

Colorado Prescribed Fire Smoke Permits

Pile Standard Permit Condition Worksheet

The endnotes are important.

Piles must be clean.

Construction¹ and Typical² Size of a Pile:	> 5.0 Miles from an Occupied Home³	0.6 - 5.0 Miles from an Occupied Home	≤ 0.5 Miles from an Occupied Home
<p>any construction method: ≤300 ft³ per pile example⁴: 10' x 10' x 7' mound = 275 ft³</p>	<p><i>Pile Category 1a:</i> Weather⁵: any End ignition by sunset. Daily Max⁶: ○ fair(+), storm or snowing: 900 ○ wind: 125</p>	<p><i>Pile Category 1b:</i> Weather: fair(+), snowing, storm, or wind End ignition 2 hours before sunset. Wave⁷ size: ○ storm: 900 ○ very good, excellent: 300 ○ good or snowing: 225 ○ fair: 150 ○ wind only: 75 Daily max: for storm and wind only, one wave. Otherwise, 3 single or 3 concurrent waves</p>	<p><i>Pile Category 1c:</i> Weather: fair(+), snowing, storm, or wind End ignition 2 hours before sunset. Wave size: ○ very good, excellent or storm: 250 ○ good or snowing: 150 ○ fair: 100 ○ wind only: 50 Daily max: for wind only, one wave. With commitment to chunk,⁸ 3 waves. Otherwise, 2 single or 2 concurrent waves Constrain wind direction etc. in the field as needed in order to keep smoke plumes from intersecting any homes, or instead to blow toward homes only when it is snowing.</p>
<p>hand or rake: 301 - 2,000 ft³ blade: 301 - 500 ft³ examples: 13' x 13' x 7' mound = 465 ft³ 20' x 20' x 12' mound = 1,885 ft³</p>	<p><i>Pile Category 2a:</i> Weather: fair(+), snowing, storm, or wind End ignition 1 hr before sunset. Daily Max: ○ fair(+), storm or snowing: 600 ○ wind: 50</p>	<p><i>Pile Category 2b:</i> Weather: fair(+), snowing, storm, or wind End ignition 2 hours before sunset. Wave size: ○ storm - 600 ○ very good, excellent: 200 ○ good or snowing: 125 ○ fair: 75 ○ wind only: 35 Daily max: for storm and wind only, one wave. Otherwise, 3 single or 3 concurrent waves</p>	<p><i>Pile Category 2c:</i> Weather: fair(+), snowing or storm End ignition 3 hours before sunset. Wave size: ○ very good, excellent or storm: 125 ○ good or snowing: 75 ○ fair: 50 Daily Max: With commitment to chunk, 3 waves. Otherwise 2 single or 2 concurrent waves</p>

Construction¹ and Typical² Size of a Pile:	> 5.0 Miles from an Occupied Home³	0.6 - 5.0 Miles from an Occupied Home	≤ 0.5 Miles from an Occupied Home
hand or rake: 2,001 - 7,100 ft ³ blade: 501 - 2,000 ft ³ examples: 30' x 30' x 20' mound = 7,068 ft ³ 20' x 20' x 12' mound = 1,885 ft ³	<i>Pile Category 3a:</i> Weather: fair(+), snowing, or storm End ignition 1 hr before sunset. Daily Max: 1,000,000 ft ³	<i>Pile Category 3b:</i> Weather: good(+), snowing, or storm End ignition 3 hrs before sunset. Max. daily vol.: storm: 1,000,000 ft ³ good (+) or snowing: 300,000 ft ³ Monitor first (test) pile closely for potential impacts.	<i>Pile Category 3c:</i> Weather: good(+) or storm End ignition 4 hrs before sunset. Max. daily vol.: good (+) 100,000 ft ³ storm 200,000 ft ³ Once fire's heat allows, chunk at least daily until smoke production ends.
rake: 7,101 - 50,000 ft ³ blade 2,001 - 50,000 ft ³ examples: 55' x 55' x 20' upright cylinder = 47,500 ft ³ 30' x 20' x 100' half cylinder = 47,124 ft ³ 20' x 15' x 200' half-cylinder = 47,124 ft ³	<i>Pile Category 4a:</i> Weather: fair(+) or storm End ignition 2 hours before sunset. Daily Max: 1,000,000 ft ³	<i>Pile Category 4b:</i> Weather: good(+) or storm End ignition 3 hours before sunset. Max. daily vol.: storm: 1,000,000 ft ³ good(+): 300,000 ft ³ if width ≤ 30' OR 75,000 ft ³ if width > 30'. Monitor first (test) pile closely for potential impacts.	<i>Pile Category 4c:</i> [These permit constraints may be hard to meet. Alternative disposal or smaller piles may be better options.] Weather: storm only End ignition 4 hours before sunset. Max. daily vol.: 200,000 ft ³ Max. (windrow) width: 50' Once fire's heat allows, chunk at least daily until smoke production ends.
Larger, any construction method	<i>Pile Category 5a:</i> Weather: storm or good(+) End ignition by 3 hours before sunset. Max. daily volume: 1,000,000 ft ³	<i>Pile Category 5b:</i> Weather: storm only End ignition by noon. Max. daily volume: 1,000,000 ft ³ Maintain ready access to heavy equipment. ⁹ Chunk daily once fire's heat allows.	<i>Pile Category 5c:</i> Weather: storm only End ignition by noon. Max. daily vol.: 200,000 ft ³ Max. (windrow) width: 50'. Ignition plan, described in narrative, must be aggressive. Maintain ready access to heavy equipment. Once fire's heat allows, chunk at least daily until smoke production ends. Advise APCD 36(+) hrs. before ignition.

