

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

13
14
15 **1) Section 1.2 is being amended by adding the following definitions in**
16 **alphabetical order to read as follows:**

17
18 **1.2 Definitions**

19
20 *****

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

25
26 *****

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

32
33 *****

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

37 *****
38

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

41
42 *****

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

48
49 *****

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

53
54 *****

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

62
63 *****

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

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

- 82 d. Elastic, pliable, or rubberized materials, including but not limited to:
- 83
- 84 i. Pliable duct sealant
- 85
- 86 ii. Pliable fiberglass insulation sealant
- 87
- 88 iii. Pliable fire-stop caulking /sealants
- 89
- 90 iv. Pliable window and door caulking
- 91
- 92 e. Extremely hard materials, coatings and sealants including but not limited
- 93 to:
- 94
- 95 i. Laboratory countertops and sinks
- 96
- 97 ii. Epoxy type Concrete Masonry Unit (CMU) coatings
- 98
- 99 iii. Epoxy type panel adhesive
- 100
- 101 iv. Duct sealant
- 102
- 103 v. Ceiling tile adhesive
- 104
- 105 f. Other asbestos-containing materials as approved by the Department.
- 106

107 *****

108

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

116 *****

117

118

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

123 *****

124

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

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

158 *****

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

163 *****

164
165
166 **“Staging”** for the purposes of Section 5.5, means the accumulation of RACS in the
167 RWA for twelve (12) hours or less.

168 *****

169
170 **“Stockpiling”** for the purposes of Section 5.5, means the accumulation of RACS that
171 will exist for more than 12 hours, up to and including ten (10) calendar days.

172 *****

173
174
175 **“Storage”** for the purposes of Section 5.5, means the accumulation of RACS greater
176 than ten (10) days, but not exceeding six (6) months.

177 *****

178
179 **“Visible”** means capable of being seen with the unaided eye.

180 *****

181
182
183
184 **2) Section 1.2 is being amended by revising the following definitions to read as**
185 **follows:**

186
187 **1.2 Definitions**

188 *****

189
190 **“Adequately wet”** means sufficiently ~~mix or penetrate with liquid to completely prevent~~
191 ~~the release of particulate material and fibers into the ambient air. If visible emissions~~
192 ~~are observed coming from asbestos-contaminated soil or asbestos-containing material,~~
193 ~~then the material has not been adequately wetted. However, the absence of visible~~
194 ~~emissions is not sufficient evidence of being adequately wet.~~ **WET TO MINIMIZE OR**
195 **ELIMINATE VISIBLE EMISSIONS OF DUST AND/OR DEBRIS WITHIN THE REGULATED WORK AREA**
196 **AND PREVENT THE RELEASE OF VISIBLE EMISSIONS FROM LEAVING THE REGULATED WORK**
197 **AREA (RWA) IN ACCORDANCE WITH SECTION 5.5 OF THESE REGULATIONS. THE OBSERVANCE**
198 **OF VISIBLE EMISSIONS, OUTSIDE OF THE RWA, OF DUST AND/OR DEBRIS IS AN INDICATION THAT**
199 **SOILS ARE NOT ADEQUATELY WET.**

200 *****

201
202
203 **“Asbestos”** means the asbestiform varieties of serpentinite (chrysotile), riebeckite
204 (crocidolite), amosite (cummingtonite-grunerite), anthophyllite, ~~and actinolite~~ **AND**
205 tremolite.

206
207 **“Asbestos-containing material” (“ACM”)** means any material that contains more than
208 one percent (1%) asbestos, ~~by weight, area or volume.~~

209 *****

210 *****

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

213
214 *****

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

219
220 *****

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

231
232 *****

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

242
243 *****

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

246
247 **1.2 Definitions**

248
249 *****

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

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

256
257 **SECTION 5**

258
259 **ASBESTOS WASTE MANAGEMENT**

- 260
261 5.1 General Provisions
262
263 5.2 Non-Friable Asbestos Waste Disposal Areas
264
265 5.3 Friable Asbestos Waste Disposal Areas
266
267 5.4 Storage of Asbestos Waste
268
269 5.5 Management of Regulated Asbestos-Contaminated Soil (RACS)
270
271 5.5.1 Scope and Applicability
272 5.5.2 Exemptions
273 5.5.3 Training and Outreach
274 5.5.4 Response for Unplanned RACS Discovery
275 (A) Immediate Actions
276 (B) 24-Hour Notification Requirements
277 (C) Interim Actions
278 5.5.5 Response for Planned RACS Management
279 (A) Project Specific RACS Management Plan (PSRMP)
280 (B) Standard Operating Procedures (SOPs)
281 (C) Minimum Requirements of Section 5.5.7
282 5.5.6 Remediation of Asbestos in Soil
283 5.5.7 Minimum Requirements for the Disturbance of RACS
284 (A) Establishment and Control of a Regulated Work Area (RWA)
285 (B) Personal Protective Equipment (PPE) for the Purposes of
286 Preventing Cross-Contamination

- 287 (C) Wetting
- 288 (D) Wind Speed Monitoring
- 289 (E) Air Monitoring
- 290 (F) Work Practices to be Followed During RACS Disturbance
- 291 (G) Loading and Placement of RACS
- 292 (H) Onsite Staging, Stockpiling, and Storage of RACS
- 293 (I) Decontamination
- 294 (J) RACS Spill Response
- 295 (K) Requirements for Exposed RACS Remaining in Place
- 296 (L) Documentation

297 5.5.8 Disposition of Regulated Asbestos-Contaminated Soil

298 5.5.9 Fees

299

300 Appendix 5A: Sample Collection Protocols and Analytical Methodologies

301

302

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

307

308

SECTION 5

309

310

ASBESTOS WASTE MANAGEMENT

311 *****

312 **5.5 MANAGEMENT OF REGULATED ASBESTOS-CONTAMINATED SOIL**
 313 **(RACS):**

314

315 **5.5.1 SCOPE AND APPLICABILITY**

316

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

321

322 (1) Conduct visual assessment of disturbed material;

323

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

329 (3) If debris is encountered that only contains metal, glass, plastic, wood, or stone
330 with no associated material suspected of containing asbestos fibers, then Section
331 5.5 is not applicable.

332
333 (4) In the event of an emergency in which a soil disturbing activity in an area of
334 debris must continue or commence at once, a RACS determination in
335 accordance with Section 5.5.1(B) may be postponed during the initial response to
336 the immediate emergency. However, the RACS determination must be made
337 within 48 hours of the initial emergency response.

338
339 (B) Any person who disturbs debris or encounters debris during soil disturbing activities,
340 when the subject debris is not excluded within 5.5.1(A)(3), must inspect the debris,
341 through continuous visual observation, to determine if the debris is, or contains,
342 suspect asbestos-containing material. The visual inspection shall be conducted in a
343 manner sufficient to provide thorough inspection of the material being disturbed,
344 while maintaining the safety of the inspector. The person(s) visually inspecting the
345 debris must be a Qualified Project Monitor (QPM) or a Certified Asbestos Building
346 Inspector (CABI). All suspect asbestos-containing materials must be:

347
348 (1) Assumed to be ACM; or

349
350 (2) Sampled by a CABI. The samples shall be analyzed by a National Voluntary
351 Laboratory Accreditation Program (NVLAP) participating laboratory utilizing
352 Polarized Light Microscopy (PLM) (EPA Method 600/R-93/116 or equivalent) to
353 determine if it is ACM; or

354
355 (3) Determined to be ACM, or non-ACM, through the use of documentation unique to
356 the material observed in the field establishing the asbestos content of the
357 material (e.g. laboratory analysis results from previous encounters with the same
358 material).

359
360 (4) The asbestos determination shall be made within seven (7) calendar days of
361 discovery of the debris.

