

Coachella Valley

Fugitive Dust Control Handbook



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STATEMENT OF PURPOSE

- **Common Violations Observed**

STATEMENT OF PURPOSE

The purpose of the dust control ordinance requirements is to reduce the amount of fugitive dust and corresponding PM10 emissions entrained as a result of human activities in the Coachella Valley. This Handbook has been prepared to assist landowners, general contractors, subcontractors, local jurisdictions, governmental agencies, and others in the Coachella Valley in complying with dust control ordinance requirements.

Common Violations Observed During Construction Site Inspections

The following are the most common dust control problems documented during site inspections. Sources must take special care to avoid these problems during all project phases.

- Failure to have an approved Fugitive Dust Control Plan or failure to follow the Fugitive Dust Control Plan conditions
- Failure to inform subcontractors of Fugitive Dust Control Plan requirements
- Failure to have the Fugitive Dust Control Plan on-site and to conduct daily recordkeeping activities
- Insufficient number of water trucks
- Inability to rapidly refill water trucks (e.g., no water towers)
- Inadequate water source
- Haul roads, work areas, not watered or stabilized
- Soil stabilization not maintained during non-working hours/days
- Inadequate long-term soil stabilization on inactive portions of site
- No track-out control implemented on-site
- Failure to rapidly clean-up track-out
- No construction project signage
- No Environmental Observer for sites greater than 50 acres
- Failure to check AQMD high-wind forecasting system on a daily basis

COACHELLA VALLEY BEST AVAILABLE CONTROL MEASURES

- **Summary of Dust Control Ordinance Requirements**
- **List of Coachella Valley Best Available Control Measures**

SUMMARY OF DUST CONTROL ORDINANCE REQUIREMENTS

The Coachella Valley dust control ordinances require:

- ✓ at least one of the Coachella Valley Best Available Control Measures (CV BACM) is required to be implemented for each fugitive dust source category.
- ✓ CV BACM must be implemented such that the applicable performance standards (e.g., visible emissions not to exceed 100 feet or 20 percent opacity, or cross any property line, etc.) are met.
- ✓ A description of the performance standards and applicable test methods is included in Chapter 8 of this Handbook.

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	<ul style="list-style-type: none"> ✓ Mix backfill soil with water prior to moving ✓ Dedicate water truck or high capacity hose to backfilling equipment ✓ Empty loader bucket slowly so that no dust plumes are generated ✓ Minimize drop height from loader bucket
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	<ul style="list-style-type: none"> ✓ Maintain live perennial vegetation and desert pavement where possible ✓ Apply water in sufficient quantity to prevent generation of dust plumes
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	<ul style="list-style-type: none"> ✓ Use of high pressure air to clear forms may cause exceedance of opacity/plume length restrictions
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	<ul style="list-style-type: none"> ✓ Follow permit conditions for crushing equipment ✓ Pre-water material prior to loading into crusher ✓ Monitor crusher emissions opacity ✓ Apply water to crushed material to prevent dust plumes

Source Category	Control Measure	Guidance
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	<ul style="list-style-type: none"> ✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration ✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition – mechanical/manual	06-1 Stabilize wind erodible surfaces to prevent dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	<ul style="list-style-type: none"> ✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	<ul style="list-style-type: none"> ✓ Limit vehicular traffic and disturbances on soils where possible ✓ If interior block walls are planned, install as early as possible ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition; and 08-3 Stabilize soils once earth-moving activities are complete.	<ul style="list-style-type: none"> ✓ Grade each project phase separately, timed to coincide with construction phase ✓ Upwind fencing can prevent material movement on site ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

