, the area to be cleared shall be inspected in at least two  
1883 (2) perpendicular directions; and

- 1884 g) Single or multiple inspectors may be used to perform a visual  
1885 inspection and clearance. However, a single inspector shall not  
1886 visually inspect more than a five (5) foot width with each pass [i.e. for a  
1887 clearance area that is 25' x 50' a single inspector would be required to  
1888 make at least five (5) passes in one direction (25' length) and at least  
1889 ten (10) passes in the other direction (50' length)]; and  
1890 h) Detailed close examination of the area being cleared is required. The  
1891 inspector(s) should use limited invasive inspection techniques, such as  
1892 periodically sifting the surface being cleared and closely inspecting the  
1893 disturbed area.  
1894 3) If sidewalls with six (6) inches or greater of vertical height are present,  
1895 independent ten (10) point aliquot composite samples shall be collected  
1896 from each of the sidewalls and the floor of the excavation.  
1897

### 1898 2.3 Ash Samples

- 1899  
1900 (A) Ash that contains, or is comingled with, suspect ACM and/or construction and  
1901 demolition debris shall be considered to be RACS unless the ash is sampled,  
1902 and analysis demonstrates that the ash is not RACS. Representative  
1903 samples of each type of ash materials shall be sampled and analyzed in the  
1904 same manner as soil (including area/volumetric limitations of sampling). Ash  
1905 samples shall be collected by homogenous strata, location, content of other  
1906 surrounding material, or other observations indicating heterogeneity of the  
1907 ash present. All samples collected to determine asbestos content shall be  
1908 collected by a CABI. In the absence of suspect ACM or construction and  
1909 demolition debris, and in the absence of documented evidence of non-visible  
1910 asbestos, ash material may be treated as non-RACS.  
1911

### 1912 2.4 Cross Contamination Prevention

- 1913  
1914 (A) All sample collection equipment shall be decontaminated in a manner  
1915 sufficient to prevent cross contamination between individual samples or  
1916 individual composite samples. Decontamination is not required between the  
1917 collection of aliquots comprising a single composite sample.  
1918

### 1919 2.5 Air Samples for Standard RACS Management

- 1920  
1921 (A) Air samples shall be collected by drawing air through 0.8-micron ( $\mu\text{m}$ ), 25-  
1922 millimeter (mm), mixed cellulose ester (MCE) filters, using an open-faced  
1923 cowl extension oriented face down at an angle of 45°. Sample flow rate shall

1924 be between 0.5-10 liters per minute depending on the anticipated duration of  
1925 sampling and the specified detection sensitivity. The air sampling equipment  
1926 shall be run until the minimum volume required is collected for each sample.  
1927 However, if the minimum air volume required by the method, and/or to reach  
1928 the required analytical sensitivity, being utilized cannot be met, the State of  
1929 Colorado trained and certified Air Monitoring Specialist (AMS) shall request  
1930 that the laboratory prepare the sample using an indirect preparation method,  
1931 for TEM presence/absence analysis. Air samples shall be collected at a  
1932 height that is representative of the disturbance activity taking place.  
1933 However, air samples shall be located at a height between three (3) feet  
1934 above the ground surface but not to exceed twenty (20) feet above the  
1935 ground surface. Air samples shall be collected by an AMS.  
1936

## 1937 2.6 Air Samples for Risk-Based Air Threshold Monitoring

1938  
1939 (A) Air samples shall be collected by an AMS. Air monitoring shall be conducted  
1940 during each partial or full day of soil management activities using fixed and  
1941 mobile monitors as follows:

- 1942
- 1943 1) A minimum of four (4) samples shall be collected for each regulated work  
1944 area (RWA).
- 1945 2) For the purpose of determining the number of samples necessary, each  
1946 RWA shall be divided into four (4) equal quadrants. A minimum of one (1)  
1947 sample shall be collected for each quadrant with an adjacent receptor  
1948 zone.
- 1949 3) If an RWA is greater than one (1) acre, one (1) additional sample for each  
1950 quadrant with an adjacent receptor zone shall be collected and analyzed  
1951 for each additional one quarter (¼) acre in RWA surface area.
- 1952 4) Samples shall be located along the RWA perimeter, between the RWA  
1953 and each adjacent receptor zone. Samples shall be placed between the  
1954 RWA and any fixed adjacent receptor(s). In the absence of fixed adjacent  
1955 receptors, sample placement shall be at the AMS's discretion.
- 1956 5) The sample volume shall be the minimum necessary to meet analytical  
1957 sensitivity.
- 1958 6) Samples shall be collected by drawing air through 0.8-micron (µm), 0.25-  
1959 millimeter (mm), mixed cellulose ester (MCE) filters, using an open-faced  
1960 cowl extension oriented face down at an angle of 45°.
- 1961

## 1962 **3.0 Analytical Requirements**

1963 (A) The following analytical methods shall be used to evaluate the presence of  
1964 asbestos and/or to determine asbestos content when analyzing samples for

1965 the purpose of determining the applicability of Section 5.5, and when  
1966 analyzing samples collected in accordance with Section 5.5:

1967

1968 3.1 Bulk Samples

1969

1970 (A) Samples of suspect ACM shall be analyzed by polarized light microscopy  
1971 (PLM), according to United States Environmental Protection Agency (USEPA)  
1972 Method EPA/600/R-93/116 or equivalent method, to determine if any  
1973 asbestos fibers are present. If the asbestos content of a sample is estimated  
1974 to be 1% asbestos or less, but greater than 0%, by a method other than point  
1975 counting (such as visual estimation), the determination shall be repeated  
1976 using the point counting technique with PLM. Alternatively, the material may  
1977 be assumed to be ACM. Analysis shall be conducted by a National Voluntary  
1978 Laboratory Accreditation Program (NVLAP) accredited laboratory.

1979

1980 3.2 Soil Samples and Ash Samples

1981

1982 (A) Prior to preparation of a soil or ash sample, bulk materials shall be separated  
1983 from the soil or ash sample for independent analysis. Any bulk materials  
1984 identified in a soil or ash sample that contain any amount of asbestos shall be  
1985 reported as independent layers of the whole sample. The samples shall be  
1986 adequately prepared (crushed and dried) to facilitate stereomicroscopic  
1987 analysis by the laboratory. The goal of the preparation process should be to  
1988 produce dried conglomerates of approximately one eighth inch (1/8") to one  
1989 quarter inch (1/4") size. Rock and/or stone material does not need to be  
1990 crushed (this process is not intended to be homogenization). Soil and ash  
1991 samples shall be analyzed by PLM according to USEPA Method EPA/600/R-  
1992 93/116 to determine if any asbestos fibers are present. Analysis shall be  
1993 conducted by a National Voluntary Laboratory Accreditation Program  
1994 (NVLAP) accredited laboratory. During the stereomicroscopic analysis (10X –  
1995 50X) of the soil/ash sample the analyst shall sift through the sample at a rate  
1996 of approximately one (1) tablespoon per minute. At the end of the  
1997 stereomicroscopic analysis the sample shall be agitated or shaken as a final  
1998 check for asbestos prior to the preparation of PLM grab mounts. At no time  
1999 during the stereomicroscopic analysis shall a sub sample be collected. The  
2000 entire sample shall be analyzed and the results reported. If no asbestos was  
2001 identified by PLM after the initial stereomicroscopic examination, then three  
2002 (3) random grab mount preparations shall be analyzed by PLM to determine if  
2003 the sample is none detected for asbestos content. If any asbestos is found by  
2004 the laboratory it shall be reported even in the absence of a second detection

2005 (i.e. there does not need to be a second detection to qualify a trace level of  
2006 asbestos in the sample). Quantification of asbestos content shall be based  
2007 on the entire sample volume, and be reported as such.

2008

2009 3.3 Air Samples for Standard RACS Management

2010

2011 (A) Air samples submitted for Phase Contrast Microscopy (PCM) shall be  
2012 analyzed according to NIOSH Method 7400 by a laboratory showing  
2013 successful participation in the American Industrial Hygiene Association  
2014 (AIHA) Proficiency Analytical Testing (PAT) Program or individual(s) certified  
2015 through the AIHA Asbestos Analysts Registry (AAR) Program.