362
363 (a) Within 24 hours of discovery of debris, and until the asbestos determination is
364 made, the debris shall be stabilized in accordance with Section 5.5.4(A)(3) of
365 these regulations.

366
367 (b) No additional disturbance, other than necessary to perform the required
368 stabilization in Section 5.5.4(A)(3), of the debris shall occur prior to the
369 asbestos determination.

370

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

- 413 (3) RACS that is generated and not disposed of or reused in compliance with
414 Section 5.5.8 of these Regulations is solid waste and shall be managed in
415 accordance with the landfill requirements of the Colorado Solid Wastes Disposal
416 Sites and Facilities Act (C.R.S. 30-20, Part 1) and the Regulations Pertaining to
417 Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1).
418
- 419 (4) A person who disturbs RACS shall make the decision upon the initial discovery of
420 RACS to either manage the RACS in accordance with Section 5.5, or cease soil
421 disturbing activities and permanently stabilize the disturbed RACS to control the
422 release of asbestos fibers in accordance with one of the following:
423
- 424 (a) Cover RACS with geofabric, or equivalent visible barrier, and restore the site
425 to pre-disturbance conditions using fill suitable for unrestricted use; or
426
 - 427 (b) Cover RACS with geofabric, or other visible barrier, followed by 18 inches of
428 fill suitable for unrestricted use, and vegetation; or
429
 - 430 (c) Cover RACS with geofabric, or other visible barrier, followed by 6 inches of fill
431 suitable for unrestricted use, and concrete or asphalt; or
432
 - 433 (d) Cover RACS with geofabric, or other visible barrier, followed by fill suitable for
434 unrestricted use to grade for vertical excavation faces or trenches; or
435
 - 436 (e) Alternate cover designs as approved by the Department.
437

438 **5.5.2 EXEMPTIONS**

- 439
- 440
- 441 (A) Removal of asbestos-containing material on a facility component with asbestos
442 quantities above the trigger levels, as defined in 5.5.1(D)(2), is subject to the permit
443 and abatement requirements of Air Quality Control Commission Regulation No. 8 (5
444 CCR 1001-10, Part B), and is therefore not subject to this Section 5.5., but shall still
445 comply with Sections 5.1 through 5.4 of these regulations.
446
- 447 (B) Spill response activities that are subject to the requirements of Air Quality Control
448 Commission Regulation No. 8 (5 CCR 1001-10, Part B) are not subject to the
449 requirements of Section 5.5, but shall still comply with Sections 5.1 through 5.4 of
450 these regulations.
451
- 452 (C) Ambient occurrences of asbestos fibers in soil that are demonstrated to be the result
453 of background conditions and not the result of site specific activities are not subject
454 to the requirements of this Section 5.5. This demonstration shall be submitted to,
455 and approved by, the Department prior to the exemption being applicable.

- 456 (D) During active solid waste disposal operations, asbestos waste disposal areas that
457 have a certificate of designation are not subject to 5.5, but shall comply with the
458 facility's Engineering Design and Operations Plan.
459
- 460 (E) De minimis projects involving a total RACS disturbance of less than 1 cubic yard,
461 using low-emission methods, are exempt from this Section 5.5, except for the
462 decontamination procedures in 5.5.7(l) and the disposal requirements in 5.5.8. For
463 the purpose of this Section 5.5, Low Emissions Methods means soil disturbing
464 activities that will not result in visible emissions without the use of wet methods.
465
- 466 (F) Projects conducted directly by a homeowner on their primary residence, including
467 residential landscaping projects and other private residential soil-disturbing projects
468 conducted after the primary dwelling is built, e.g. planting trees, digging holes for
469 fence posts, installing sign posts, gardening, other projects done by private
470 individuals on their primary place of residence are not subject to this Section 5.5, but
471 shall still comply with Sections 5.1 through 5.4 of these regulations.
472
- 473 (G) Soil disturbing activities involving Non-RACS, where no RACS is present or
474 generated, are not subject to the requirements of Section 5.5, but Non-RACS must
475 be disposed as non-friable asbestos waste in accordance with the disposal
476 requirements set forth in Section 5.2 of these regulations. However, removal of
477 Non-RACS from a project area is required if seeking a No Further Action or No
478 Action Determination for a remediation project under Section 5.5.6, or an
479 environmental covenant, in accordance with § 25-15-320 C.R.S., is required for Non-
480 RACS left in place.
481
482

483 **5.5.3 TRAINING AND OUTREACH**

484

- 485 (A) Community outreach shall be conducted for projects involving mechanical
486 disturbance of RACS containing friable ACM with an adjacent receptor zone present.
487 In addition, ancillary worker awareness briefing(s) shall be conducted through the
488 dissemination of fact sheets and/or informational meetings that discuss the presence
489 of RACS that includes friable ACM and the measures being taken to prevent
490 emissions and cross contamination.
491
- 492 (B) Projects involving the disturbance of debris or soil/ash containing debris shall
493 include at least one onsite QPM during active disturbance.
494
- 495 (C) Personnel inside the RWA during the disturbance of RACS shall have annual
496 awareness training. This training requirement applies to equipment operators and
497 drivers of trucks carrying contaminated material for offsite disposal or reuse. Truck
498 drivers who do not complete this training are ancillary workers. Soil disturbing

499 activities must cease if the truck driver is present within the RWA unless the driver
500 remains in the cab of the truck, the truck's windows and doors remain closed, and
501 the air handling system remains off while the truck is inside the RWA. This training
502 shall cover information necessary to comply with Section 5.5 including:

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

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

- 534 (E) Qualified Project Monitors shall have, at a minimum:
535
536 1) Annual awareness training and site specific awareness training under Section
537 5.5.3(C) and (D); and,
538
539 2) Training from a CABI on identifying debris, exempted materials under Section
540 5.5.1(A)(3), and the assumption of debris to be RACS as outlined in Section
541 5.5.1; and,
542
543 3) Training from a CABI on how to implement the minimum requirements under
544 Section 5.5.7 and how to perform the duties that a QPM may perform in lieu of a
545 CABI; and
546
547 4) Training from a CABI on how to implement the provisions of the chosen RACS
548 management approach (PSRMP, SOPs, or minimum requirements of Section
549 5.5.7) and how to perform the duties that a QPM may perform in lieu of a CABI;
550 and,
551
552 5) 40 verifiable hours of direct experience on projects conducted under Section 5.5.
553
554 (F) Inspection and identification of RACS shall be conducted by a CABI, with 40
555 verifiable hours of on the job asbestos in soils experience on a minimum of three (3)
556 different asbestos in soils jobs, conducted under either AQCC Regulation No. 8 or
557 Section 5.5. The CABI shall be independent of the general contractor (GC) and/or
558 abatement contractor unless the CABI and the GC or abatement contractor are both
559 direct employees of the property owner. However, the GC or abatement contractor
560 may hire a subcontractor CABI, but the CABI shall not be a direct employee of the
561 GC or abatement contractor.
562
563 (G) Air monitoring conducted in accordance with this Section 5.5 shall be performed by
564 an Air Monitoring Specialist (AMS).
565
566

567 **5.5.4 RESPONSE FOR UNPLANNED RACS DISCOVERY**

568
569 Soil disturbing activities that encounter RACS without previously approved plans are
570 subject to the following requirements:
571

- 572 (A) IMMEDIATE ACTIONS: Immediate actions shall be taken by the person conducting
573 the soil disturbing activity, or representative of the owner or operator, to manage
574 RACS in accordance with Section 5.5 and Section 1.2 definitions of these
575 Regulations. These actions shall include, at a minimum, the following:
576

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

587
588 (2) Establishing, and taking measures to prevent access to, the regulated work area
589 by unauthorized persons.