Source Category	Control Measure	Guidance
Importing/exporting of bulk materials	09-1 Stabilize material while loading to prevent fugitive dust emissions; and 09-2 Maintain at least six inches of freeboard on haul vehicles; and 09-3 Limit vehicular speeds to 15 miles per hour while traveling on-site; and 09-4 Stabilize material while transporting to prevent fugitive dust emissions; and 09-5 Stabilize material while unloading to prevent fugitive dust emissions; and 09-6 Comply with Vehicle Code Section 23114.	<ul style="list-style-type: none"> ✓ Use tarps or other suitable enclosures on haul trucks ✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage ✓ Comply with track-out prevention/mitigation requirements ✓ Provide water while loading and unloading to prevent visible dust plumes
Landscaping	10-1 Stabilize soils, materials, slopes	<ul style="list-style-type: none"> ✓ Apply water to materials to stabilize ✓ Maintain materials in a crusted condition ✓ Maintain effective cover over materials ✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes ✓ Hydroseed prior to rain season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	<ul style="list-style-type: none"> ✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs ✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs

Source Category	Control Measure	Guidance
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	<ul style="list-style-type: none"> ✓ Dedicate water truck or high capacity hose to screening operation ✓ Drop material through the screen slowly and minimize drop height ✓ Install wind barrier with a porosity of no less than 50% upwind of screen to the height of the drop point
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	<ul style="list-style-type: none"> ✓ Limit size of staging area ✓ Limit vehicle speeds to 15 miles per hour ✓ Limit number and size of staging area entrances/exits
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials; or 14-2 Install and maintain wind barriers with no less than 50 percent porosity on three sides of the pile, such that the barrier is equal to or greater than the pile height. 14-3 Stockpiles within 100 yards of occupied buildings must not be greater than eight feet in height; or 14-4 Stockpiles greater than eight feet in height and not covered must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	<ul style="list-style-type: none"> ✓ Add or remove material from the downwind portion of the storage pile ✓ Maintain storage piles to avoid steep sides or faces

Source Category	Control Measure	Guidance
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Ensure that on-site vehicular traffic does not exceed 15 miles per hour; and 15-3 Stabilize all haul routes; and 15-4 Direct construction traffic over established haul routes.	<ul style="list-style-type: none"> ✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	<ul style="list-style-type: none"> ✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching ✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard does not exceed six inches	<ul style="list-style-type: none"> ✓ Empty loader bucket such that no visible dust plumes are created ✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	<ul style="list-style-type: none"> ✓ Haul waste material immediately off-site

Source Category	Control Measure	Guidance
Unpaved roads/parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
Weather monitoring/work practices	20-1 Monitor current weather conditions and weather predictions from the AQMD’s toll free wind forecast system (800) CUT-SMOG [Press 1, then Press 5] and / or the National Weather Service; and 20-2 Cease all construction activities if fugitive dust emissions exceed 20 percent opacity or if 100 foot visible plume restriction cannot be met. Control measures (e.g., water trucks/pulls) must continue to operate unless operation of such equipment cannot reduce fugitive dust emissions or if visibility is limited to such an extent that it is hazardous to continue operating such equipment.	✓ Documentation of weather (e.g., wind) conditions can facilitate compliance determinations when using an affirmable defense to dust control ordinance and Fugitive Dust Control Plan requirements