2016

2017 (B) Air samples submitted for Transmission Electron Microscopy (TEM), for which  
2018 quantification of asbestos is desired, shall be prepared and analyzed  
2019 according to the standard Asbestos Hazard Emergency Response Act  
2020 (AHERA) method (AHERA; 40 CFR Part 763, Subpart E, Appendix A). All  
2021 TEM analysis shall be performed by a NVLAP accredited laboratory. If a  
2022 presence/absence analysis is desired, the analysis shall be performed using  
2023 the AHERA method modified in the following manner:

2024

2025 1) A minimum of two (2) preparations shall be prepared and utilized for each  
2026 sample.

2027 2) Analysis shall be conducted on a minimum of four (4) grid openings or  
2028 until three (3) or more structures are identified, whichever comes first.

2029 3) Any structure (adhering to the AHERA counting rules) identified during  
2030 analysis shall be reported.

2031 a) Identification of less than three (3) structures shall be reported as  
2032 present.

2033 b) Identification of three (3) or greater structures shall be reported as  
2034 detected.

2035

2036 (C) Any air sample analysis that results in a “cannot be read (CBR)”  
2037 determination from the analyst, or a “not analyzed (NA) or rejected” due to  
2038 loose debris or uneven loading, shall be evaluated by the AMS to determine if  
2039 a cause of the CBR or NA can be ascertained. If it is determined that the  
2040 CBR is a result of overloading from airborne emissions, then the AMS shall  
2041 request that the laboratory prepare the sample, using an indirect preparation  
2042 method, for TEM presence/absence analysis.

2043

2044 3.4 Risk-Based Air Threshold Samples

2045  
2046 (A) Air samples collected for TEM analysis shall be submitted to a NVLAP accredited  
2047 laboratory. Samples shall be analyzed by TEM according to ISO Method 10312  
2048 with the following modifications for PCM equivalent (PCMe) structures:

- 2049
- 2050 1) An aspect ratio of 3:1 shall be used when counting structures greater than
  - 2051 5 µm in length, rather than the 5:1 ratio specified in the method.
  - 2052 2) A width range of 0.25 to 3 µm will be used when counting PCMe
  - 2053 structures, rather than the 0.2 to 3 µm specified in the method.
  - 2054 3) A minimum of ten grid openings will be counted, rather than the minimum
  - 2055 of four (4) grid openings specified in the method.
  - 2056 4) Calculations shall be made based on total fibers rather than primary fibers.

2057  
2058 (B) The maximum number of grid openings (GOs) to be counted to achieve the  
2059 specified analytical sensitivity shall be estimated as follows:

2060  
2061 Number of GOs =  $EFA \div (A_{GO} \times V \times S \times CF)$

2062  
2063 where:

- 2064 EFA = effective filter area (385 for a 25-mm filter)  
2065  $A_{GO}$  = area of a grid opening (approximately 0.01 mm<sup>2</sup>; actual value to be  
2066 provided by the analytical laboratory)  
2067 V = volume of air sampled (in liters [L])  
2068 S = analytical sensitivity (structures per cubic centimeter [s/cc])  
2069 CF = conversion factor (1000 cc/L)

2070  
2071 (C) Any air sample analysis that results in a “cannot be read (CBR)” determination  
2072 from the analyst, or a “not analyzed (NA) or rejected” due to loose debris or  
2073 uneven loading, shall be prepared by the laboratory, using an indirect preparation  
2074 method, for TEM presence/absence analysis.

### 2075 2076 3.5 Data Evaluation for Risk-Based Air Threshold Samples

2077  
2078 (A) General requirements:

- 2079
- 2080 1) Samples collected for comparison to risk-based air thresholds shall be
  - 2081 evaluated based on the average (mean) concentration over the exposure
  - 2082 duration.
  - 2083 2) All valid data shall be used to calculate daily and ten (10) day rolling
  - 2084 averages.