590
591 (3) Conducting interim surface soil stabilization to reduce emissions including:

- 592
593 a. Polyethylene sheeting or geotechnical fabric with daily inspection, and
594 inspection after storm events, and repair/replacement of sheeting as
595 necessary to maintain stabilization; or
596
597 b. Chemical stabilizer demonstrated to be effective in the stabilization of RACS
598 (e.g. magnesium chloride) with weekly inspection, and inspection after storm
599 events, and re-application of chemical stabilizer as necessary to maintain
600 stabilization; or
601
602 c. Minimum of 3 inches of soil appropriate for unrestricted use; or
603
604 d. Other means of stabilization as approved by the Department.
605
606 e. Stabilization is not required if RACS is kept adequately wet. Verification of
607 adequately wet conditions shall be conducted at least every two hours, or
608 RACS shall be stabilized.

609
610 (B) 24-HOUR NOTIFICATION REQUIREMENTS: The owner/operator, or
611 owner/operator representative shall submit a completed Notification of RACS
612 Disturbance form to the Department's Hazardous Materials and Waste Management
613 Division within 24 hours of encountering RACS during a soil disturbing activity.

614
615 (C) INTERIM ACTIONS: In accordance with 5.5.5, the owner/operator, or
616 owner/operator representative, shall submit to the Department's Hazardous
617 Materials and Waste Management Division, for review and approval, within five (5)
618 workings days of the discovery, PSRMP, SOPs, or indicate the minimum
619 requirements of Section 5.5.7 will be followed.

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

622
623

624 **5.5.5 RESPONSE FOR PLANNED RACS MANAGEMENT**

625

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

630

631 (A) PROJECT SPECIFIC RACS MANAGEMENT PLAN (PSRMP);

632

633 (1) The owner/operator, or owner/operator representative, shall submit a completed
634 Notification of RACS Disturbance form to the Department's Hazardous Materials
635 and Waste Management Division at least 10 working days prior to any planned
636 soil disturbing activity. This notification shall include submittal of a Project
637 Specific RACS Management Plan (PSRMP) conforming to the requirements of
638 Section 5.5.5(A)(2). The Division will acknowledge receipt of a notification of the
639 intent to utilize a PSRMP by mail or electronic correspondence. The PSRMP
640 shall be approved by the Department prior to implementation.

641

642 (2) If the owner/operator choose(s) management in accordance with Section
643 5.5.5(A), a PSRMP shall be developed and submitted to the Department's
644 Hazardous Materials and Waste Management Division for review and approval
645 prior to implementation. The Department will use its best efforts to review and
646 respond to the plan within ten (10) working days of receipt. The PSRMP shall
647 include the following:

648

649 (a) Property representative's name and phone number; and

650

651 (b) Property location; and

652

653 (c) General site description, including a description of RACS and the types of
654 known or assumed asbestos-containing material(s), and the location(s) of
655 these material on the site; and

656

657 (d) Description of planned soil disturbing activities; and

658

659 (e) Description of site management, emission control activities, and work
660 practices to control the release of, and/or exposure to, asbestos outside of the
661 RWA including:

662

- 663 (i) Measures to assure that the soil is adequately wet (as that term is defined
664 in Section 1.2 of these regulations), stabilized, or covered during soil
665 disturbing activities; and
666
- 667 (ii) Wind speed monitoring during RACS disturbance, including frequency of
668 monitoring, and shutdown and start up criteria; and,
669
- 670 (iii) An air monitoring plan to verify that the measures to control the release of,
671 and/or exposure to, asbestos outside of the RWA are effective. The plan
672 may include a tiered air monitoring approach providing less frequent air
673 monitoring given demonstrated effectiveness of work practices; and,
674
- 675 (iv) Work practices specific to mechanical and/or hand disturbance of RACS
676 including measures to prevent the release of visible emissions outside of
677 the RWA; and,
678
- 679 (v) Work practices for the loading and placement of RACS including spill
680 prevention procedures.
681
- 682 (vi) The owner /operator has the option to erect a structure maintained at a
683 negative pressure differential sufficient to contain all dust, with off-gas
684 from the evacuation system treated with HEPA filtration. If chosen, the
685 requirement to submit an air monitoring plan, under 5.5.5(A)(2)(e)(iii) is not
686 applicable.
687

688 **and,**
689

- 690 (f) Description and location of any planned sampling. All sampling shall be
691 performed in accordance with the procedures set forth in Appendix 5A. All
692 investigation derived waste shall be managed in accordance with 5.5.8.
693

- 694 (3) A copy of the PSRMP shall be maintained on the site during RACS disturbing
695 activities.
696

697 **(B) STANDARD OPERATING PROCEDURES (SOPs)**
698

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

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

713
714 **(C) MINIMUM REQUIREMENTS OF SECTION 5.5.7**

715
716 The owner/operator, or owner/operator representative, shall submit to the Department's
717 Hazardous Materials and Waste Management Division a completed Notification of
718 RACS Disturbance form indicating the intent to utilize the minimum requirements of
719 Section 5.5.7, as a default RACS management plan, prior to any planned soil disturbing
720 activity. This notification shall include property location, general site description, and
721 contact information for the owner/operator responsible for the regulated work area
722 activities. The Department will acknowledge receipt of a notification of the intent to
723 utilize the minimum requirements of Section 5.5.7 by mail or electronic correspondence.
724

725
726 **5.5.6 REMEDIATION OF ASBESTOS IN SOIL**

727
728 (A) Remediation is not required of properties at which asbestos-containing material,
729 RACS, or asbestos waste is located. If the owner of a property chooses to
730 remediate (rather than just manage) all or a portion of the property containing ACM,
731 RACS, or asbestos waste and seeks a No Further Action or No Action Determination
732 in accordance with the Voluntary Cleanup and Redevelopment Act (C.R.S. 25-16-
733 301 et seq.), the Resource Conservation and Recovery Act Subtitle D (C.R.S. 30-20,
734 Part 1) or the Resource Conservation and Recovery Act Subtitle C (C.R.S. 25-18-
735 302 et seq.), as may be required by a final enforceable mechanism, a Remediation
736 Plan shall be submitted to the Department's Hazardous Materials and Waste
737 Management Division for review and approval prior to commencement of activities
738 associated with the remediation. The Remediation Plan shall comply with this
739 Section 5.5, and the governing regulatory authority and include the following:

- 740
741 (1) The minimum requirements in accordance with Section 5.5.7, and the plan
742 requirements outlined in 5.5.5(A). Alternatively, a risk based approach may be
743 proposed, for Department review and approval, for disturbance of RACS; and
744
745 (2) A detailed description of planned remediation activities, including proposed depth
746 and areal extent of remediation, and work practices to be implemented; and
747
748 (3) The proposed use of the property and area of remediation; and

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

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

767

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

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

772

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

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

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

800
801 (1) Requirements applicable to all RWAs subject to this Regulation:

802
803 (a) Use disposable booties or impermeable footwear that will be decontaminated
804 per 5.5.7(I); and

805
806 (b) Use disposable gloves or impermeable gloves that will be decontaminated
807 per 5.5.7(I); and

808
809 (c) Replace or decontaminate (per 5.5.7(I)) all PPE as necessary to prevent
810 contamination from leaving the RWA via cross contamination. This
811 requirement applies to all instances where the integrity of the PPE is
812 compromised, and when workers exit the RWA; and

813
814 (d) Decontaminate (per 5.5.7(I)) or dispose of all used PPE as asbestos
815 contaminated waste.

816
817 (2) **Additional Requirement Applicable to Projects at RWAs Containing Friable**
818 **ACM.** Use disposable impermeable suits or equivalent coveralls, remove suits or
819 coveralls upon exiting the RWA, and dispose of used suits or coveralls as
820 asbestos contaminated waste.