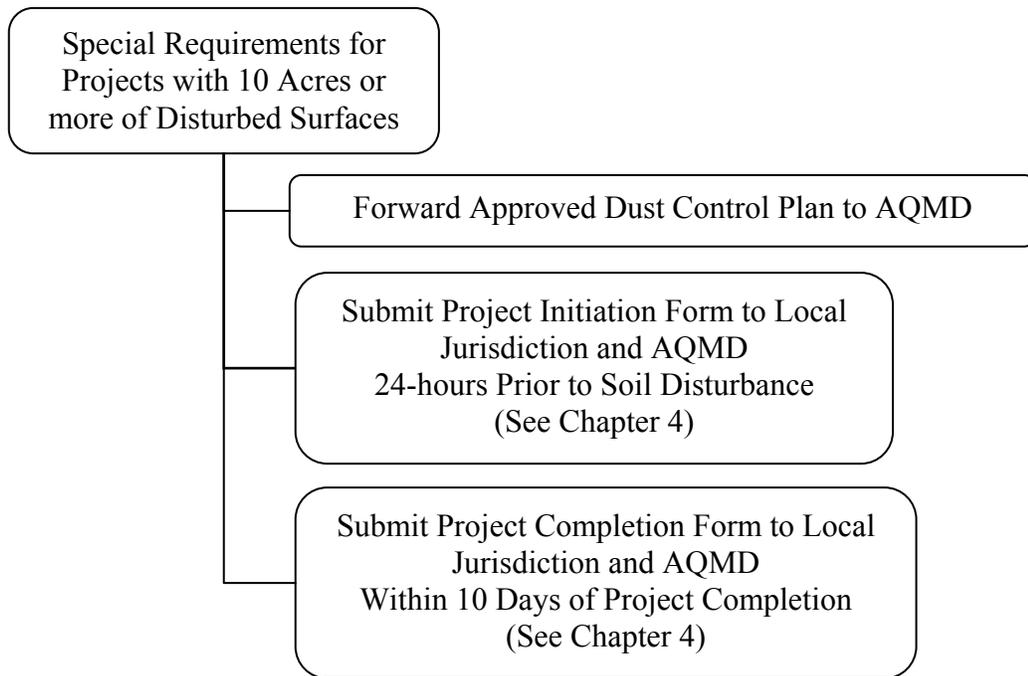
FUGITIVE DUST CONTROL PLAN GUIDANCE

- **Summary Flowchart for Construction Activity Requirements**
- **Summary of Dust Control Ordinance Requirements**
- **Fugitive Dust Control Plan Application Form**
- **Fugitive Dust Control Plan Guidance for Smaller Projects (less than 10 acres)**
- **Fugitive Dust Control Plan Guidance for Larger Projects (10 acres or greater)**

SUMMARY FLOWCHART FOR CONSTRUCTION ACTIVITY REQUIREMENTS

The following is a summary checklist and flowchart for the construction activity dust control ordinance requirements. Project operators, Fugitive Dust Control Plan reviewers, and code enforcement personnel can use this to ensure that all dust control ordinance requirements are met throughout the construction process. Additional information on specific requirements is included in the referenced Handbook Chapters.

- Implement Coachella Valley BACM for all sources (Chapter 2)
- All sites requiring a grading permit, or that involve more than 5,000 square feet of soil disturbance, or import/export more than 100 cubic yards of material per day must prepare and have a Fugitive Dust Control Plan approved by the permitting authority (Chapter 3)



- Install construction project signage (Chapter 5)
- Maintain daily dust control log and chemical stabilization recordkeeping (Chapter 6)
- Ensure compliance with applicable test methods (Chapter 8)

SUMMARY OF DUST CONTROL ORDINANCE REQUIREMENTS

The Coachella Valley dust control ordinances require local government approval of a Fugitive Dust Control Plan prior to:

- ✓ Issuance of a grading permit
- ✓ Issuance of a building permit for projects with 5,000 or more square feet of soil disturbance
- ✓ Issuance of permits for projects that import or export more than 100 cubic feet of bulk material per day

The Fugitive Dust Control Plan requirements consist of two elements:

- (1) Fugitive Dust Control Plan Application (Form A);

and
- (2) Fugitive Dust Control Plan (Form DCP or equivalent for projects with less than 10 acres of disturbed surfaces or a Site-Specific Fugitive Dust Control Plan for projects with 10 or more acres of disturbed surfaces)

The following guidance has been prepared for construction project operators to facilitate preparation of consistent Fugitive Dust Control Plans throughout the Valley.

FUGITIVE DUST CONTROL PLAN APPLICATION FORM

The following instructions have been prepared to assist project operators in preparing a Fugitive Dust Control Plan application (Form A) for construction activities. Submitting a complete application is essential in expediting the process, so please read and follow the instructions carefully.

In addition to the Fugitive Dust Control Plan application (Form A), construction activities are required to prepare a Fugitive Dust Control Plan.

Guidance for preparing Fugitive Dust Control Plans for smaller projects (less than 10 acres of disturbed surfaces) and larger projects (10 acres or more of disturbed surfaces) is also included in this Chapter.



Fugitive Dust Control Plan Application Form
(Form A - Page 1 of 4)

Please print in ink or type. Blank spaces must be completed for the application to be processed. If an item is not applicable, please enter N/A.