2085 3) For all projects a minimum of three (3) samples per day must have  
2086 quantifiable data (not CBR or rejected). If less than three (3) quantifiable  
2087 analytical results are available then the daily average is invalid.  
2088

2089 (B) Project days 1-9:  
2090

- 2091 1) The results of the daily samples must be averaged to calculate a daily  
2092 average for use in comparing to the risk based air threshold for days 1-9  
2093 of monitoring.
- 2094 2) A ten (10) day average shall be calculated for days 1-9. The ten (10) day  
2095 average shall be comprised of at least eight (8) valid daily average results.  
2096 However, all valid data shall be used to calculate the ten (10) day  
2097 average.
- 2098 3) If the ten (10) day average exceeds the risk-based air threshold,  
2099 engineering controls shall be adjusted to reduce the daily average.
- 2100 4) The Department shall be notified within 24 hours if the calculations in  
2101 paragraphs 1 and 2 above cannot be completed due to invalid data.  
2102

2103 (C) Project days 10 and greater:  
2104

- 2105 1) Starting on day 10, a ten (10) day rolling average shall be calculated and  
2106 compared to the risk-based threshold.
- 2107 2) If average concentration trends indicate the risk-based air threshold will be  
2108 exceeded before project completion, engineering controls shall be  
2109 adjusted to reduce the daily asbestos emissions.
- 2110 3) If subsequent evaluation of average concentration trends indicates that  
2111 the risk-based air threshold will still be exceeded before project  
2112 completion, additional adjustments to engineering controls shall be made.
- 2113 4) If changes in engineering controls are not effective in reducing airborne  
2114 concentration trends such that the risk-based air thresholds can be met,  
2115 consultation with the Department is required.
- 2116 5) The Department shall be notified within five (5) working days if the  
2117 averaged airborne asbestos concentration for the entire project exceeds  
2118 the risk-based air threshold.  
2119

#### 2120 **4.0 Documentation** 2121

2122 (A) All of the following sampling and analytical documentation shall be maintained  
2123 during a project and available for Department review upon request. This

2124 documentation need not be submitted to CDPHE unless requested or as required  
2125 in a project specific plan.

2126

2127 1) Documentation of bulk, soil, and ash samples shall include:

2128

- 2129 a. A description of the material being sampled including friability.
  - 2130 i. For samples collected for characterization purposes also
  - 2131 include an estimate of the quantity of visible suspected
  - 2132 RACS present.
  - 2133 ii. For samples of ash, also include a brief description of the
  - 2134 ash layer, and any associated identifiable debris.
- 2135 b. Name of person collecting the sample(s).
- 2136 c. Date and time of sample collection.
- 2137 d. Location of sample collection (a map, drawing, or diagram showing
- 2138 sample locations in relation to the work area and surrounding area).
- 2139 e. The boundary/limits that are represented by the collected sample.
- 2140 f. Chain of custody documentation.
- 2141 g. Laboratory analysis reports.
- 2142 h. Log of characterized homogeneous bulk materials including
- 2143 material descriptions, photographic documentation, and asbestos
- 2144 content.

2145

2146 2) Documentation of air samples shall include:

2147

- 2148 a. Name of person collecting the sample(s).
- 2149 b. Date and time(s) of sample collection.
- 2150 c. Locations of air sample collection.
- 2151 d. Any relocation of air samples.
- 2152 e. A map, drawing, or diagram showing air sample locations (initial
- 2153 and relocations) in relation to the work area and the surrounding
- 2154 area.
- 2155 f. Chain of custody documentation.
- 2156 g. Laboratory analysis reports.
- 2157 h. Explanation of any air sample malfunctions and any voided air
- 2158 samples.
- 2159 i. Risk based air threshold concentration calculations.
- 2160 j. Air sample data (flow rates, time of sampling, volumes, calibration
- 2161 method, etc.).
- 2162 k. Wind speed measurements.
- 2163 l. Prevailing wind directions.

2164 m. Wind shut down events.

2165 n. Observations of visible emissions and responses.

2166

2167 **5.0 Deviations from Sampling and Analysis Procedures**

2168

2169 (A) Deviation from this sampling and analysis appendix shall only be allowed  
2170 upon consultation with, review by, and approval from, the Department.

2171

2172