821
822 (C) WETTING

823
824 (1) Wetting requirements applicable to all RACS disturbance:

825
826 (a) Adequately wet all RACS and soils, or other materials, containing RACS, on
827 the surface and in the sub-surface (as defined in Section 1.2 of the Solid
828 Waste Regulations) prior to and during RACS disturbance, except as
829 provided in 5.5.7(F)(1)(b)(ii). Pre-wetting is not necessary if soils are already
830 adequately wet. Apply water or amended water (as required in 5.5.7(C)(2)) at
831 low pressure in order to prevent dust generation and splattering.
832

833 (b) Continuously mist RACS and soils, or other materials, containing RACS
834 during placement using equipment mounted spray bars, or additional hose
835 operator(s).
836

837 (2) **Additional requirement for RACS that contains friable ACM.** Use amended
838 water containing a wetting agent, such as a 50:50 mixture of polyoxyethylene
839 ester and polyoxyethylene ether, or the equivalent, in a 0.16 percent solution (1
840 ounce to 5 gallons) of water, or as per manufacturer recommendations for the
841 wetting of asbestos. This requirement may be waived by the Department for
842 emergency situations where the work must occur immediately and wetting agents
843 are not available.
844

845 (D) WIND SPEED MONITORING
846

847 (1) Requirements applicable to all projects involving mechanical disturbance of
848 RACS, and hand disturbance of RACS containing friable ACM:
849

850 (a) Take wind measurements from within the RWA using a hand held
851 anemometer. Alternatively, or in conjunction with hand held measurements,
852 an onsite weather station may be used within a quarter mile of the RWA as
853 long as the conditions measured by the weather station are representative of
854 conditions in the RWA.
855

856 i. Collect wind speed measurements at a minimum of 30 minute intervals
857 and during wind gust(s). Average wind speed measurements shall be
858 obtained manually by taking ten readings at one minute intervals and
859 averaging the ten readings, or through the use of instrumentation that
860 provides a ten minute average wind speed reading.
861

862 ii. If wind break barriers are used, wind speed measurements may be taken
863 from within barriers; however, wind speed measurements shall also be
864 taken outside the wind break barriers if any activities, such as loading, are
865 taking place outside or above the barriers. Wind speed shut-down criteria
866 shall be based on measurements taken that are representative of the area
867 of active RACS disturbance.
868

869 (b) Immediate stoppage of all RACS disturbance shall occur based on the
870 following criteria:
871

872 i. Wind gust(s) in excess of 20 mph, or
873

874 ii. Sustained winds in excess of 12 mph, averaged over 10 minutes, or
875

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

893 (E) AIR MONITORING

- 894
895 (1) Air monitoring is required for all projects involving Mechanical Disturbance in
896 RWAs with an Adjacent Receptor Zone (to demonstrate effectiveness of work
897 practices, not for risk evaluation):
898
899 (a) No air monitoring is required for projects with durations of 2 days or less.
900 However, the requirements for adequate wetting (5.5.7(C)) and no visible
901 emissions leaving the RWA (5.5.7(F)) shall be adhered to on all RACS
902 disturbance projects. Dividing projects into multiple 2 day or shorter
903 components shall not be used as a mechanism to avoid air monitoring
904 requirements.
905
906 (b) Area monitoring shall consist of a minimum of four samples collected on the
907 perimeter of the RWA at appropriate intervals to provide representative
908 information regarding potential releases of asbestos fibers to the adjacent
909 receptor zone(s). Additional samples shall be collected for large perimeter
910 RWAs (greater than 1 acre). RWAs greater than 1 acre shall require
911 additional perimeter monitoring points be added at a rate of one sample for
912 every 200 linear feet (or approximately each additional ¼ acre). If
913 representative information about potential releases to the adjacent receptor
914 zone(s) can be collected using less than the minimum number of samples,
915 the remaining sample locations shall be at the discretion of the AMS.
916
917 (c) PCM analysis is required on all samples collected (unless all samples will be
918 analyzed by Transmission Electron Microscope (TEM) by default). The

919 laboratory shall be requested to provide verbal results to the AMS or the QPM
920 by the start of the next working day, or as soon as possible after the start of
921 the next working day, with written results within 24 hours of the receipt of
922 verbal results. A consultation with the Department is required If this
923 timeframe cannot be met by the laboratory.
924

925 (d) Upon receipt of a laboratory report indicating a “cannot be read (CBR)”, or a
926 “not analyzed (NA) or rejected” due to loose debris or uneven loading,
927 analysis result:
928

929 i. The AMS shall evaluate the lab report and any field documentation to
930 determine a possible cause for the CBR or “not analyzed (NA) or rejected”
931 result; and,
932

933 ii. If the CBR or “not analyzed (NA) or rejected” cannot be correlated to a
934 specific field event that compromised the sample (e.g. the sample was
935 blown over, the filter of the sample was sprayed with water, etc.) then the
936 sample shall be prepared for indirect TEM presence/absence analysis to
937 determine potential asbestos content in accordance with Appendix 5A;
938 and,
939

940 iii. If the CBR or “not analyzed (NA) or rejected”, analysis result can be
941 correlated to a compromised sample, then preparation for indirect TEM
942 presence/absence analysis is not required as long as adequate air
943 monitoring data is available to evaluate the effectiveness of engineering
944 controls. However, overloading of a sample with particulate matter does
945 not constitute a compromised sample, and will require indirect preparation
946 for TEM presence/absence analysis; and,
947

948 iv. Field personnel shall evaluate why the sample was compromised and
949 modify field procedures as necessary to prevent future samples from
950 being compromised; and,
951

952 v. The Department project manager shall be notified by phone or email of
953 instances of CBR or “not analyzed (NA) or rejected” analysis results within
954 24 hours of receipt of verbal results.
955

956 (e) TEM presence/absence analysis is required (analysis providing fiber
957 counts/concentrations is always optional) as described in paragraphs i
958 through iv below. The laboratory shall be requested to provide verbal results
959 by the start of the next working day, or as soon as possible after the start of
960 the next working day, with written results within 24 hours of the receipt of
961 verbal results.

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

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

- 1045 i. Changes in the minimum requirements of Section 5.5.7 are likely to
1046 prevent future releases; or
1047
1048 ii. Changes in the minimum requirements of Section 5.5.7 are not likely to
1049 prevent future releases and a PSRMP is necessary per Section
1050 5.5.5(A)(2); or
1051
1052 iii. If the owner/operator believes fibers are coming from offsite and are not
1053 under the control of the owner/operator, then, in addition to the
1054 information provided in the ECP, documentation shall be provided
1055 demonstrating possible additional sources of asbestos fibers; or
1056
1057 iv. Consultation with the Department is required to develop criteria for the
1058 evaluation of additional engineering controls for structures within the
1059 adjacent receptor zone.
1060

1061 (2) **Additional requirement for projects disturbing RACS containing friable**
1062 **ACM.** Collect two additional downwind floating samples for mechanical
1063 disturbance of RACS containing friable ACM. The samplers shall be moved
1064 based on prevailing wind direction and adjacent receptors. For example, if
1065 adjacent receptors are present on only one side of the RWA, one sample location
1066 should be maintained between the RWA and the adjacent receptor.
1067

1068 (F) WORK PRACTICES TO BE FOLLOWED DURING RACS DISTURBANCE
1069

1070 (1) Work practice requirements applicable to all management of RACS:
1071

1072 (a) Prevent visible emissions from leaving the RWA by:
1073

- 1074 i. Excavating in lifts not to exceed the extent of wetting; or
1075
1076 ii. Conducting continuous wetting while mixing dry materials at the point of
1077 RACS disturbance to ensure all materials are adequately wet prior to
1078 removal from the excavation.
1079
1080 iii. Instances of visible emissions leaving the RWA shall be documented and
1081 addressed by changing or increasing controls (e.g. more effective wetting,
1082 reduced speed of excavation).
1083