1. Form Preparer: Property Owner Developer Prime Contractor Other *
(If Other, attach Owner Designee Form [Page 3-8])

CONTACT PERSON NAME	
COMPANY NAME	
COMPANY ADDRESS	
CITY, STATE, ZIP CODE	
TELEPHONE NUMBER	
FACSIMILE NUMBER	
24-HOUR, MANNED AFTER HOURS PHONE NUMBER	
AQMD DUST CLASS CERTIFICATE #	

2. Project Address or Location

PROJECT NAME	
PROJECT ADDRESS	
CITY, STATE, ZIP CODE	
NEAREST MAJOR CROSS STREETS	
PARCEL NUMBERS	



Fugitive Dust Control Plan Application Form
(Form A - Page 2 of 4)

3. Project Acreage (total land to be disturbed)

(include project site and associated unpaved access roads, stockpiles, and staging areas)

PROJECT SIZE (ACRES)	
WATER SOURCE (GPM)	

4. Project Owner (if Fugitive Dust Control Plan preparer is not the property owner)

NAME	
COMPANY NAME (IF APPLICABLE)	
ADDRESS (INCLUDE CITY, STATE, & ZIP CODE)	
TELEPHONE NUMBER	
FACSIMILE NUMBER	

5. The Person(s) responsible for dust control measures and to whom official notices should be sent if necessary

RESPONSIBLE PERSON	
COMPANY NAME	
ADDRESS (INCLUDE CITY, STATE, & ZIP CODE)	
TELEPHONE NUMBER	
24-HOUR, MANNED AFTER-HOURS TELEPHONE NUMBER	
FACSIMILE NUMBER	
AQMD DUST CLASS CERTIFICATE #	

Fugitive Dust Control Plan Application Form
 (Form A - Page 3 of 4)

6. On-Site Superintendent/Supervisor/Foreman contact

NAME	
COMPANY NAME	
ADDRESS (INCLUDE CITY, STATE, & ZIP CODE)	
TELEPHONE NUMBER	
24-HOUR, MANNED AFTER-HOURS TELEPHONE NUMBER	
AQMD DUST CLASS CERTIFICATE #	

7. Site Mapping

Provide a map showing the vicinity of the project clearly identifying the closest major cross streets or other landmarks and the project location. Label this map “**Vicinity Map**”. Required map size is 8 ½ by 11”.

Provide an 8 ½ by 11” or larger **Assessor Parcel Map** for the property(s) on which the project will be occurring. Outline or highlight the affected parcels. Identify location of site entrances, internal unpaved haul routes, wind fencing, areas to be chemically stabilized and other proposed and required dust control mitigations. Projects that are only installing or constructing linear features such as roads, pipelines or other utilities that boarder or cross more than one Assessor’s parcel do not require Assessor’s Parcel Maps, but must provide a detailed vicinity map adequately depicting the entire project area. If the project is divided into construction phases (separate physical project areas), provide a map clearly identifying the phases.

8. Attach a Fugitive Dust Control Plan

- ✓ Projects with less than 10 acres of disturbed surfaces must complete and attach a Fugitive Dust Control Plan (Form DCP) or equivalent.
- ✓ Projects with 10 acres or more of disturbed surfaces must complete and attach a Site-Specific Fugitive Dust Control Plan. Guidance for preparation of a Site-Specific Fugitive Dust Control Plan is included later in this Chapter.



Fugitive Dust Control Plan Application Form
(Form A - Page 4 of 4)

9. Project notifications

For projects with 10 acres or more of disturbed surfaces, the dust control ordinance requires notification to the local permitting authority and to the AQMD prior to project initiation and at project completion. (Refer to Chapter 4 of this Handbook for specific requirements and forms).

10. Project Signage

Construction signage must be installed on-site prior to construction. Guidelines for construction signage are found in Chapter 5 of this Handbook.

11. Owner Agreement

The signatory on this application constitutes an agreement by the owner to be the person with authority to enforce compliance by all contractors and subcontractors of the Dust Control Ordinance, Fugitive Dust Control Plan conditions, and any supplements identified by the permitting authority. Once approved, this application is incorporated by reference and becomes apart of the approved site grading plan.