¹ *Construction* refers to what was used to build the piles. If no machinery was used to pile up the slash, use 'hand.' Use 'rake' if the machinery used lifted the material with tines, as with a brush rake, grapple, or boom-delimiter. If a bulldozer, front-end loader,

excavator or other equipment with a blade or enclosed bucket was used to build the piles, including if only to push surface clean-up into the pile edges, use 'blade.' If more than one method was used, choose the more restrictive category.

² Pile *dimensions* should be reported based on typical or average size. Estimating a little generously is good, but the size need not be based on the largest pile in the project. Describe the variability in a narrative if (a) any pile is more than a third larger than the average and/or (b) more than 20% of the piles fall in a larger size category. For piles over 25,000 ft³ each, instead provide dimensions of each pile.

³ '*Home*' means closest occupied residence. For piles >300 ft³ each, to count as occupied there must be someone in the home either the day of burning or the following night. Only for piles ≤ 300 ft³ each, if a home is vacant during the burn day it may be considered to be unoccupied. If a person in every home within the relevant radius is contacted individually before burning, either in person or by a 2-way phone conversation, and none of the people in a contacted household have unmitigated health concerns related to smoke, then note the mitigated distance in the block provided on the application form and categorize the burn according to the **distance to the closest home** that was not contacted and cleared.

⁴ *Volume estimating equations*: Use the [volume calculator spreadsheet](#), or [the document with the spreadsheet's parent equations](#).

⁵ *Fair, good, very good, or excellent* means the National Weather Service has forecasted the day's best [ventilation](#) to be the named adjective or better at some point during the day.

Wind means the one-minute average on-site eye-level wind speeds are 4(+) mph measured before ignition and also 4(+) mph measured at least 15 minutes later, during which delay one test pile may be burned.

Snowing means ignition occurs while it is snowing as indicated by visibility through snow of 1 mile or less.

Storm means probability (PoP) of snow ≥ 60% for at least 6 hours in the 18 hours following ignition OR good (+) ventilation forecasted at least until the next sunrise. Use a NWS spot forecast with the duration of the precipitation probability specifically requested, or (for some non-federal permittees) an alternative forecast mechanism that APCD has approved for this project.

⁶ *Daily max* means maximum number of piles to ignite in one day.

⁷ If chunking is a permit condition then a *wave* is the maximum number of piles burning at any one time that have not yet been chunked. If chunking is not otherwise required then a new wave may be started after the pile that each new pile replaces has either been chunked once or has burned down for at least 2 hours.

For smaller piles near homes, categories 1c and 2c, three waves per day are standard (only) if the application includes a commitment to chunk each pile before the replacement wave is ignited.

If *concurrent waves* are approved, it means that two or more groups of piles may be burned at the same time on the same permit if the groups of piles are each at least a mile apart and will not impact the same receptors. Each group may burn up to wave and daily limits concurrently. Concurrent waves are standard only for piles ≤500 ft³ each.

⁸ A pile may be considered to have been *chunked* in either of two ways. First, the work of chunking has been done at least once. Partly-burned wood may be thrown outward where it will self-extinguish in snow and/or bonepiled inward for renewed flaming.

Second, and whether or not anyone has touched the pile since ignition, there is a 1' wide band of ash that has no unburned fuel and lies between the remaining hot material and the adjacent snow perimeter along which no hot fuel remains.

⁹ *Ready access to heavy equipment* means a bulldozer or other heavy equipment capable of working the pile is within ¼ mile of at least one of the piles being ignited that day and could be in use within one hour.