1084 (b) RACS on exposed excavation faces that will be disturbed and/or managed
1085 during the project shall either be kept adequately wet (in accordance with
1086 Section 5.5.7(C)), or be stabilized using any of the following to prevent visible
1087 emissions from leaving the RWA:

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

- 1131 d. In-situ sub-surface hand removal of a single location RACS pocket shall
1132 consist of:
1133
1134 i. Removal of the pocket of RACS and associated soil or other material,
1135 plus removal of an additional 6 inches in the direction of planned
1136 disturbance; and
1137
1138 ii. CABI confirmation that the visual extent of RACS and surrounding soil
1139 and/or other matrix material has been removed. If RACS remains, it
1140 shall be managed for stabilization or future removal. If there is no
1141 documented evidence of non-visible RACS in the project area, then a
1142 visual clearance shall be sufficient to determine the removal of RACS.
1143 If there is documented evidence of non-visible RACS in the project
1144 area, sampling is required to confirm the removal of RACS; and
1145
1146 iii. For the purpose of disposal, containerize non-friable asbestos-
1147 containing materials and associated soil and/or other matrix material
1148 using a single 6 mil leak tight bag, or containerize friable asbestos-
1149 containing materials and associated soil and/or other matrix material
1150 using a double 6 mil leak tight bag. Dispose of materials properly in
1151 accordance with 5.5.8(A).
1152

1153 (3) Work practice requirements applicable to management of RACS using
1154 mechanical methods:
1155

- 1156 a. For surface occurrence of RACS - Wet and remove all RACS and a minimum
1157 of 6 inches of soil, and/or other matrix material, in all directions from the last
1158 occurrence of visible ACM, with CABI confirmation that the visual extent of
1159 RACS has been removed; and/or
1160
1161 b. For subsurface occurrence of RACS - Wet and remove all RACS and a
1162 minimum of three (3) linear feet of soil or other matrix material, in the
1163 direction(s) of planned excavation, with CABI confirmation that the visual
1164 extent of RACS has been removed; and
1165
1166 c. If RACS remains in the RWA, it shall be managed for stabilization, per
1167 5.5.7(K), or future removal.
1168
1169 d. In lieu of stabilization or full removal, sampling may be performed per
1170 Appendix 5A to demonstrate that the material is not RACS.
1171
1172 e. Package and dispose of RACS in accordance with Section 5.5.8.
1173

1174 (G)LOADING AND PLACEMENT OF RACS

1175

1176 (1) Requirements for the loading of RACS:

1177

1178 (a) Protect clean surfaces (including loading surface and truck or disposal
1179 container surfaces that may come in contact with RACS) by covering or
1180 decontamination of surfaces prior to transport or removal of the truck or
1181 disposal container from the RWA and/or loading zone.

1182

1183 (b) Spill prevention shall consist of:

1184

1185 i. Minimization of spillage by not overfilling the excavator or loader bucket
1186 and returning the bucket to a closed position prior to moving from the
1187 loading point; and

1188

1189 ii. Replacement of protective coverings when worn or damaged to prevent
1190 breaches; and

1191

1192 iii. Control of runoff to prevent cross contamination from water containing
1193 asbestos; and

1194

1195 iv. Mitigation of spills of RACS in accordance with 5.5.7(J).

1196

1197 (c) During the process of loading the container, the equipment operator shall
1198 lower the bucket as close as possible to the interior of the container before
1199 dumping, and dump the load slowly to allow adequate misting and to prevent
1200 emissions.

1201

1202 (2) Requirements for the transportation of RACS:

1203

1204 (a) Onsite transportation of RACS between the RWA and an onsite area of
1205 disposal or reuse shall comply with the following:

1206

1207 i. The packaging requirements for RACS set forth in Section 5.5.8(A) of
1208 these Regulations are not applicable; however, the decontamination
1209 requirements of Section 5.5.7(I) shall be followed at the end of disposal
1210 operations, or before disposal equipment is removed from the site; and

1211

1212 ii. Driving speeds shall not exceed 12 miles per hour or RACS shall be
1213 covered during transport; and

1214

1215 iii. For transportation between the RWA and a non-contiguous onsite
1216 disposal or stockpile area:

- 1217 1. Transportation equipment tires shall kept off RACS; or
- 1218
- 1219 2. RACS that is driven upon shall be kept adequately wet to prevent
- 1220 visible emissions and all equipment surfaces that have come into
- 1221 contact with RACS shall be decontaminated per 5.5.7(l) before leaving
- 1222 the RWA; or
- 1223
- 1224 3. The haul road shall be managed as RACS for stabilization, per
- 1225 5.5.7(F)(1), and future removal of a minimum of 3 inches of soil, or
- 1226 other matrix material. If the road is constructed of a durable surface
- 1227 such as concrete or asphalt, the surface shall be decontaminated in
- 1228 accordance with 5.5.7(l)(1)(b) using wet methods, followed by CABI
- 1229 inspection verifying that all soil and debris has been removed from the
- 1230 surface. Rinsate/runoff shall be collected and filtrated to less than 5
- 1231 microns (or applicable local requirements) and discharged to a sanitary
- 1232 sewer or re-applied to RACS that will be removed.
- 1233

1234 (H) ONSITE STAGING, STOCKPILING, AND STORAGE OF RACS

- 1235
- 1236 (1) Staging, as defined in Section 1.2 of these regulations, is the accumulation and
- 1237 temporary storage of RACS in the RWA for 12 hours or less. The following
- 1238 requirements shall apply to the staging of RACS:
- 1239
- 1240 (a) Staged RACS shall remain adequately wet,
- 1241
- 1242 (b) Staging of RACS shall be on 6 mil, or greater, polyethylene sheeting or shall
- 1243 include removal, and management as RACS, of a minimum of 3 inches of
- 1244 material, from below the staging pile/area prior to demobilization; with visual
- 1245 or measured confirmation of removal. If poly is placed on top of a durable
- 1246 surface such as concrete or asphalt, the surface must be decontaminated
- 1247 using wet methods, followed by CABI inspection verifying that all soil and
- 1248 debris has been removed from the surface. Rinsate/runoff shall be collected
- 1249 and filtrated to less than 5 microns (or applicable local requirements) and
- 1250 discharged to a sanitary sewer or re-applied to RACS that will be managed
- 1251 under this Regulation.
- 1252
- 1253 (c) Staging of clean material with incidental discovery of RACS shall be managed
- 1254 as follows:
- 1255
- 1256 i. If a CABI was continually inspecting the material during generation,
- 1257 remove the piece of ACM and one foot of material in all directions, with
- 1258 CABI confirmation that the visual extent of RACS has been removed. If
- 1259 more than one piece of ACM, or a pocket of ACM is discovered, remove

1260 the pocket of ACM plus one foot of material in all directions, with CABI
1261 confirmation that the visual extent of RACS has been removed. Material
1262 that remains after removal of RACS, and CABI visual confirmation, is not
1263 considered RACS, is not subject to Section 5.5, and may be appropriate
1264 for unrestricted reuse, onsite or offsite, as long as it does not contain any
1265 other regulated material.

1266
1267 ii. If a CABI was not continually inspecting the material during generation, an
1268 intrusive inspection of the pile shall be conducted to determine the extent
1269 of RACS contamination, followed by the removal of the visual extent of
1270 contamination plus removal of one foot of material in all directions.
1271 Alternatively, the entire pile, plus 3 inches of material below the pile, shall
1272 be removed and managed as RACS. If the pile was placed on top a
1273 durable surface such as concrete or asphalt, the surface shall be
1274 decontaminated using wet methods, followed by CABI inspection verifying
1275 that all soil and debris has been removed from the surface. Rinsate/runoff
1276 shall be collected and filtrated to less than 5 microns (or applicable local
1277 requirements) and discharged to a sanitary sewer or re-applied to RACS
1278 that will be removed.

1279
1280 (2) Stockpiling, as defined in Section 1.2 of these regulations, is the accumulation
1281 and storage of RACS that will exist for more than 12 hours, up to and including
1282 10 calendar days. The following requirements shall apply to stockpiled RACS:
1283

1284 (a) Stockpiled RACS shall be placed on a minimum of 6 mil polyethylene
1285 sheeting or shall include removal, and management as RACS, of a minimum
1286 of 3 inches of soil, or other matrix material, from under the entire area of
1287 RACS stockpiling after stockpile removal. If the stockpile was placed on top
1288 of a durable surface such as concrete or asphalt, the surface must be
1289 decontaminated using wet methods, followed by CABI inspection verifying
1290 that all soil and debris has been removed from the surface. Rinsate/runoff
1291 shall be collected and filtrated to less than 5 microns (or applicable local
1292 requirements) and discharged to a sanitary sewer or re-applied to RACS that
1293 will be removed.

1294
1295 (b) RACS shall be adequately wet during disturbance.

1296
1297 (c) Stockpiled RACS shall be controlled per 5.5.7(A)

1298
1299 (d) Stockpiled RACS shall be stabilized by:
1300

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

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

1387 (I) DECONTAMINATION

1388

1389 (1) Requirements applicable to all projects subject to Section 5.5:

1390

1391 (a) Personnel Decontamination:

1392

1393 i. Remove booties and/or gloves before exiting RWA and dispose as
1394 asbestos contaminated waste; or

1395

1396 ii. If not using disposable PPE, decontaminate boots in a boot wash station,
1397 remove gloves after exiting the boot wash station, and dispose of gloves
1398 as asbestos contaminated waste. Rinsate from the boot wash station
1399 shall be collected, filtrated to less than 5 microns (or applicable local
1400 requirements) and discharged to a sanitary sewer or other Department-
1401 approved disposal facility, or re-applied to RACS that will be managed
1402 under these regulations.

1403

1404 (b) Decontamination of Equipment or Surfaces that have come into Contact with
1405 RACS

1406

1407 i. For equipment that comes into contact with RACS:

1408

1409 1. Wet decontamination on a decontamination pad (minimum 10 mil poly
1410 or other durable non-permeable barrier) followed by CABI inspection
1411 and verification of equipment decontamination before it leaves the
1412 decontamination area. All decontamination liquids and solids shall be
1413 contained, and run-on and run-off shall be prevented. Rinsate/runoff
1414 shall be collected, filtrated to less than 5 microns (or applicable local
1415 requirements) and discharged to a sanitary sewer or re-applied to
1416 RACS that will be removed;

1417

1418 **Note:** For breaches in the decontamination pad where RACS or water
1419 contaminated with asbestos may have impacted the material below the
1420 decontamination pad, implement the provisions of section 5.5.7(J);
1421 and/or

1422

1423 2. Decontamination using HEPA vacuums followed by CABI inspection
1424 and verification of equipment decontamination before it leaves the
1425 decontamination area.

1426

1427 (c) Protection of Clean Equipment and Surfaces:

1428

1429 i. Keep all equipment off of RACS; or

1430 ii. Protect clean surfaces from coming in contact with RACS by covering
1431 equipment surfaces or RACS surfaces with polyethylene sheeting or
1432 equivalent durable impermeable covering. For onsite movement of
1433 excavation equipment between RWAs, where only the excavator bucket
1434 has come in contact with RACS, the bucket shall be wrapped in
1435 polyethylene sheeting (minimum 6 mil) prior to movement. Protective
1436 coverings shall be cleaned, repaired, or replaced as necessary. If
1437 protective coverings are breached and RACS or asbestos contaminated
1438 water comes into contact with underlying material, the provisions of
1439 section 5.5.7(J) shall be followed. Coverings that have come in contact
1440 with RACS shall be disposed as asbestos contaminated waste.
1441

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

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

1452 (J) RACS SPILL RESPONSE
1453

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

1472 (4) Rinsate, runoff, or any other water that has come into contact with RACS shall be
1473 considered to be asbestos contaminated water and shall be collected and
1474 filtrated to less than 5 microns and discharged to a sanitary sewer or re-applied
1475 to RACS that will be managed under these regulations.

1476
1477 (5) Surfaces that are contacted by asbestos contaminated water shall be managed
1478 as RACS as per 5.5.7(J)(3) or permanently stabilized as per 5.5.7(K).

1479
1480 (6) If work practices in an RWA are causing an ongoing spill outside the RWA, the
1481 work practices shall cease or be modified to prevent additional releases.

1482
1483 (K) REQUIREMENTS FOR EXPOSED RACS REMAINING IN PLACE

1484
1485 (1) Any remaining RACS that has been exposed by the soil disturbing activity, but is
1486 not disturbed, such as an excavation side-wall or bottom shall be covered or
1487 stabilized using one of the following:

1488
1489 (a) Cover RACS with geofabric, followed by 18 inches of fill suitable for
1490 unrestricted use, and vegetation; or

1491
1492 (b) Cover RACS with geofabric, followed by 6 inches of fill suitable for
1493 unrestricted use, and concrete or asphalt; or

1494
1495 (c) Cover RACS with geofabric, followed by fill suitable for unrestricted use to
1496 grade or six inches, whichever is greater, for vertical excavation faces or
1497 trenches; or

1498
1499 (d) Alternate cover designs as approved by the Department.

1500
1501 (L) DOCUMENTATION

1502
1503 (1) The documents listed below shall be maintained during a project and available
1504 for Department review upon request. However, this documentation need not be
1505 submitted to the Department unless requested. CABI and AMS notes may be
1506 collected by one individual if they possess both certifications; however, if no AMS
1507 is onsite it may be necessary for the CABI to provide items listed in the AMS
1508 notes section (e.g. wind monitoring and shutdown events). CABI and AMS notes
1509 may be taken by a scribe, but shall be reviewed and approved by the CABI or
1510 AMS for whom the notes are being taken. Other appropriate personnel may also
1511 provide the following documentation.

1512
1513 (a) CABI/QPM Notes shall include documentation of:
1514 i. Site description including location; and

- 1515 ii. Descriptions of site activities; and
- 1516 iii. Descriptions of equipment in use; and
- 1517 iv. Descriptions of hand removals (including locations); and
- 1518 v. Descriptions of types of debris encountered; and
- 1519 vi. Descriptions of suspect material encountered; and
- 1520 vii. Friability of ACM encountered (As determined by a CABI); and
- 1521 viii. Sampling, if conducted (All sampling shall be conducted by a CABI); and
- 1522 ix. Decontamination visual clearances; and
- 1523 x. Excavation visual clearances; and
- 1524 xi. Spill response activities; and
- 1525 xii. Observations of visible emissions and responses; and
- 1526 xiii. Observations non-earthen material or the appearance of fill; and
- 1527 xiv. Observations of other indicators of impact to soils.
- 1528

1529 (b) AMS notes shall include documentation of:

- 1530 i. Wind speed measurements; and
- 1531 ii. Prevailing wind direction(s); and
- 1532 iii. Wind shut down event(s); and
- 1533 iv. Initial air sample locations; and
- 1534 v. Air sample relocation notes; and
- 1535 vi. Observations of visible emissions and responses; and
- 1536 vii. Notes pertaining to sample malfunctions (pump faults, overloading, etc.);
- 1537 and
- 1538 viii. Instances of samples being compromised (samples knocked over,
- 1539 sample filters being sprayed with water, samples physically impacted by
- 1540 equipment, etc.); and
- 1541 ix. Air sample data (flow rates, time of sampling, volumes, calibration method,
- 1542 etc.).
- 1543

1544 (c) General documentation shall include:

- 1545 i. Disposal records; and
- 1546 ii. Analytical reports including chain of custody forms; and
- 1547 iii. Evaluations of any samples with a “cannot be read” analysis result and the
- 1548 notifications of these events to the Department; and,
- 1549 iv. Location of known remaining RACS; and
- 1550 v. Creation and removal dates for staged, stockpiled, and/or stored RACS,
- 1551 and
- 1552 vi. Stockpile and staging pile inspection logs and documentation of weather
- 1553 events requiring inspection, and
- 1554 vii. Logs of all site personnel with access to the RWA, and
- 1555 viii. Certification records for all CABIs and AMSs utilized on the project, and
- 1556 ix. Records for training conducted in accordance 5.5.3(C) and 5.5.3(D)

1557 x. Records demonstrating the QPM(s) meet the training and experience
1558 requirements set forth in Section 5.5.3(E).
1559

1560 **5.5.8 DISPOSITION OF REGULATED ASBESTOS CONTAMINATED SOIL**
1561

1562 (A) Disposal of RACS
1563

1564 (1) RACS containing one percent (1%), or one pound, or greater of friable ACM (as
1565 determined in the field by a CABI) by volume per load or container, based on
1566 visual estimation through continuous inspection or other Department-approved
1567 quantifiable means of measurement, shall be packaged in a leak tight container
1568 and disposed as friable asbestos waste, in accordance with Section 5.3 of these
1569 regulations. Alternatively, no friable ACM determination by a CABI is required if
1570 the disposal load is assumed to be RACS containing 1% or greater of friable
1571 ACM and is disposed of in accordance with Section 5.3 of these regulations.
1572 Documentation shall accompany each load of RACS removed from the site
1573 stating that soil originating from this site shall not be used as daily cover or
1574 reused offsite.
1575

1576 (2) For RACS containing
1577

1578 (a) Less than one percent (1%), and less than one pound, of friable ACM (as
1579 determined in the field by a CABI) by volume, per load or container, based on
1580 visual estimation through continuous inspection, or other Department-
1581 approved quantifiable means of measurement, shall be packaged in a leak
1582 tight container and disposed in a manner similar to non-friable asbestos
1583 waste, as described in Section 5.2 of these regulations. Documentation must
1584 accompany each load of RACS removed from the site stating that soil
1585 originating from this site shall not be used as daily cover or reused offsite.
1586

1587 (b) Only visible non-friable ACM (as determined in the field by a CABI) that has
1588 not been rendered friable, or RACS that contains no visible ACM, shall be
1589 packaged in a leak tight container and disposed of as non-friable asbestos in
1590 accordance with Section 5.2 of this Part 5. Documentation shall accompany
1591 each load of RACS removed from the site stating that soil originating from this
1592 site shall not be used as daily cover or reused offsite.
1593

1594 (c) A total volume of debris that is less than 1% of the disposal load, based on
1595 visual estimation through continuous inspection, and the debris is all assumed
1596 to be RACS, then a CABI is not required to make a friable ACM
1597 determination.
1598
1599

1600 (3) A Design and Operations (D&O) plan shall be submitted to, and approved by, the
1601 Department for onsite disposal of RACS outside of the AOC, in accordance with
1602 the Colorado Solid Wastes Disposal Sites and Facilities Act (C.R.S. 30-20, Part
1603 1) and these regulations. The packaging requirements set forth above in
1604 5.5.8(A)(1-2) are not required for onsite disposal, but the requirements of Section
1605 5.5.5(A)(2) (e) are applicable. An environmental covenant, in accordance with
1606 25-15-320, C.R.S., is required for onsite RACS disposal, and a Certificate of
1607 Designation shall be required, in accordance with Section 1.6 of these
1608 regulations, unless exempt under Section 1.4.

1609
1610 (B) Onsite reuse of RACS:

1611
1612 (1) Reuse of RACS within the footprint of the AOC shall comply with 5.5.5(A)(2)(e),
1613 and the following cover requirements:

1614 (a) Cover RACS with geofabric, followed by 18 inches of fill suitable for
1615 unrestricted use, and vegetation; or

1616 (b) Cover RACS with geofabric, followed by 6 inches of fill suitable for
1617 unrestricted use, and concrete or asphalt; or

1618 (c) Cover RACS with geofabric, followed by fill suitable for unrestricted use to
1619 grade for vertical excavation faces or trenches; and

1620 (d) The final grades shall promote surface water run-off and minimize erosion,
1621 and shall have slopes no less than 5% (20:1) and no greater than 25% (4:1);
1622 or

1623 (e) Alternate cover designs as approved by the Department; and

1624 (f) An environmental covenant, in accordance with 25-15-320, C.R.S., is
1625 required for onsite reuse of RACS.

1626
1627
1628 (2) A plan for beneficial reuse of RACS outside the footprint of the AOC, in
1629 accordance with Section 8.6, shall be submitted to the Department for review and
1630 approval prior to its implementation. The plan shall include provisions for
1631 covering RACS to prevent direct exposure, and shall comply with the
1632 management requirements of Section 5.5.5(A)(2)(e). Additionally, the cover
1633 requirements outlined in Section 5.5.4(A)(3) shall be adhered to. An
1634 environmental covenant, in accordance with 25-15-320 C.R.S. is required for
1635 beneficial reuse of RACS.

1640
1641

1642 (C) Soil or other matrix material initially determined to be RACS may be demonstrated
1643 not to be RACS based on visual inspection, removal of all ACM, and sampling and
1644 analysis of the remaining material showing no detectable asbestos. Sampling and
1645 analysis shall be conducted in accordance with Appendix 5A. If there is no
1646 detectable asbestos, this material is no longer subject to Section 5.5 and may be
1647 appropriate for unrestricted use, onsite or offsite, as long as it does not contain any
1648 other regulated material.

1649
1650 (D) Soil or other matrix material that remains after removal of RACS in accordance with
1651 5.5.7(F), 5.5.7(H)(1)(c)(i), or an approved plan, is not considered RACS, is not
1652 subject to Section 5.5, and may be appropriate for unrestricted use, onsite or offsite,
1653 as long as it does not contain any other regulated material.

1654
1655

1656 **5.5.9 FEES.**

1657
1658 The Department shall collect fees, from the owner, operator, or person conducting the
1659 soil disturbing activity, based on total documented costs, in accordance with Section 1.7

1660 **6) Appendix 5A (Sample Collection Protocols and Analytical Methodologies) is**
1661 **being added to Section 5 to read as follows:**

1662
1663
1664 **APPENDIX 5A**
1665 **SAMPLE COLLECTION PROTOCOLS AND ANALYTICAL METHODOLOGIES**

1666 **Purpose**

1667 The purpose of this appendix is to establish standard sample collection requirements
1668 and analytical methods and procedures for use in identifying and quantifying asbestos
1669 fibers in air, bulk material, and environmental media such as soil or ash.

1670 **Sample Collection Requirements**

1671 The following sample collection requirements shall be followed when collecting samples
1672 for the purpose of determining the applicability of Section 5.5, and when collecting
1673 samples necessary to comply with the requirements of Section 5.5. Remediation plans
1674 submitted in accordance with Section 5.5.6 shall include a site specific sampling and
1675 analysis plan that incorporates the sample collection methodologies and analytical
1676 procedures in this Appendix, or proposes alternatives, and includes site specific
1677 clearance criteria.

1678
1679 **Bulk Samples**

1680 Bulk samples shall be collected, in a manner sufficient to determine whether the
1681 material is asbestos-containing material (ACM) or not ACM, from each type of suspect
1682 ACM. Bulk samples shall be collected by a State of Colorado certified Asbestos
1683 Building Inspector. In the absence of bulk sample collection, any suspect ACMs must
1684 be assumed to be ACMs.

1685
1686 Bulk samples shall be collected by homogenous type based on color, pattern, texture,
1687 thickness, associated materials, or by other identifying characteristics. Additionally, the
1688 quantity and location of a suspect material shall be used to determine the number of
1689 bulk samples required to characterize the asbestos content of each homogeneous
1690 suspect material. For the purpose of determining that a homogeneous suspect material
1691 does not contain asbestos, a minimum of three bulk samples shall be collected from the
1692 homogeneous material unless there is insufficient material to constitute three samples.
1693 If one of the collected samples of a homogeneous bulk material is determined to be
1694 ACM, then the homogeneous material shall be considered ACM.

1695

1696 Soil Samples

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

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

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

1734 periodically sifting the surface being cleared and closely inspecting the
1735 disturbed area.

1736 C) If sidewalls with 6" or greater of vertical height are present, independent 10 point
1737 aliquot composite samples shall be collected from each of the sidewalls and the
1738 floor of the excavation.

1739

1740 Ash Samples

1741 Ash that contains, and/or is comingled with, suspect asbestos containing material
1742 and/or construction and demolition debris shall be considered to be RACS unless the
1743 ash is sampled, and analysis demonstrates that the ash is not RACS. Representative
1744 samples of each type of ash materials shall be sampled and analyzed in the same
1745 manner as soil (including area/volumetric limitations of sampling). Ash samples shall be
1746 collected by homogenous strata, location, content of other surrounding material, or
1747 other observations indicating heterogeneity of the ash present. All samples collected to
1748 determine asbestos content shall be collected by a State of Colorado Certified Asbestos
1749 Building Inspector. In the absence of suspect asbestos containing materials or
1750 construction and demolition debris, and in the absence of documented evidence of non-
1751 visible asbestos, ash material may be treated as non-RACS.

1752

1753 Cross Contamination Prevention

1754 All sample collection equipment shall be decontaminated in a manner sufficient to
1755 prevent cross contamination between individual samples or individual composite
1756 samples. Decontamination is not required between the collection of aliquots comprising
1757 a single composite sample.

1758

1759 Air Samples

1760 Air samples shall be collected by drawing air through 0.8-micron (μm), 25-millimeter
1761 (mm), mixed cellulose ester (MCE) filters, using an open-faced cowl extension oriented
1762 face down at an angle of 45°. Sample flow rate shall be between 0.5-10 liters per
1763 minute depending on the anticipated duration of sampling and the specified detection
1764 sensitivity. If the minimum air volume required by the method being utilized cannot be
1765 met, the AMS shall request that the laboratory prepare the sample using an indirect
1766 preparation method, for TEM presence/absence analysis. Air samples shall be
1767 collected at a height that is representative of the disturbance activity taking place.
1768 However, air samples shall be located at a height between 3' above the ground surface
1769 but not to exceed 20 feet above the ground surface. Air samples shall be collected by a
1770 State of Colorado trained and certified Air Monitoring Specialist.

1771 Documentation

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

1775 1) Bulk, soil, and ash samples:

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

1790 2) Air samples:

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

1806
1807
1808

1809 **Analytical Requirements**

1810 The following analytical methods shall be used to evaluate the presence of asbestos
1811 and/or to determine asbestos content when analyzing samples for the purpose of
1812 determining the applicability of Section 5.5, and when analyzing samples collected in
1813 accordance with Section 5.5:

1814

1815 Bulk Samples

1816 Samples of suspect asbestos-containing material shall be analyzed by polarized light
1817 microscopy (PLM), according to United States Environmental Protection Agency
1818 (USEPA) Method EPA/600/R-93/116 or equivalent method, to determine if any asbestos
1819 fibers are present. If the asbestos content of a sample is estimated to be 1% asbestos
1820 or less, but greater than 0%, by a method other than point counting (such as visual
1821 estimation), the determination shall be repeated using the point counting technique with
1822 PLM. Alternatively, the material may be assumed to be ACM. Analysis shall be
1823 conducted by a National Voluntary Laboratory Accreditation Program (NVLAP)
1824 accredited laboratory.

1825

1826 Soil Samples and Ash Samples

1827 Prior to preparation of a soil or ash sample, bulk materials shall be separated from the
1828 soil or ash sample for independent analysis. Any bulk materials identified in a soil or
1829 ash sample that contain any amount of asbestos shall be reported as independent
1830 layers of the whole sample. The samples shall be adequately prepared (crushed and
1831 dried) to facilitate stereomicroscopic analysis by the laboratory. The goal of the
1832 preparation process should be to produce dried conglomerates of approximately one
1833 eighth inch (1/8") to one quarter inch (1/4") size. Rock and/or stone material does not
1834 need to be crushed (this process is not intended to be homogenization). Soil and ash
1835 samples shall be analyzed by PLM according to USEPA Method EPA/600/R-93/116 to
1836 determine if any asbestos fibers are present. Analysis shall be conducted by a National
1837 Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory. During the
1838 stereomicroscopic analysis (10X – 50X) of the soil/ash sample the analyst shall sift
1839 through the sample at a rate of approximately one tablespoon per minute. At the end of
1840 the stereomicroscopic analysis the sample shall be agitated or shaken as a final check
1841 for asbestos prior to the preparation of PLM grab mounts. At no time during the
1842 stereomicroscopic analysis shall a sub sample be collected. The entire sample shall be
1843 analyzed and the results reported. If no asbestos was identified by PLM after the initial
1844 stereomicroscopic examination, then three random grab mount preparations shall be
1845 analyzed by PLM to determine if the sample is none detected for asbestos content. If

1846 any asbestos is found by the laboratory it shall be reported even in the absence of a
1847 second detection (i.e. there does not need to be a second detection to qualify a trace
1848 level of asbestos in the sample). Quantification of asbestos content shall be based on
1849 the entire sample volume, and be reported as such.

1850

1851 Air Sample Collection

1852 Air samples submitted for Phase Contrast Microscopy (PCM) shall be analyzed
1853 according to NIOSH Method 7400 by a laboratory showing successful participation in
1854 the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing
1855 (PAT) Program or individual(s) certified through the AIHA Asbestos Analysts Registry
1856 (AAR) Program.

1857

1858 Air samples submitted for Transmission Electron Microscopy (TEM), for which
1859 quantification of asbestos is desired, shall be prepared and analyzed according to the
1860 standard Asbestos Hazard Emergency Response Act (AHERA) method (AHERA; 40
1861 CFR Part 763, Subpart E, Appendix A). All TEM analysis shall be performed by a
1862 NVLAP accredited laboratory. If a presence/absence analysis is desired, the analysis
1863 shall be performed using the AHERA method modified in the following manner:

- 1864 • A minimum of two preparations shall be prepared and utilized for each
1865 sample
- 1866 • Analysis shall be conducted on a minimum of four grid openings or until
1867 three or more structures are identified, whichever comes first
- 1868 • Any structure (adhering to the AHERA counting rules) identified during
1869 analysis shall be reported
 - 1870 ○ Identification of less than three structures shall be reported as
1871 present
 - 1872 ○ Identification of three or greater structures shall be reported as
1873 detected

1874

1875 Any air sample analysis that results in a “cannot be read (CBR)” determination from the
1876 analyst, or a “not analyzed (NA) or rejected” due to loose debris or uneven loading, shall
1877 be evaluated by the AMS to determine if a cause of the CBR or NA can be ascertained.
1878 If it is determined that the CBR is a result of overloading from airborne emissions, then
1879 the AMS shall request that the laboratory prepare the sample, using an indirect
1880 preparation method, for TEM presence/absence analysis.

1881

1882 Deviation from this sampling and analysis appendix shall only be allowed upon
1883 consultation with, review by, and approval from, the Department.