Owner Signature

Date

Printed Name

Title and Company

AQMD Coachella Valley Fugitive Dust Control Class Certificate #



Ownership Designee Form
(Form OD)

An owner's designee form is required if a Fugitive Dust Control Plan is not prepared/implemented by the property owner, developer or prime contractor.

PROJECT INFORMATION	PLEASE ENTER INFORMATION BELOW
DESIGNEE'S NAME	
COMPANY NAME	
ADDRESS/LOCATION	
PHONE NUMBER	
AFTER-HOURS PHONE NUMBER	
AQMD DUST CLASS CERTIFICATE #	
PROPERTY OWNER INFORMATION	PLEASE ENTER INFORMATION BELOW
PROPERTY OWNER'S NAME	
ADDRESS/LOCATION	
PHONE NUMBER	
24-HOUR, MANNED AFTER- HOURS PHONE NUMBER	
<p>OWNER STATEMENT</p> <p>I hereby authorize the person listed as my designee to act on my behalf in all matters regarding the issuance and requirements of the Fugitive Dust Control Plan for construction activities. The designee is responsible for project duration. The designee has successfully completed the AQMD Coachella Valley Fugitive Dust Control Class. Furthermore, the designee is responsible for ensuring the contractor(s), subcontractor(s), and all other persons associated with the project are in compliance with the approved Fugitive Dust Control Plan, dust control ordinance requirements, and AQMD regulations.</p> <p>Owner's Signature _____ Date _____</p> <p>Printed Name _____</p>	

FUGITIVE DUST CONTROL PLAN PREPARATION GUIDANCE FOR SMALLER CONSTRUCTION PROJECTS (LESS THAN 10 ACRES)

The following instructions have been prepared to assist project operators in preparing a Fugitive Dust Control Plan for construction activities with less than 10 acres of disturbed surfaces. Submitting a complete Fugitive Dust Control Plan is essential in expediting the process, so please read and follow the instructions carefully.

Fugitive Dust Control Plan Guidance

Use the attached pages (Form DCP) to describe the dust control actions to be implemented on-site. Separate the actions to be implemented during the various project phases (e.g., clearing/grubbing and mass grading, finish grading, and site construction, etc.). If applicable, describe the additional control actions to be implemented on-site.

Please remember the following when preparing a Fugitive Dust Control Plan:

- ✓ A complete copy of the Fugitive Dust Control Plan and all maps must be on-site prior to beginning construction activity and must be retained on-site at all times during project construction.
- ✓ Construction signage must be installed on-site prior to construction. Guidelines for construction signage are found in Chapter 5 of this Handbook.
- ✓ Dust control is required 24 hours a day, 7 days a week for the duration of the project regardless of wind conditions or construction project status.
- ✓ Daily recordkeeping of dust control actions is required to be compiled and retained during project duration and for three years after project completion.
- ✓ Grading plans must include a statement that incorporates the approved fugitive dust control plan into the approved grading plan.



Fugitive Dust Control Plan
 For Projects < 10 Acres
 (Form DCP, Page 1 of 5)

Project Name: _____

Permit Number (if applicable): _____

Owner Name: _____

Anticipated Start Date: _____ **Anticipated Completion Date:** _____

Total Earth-Movement (Cubic Yards): _____

*Note: Fill out completely and describe Control Actions (e.g., # of watering trucks during phases, available water GPM. etc.).
 Indicate N/A if not applicable*

Project Phases

Source Category	Clearing, Grubbing, and Mass Grading <i>(Describe Control Actions)</i>	Finish Grading <i>(Describe Control Actions)</i>	Site Construction <i>(Describe Control Actions)</i>
Backfilling			
Clearing and Grubbing			
Clearing Forms			
Crushing			

Fugitive Dust Control Plan
 For Projects < 10 Acres
 (Form CP, Page 2 of 5)

Project Phases

Source Category	Clearing, Grubbing, and Mass Grading <i>(Describe Control Actions)</i>	Finish Grading <i>(Describe Control Actions)</i>	Site Construction <i>(Describe Control Actions)</i>
Cut and Fill:			
Demolition – mechanical/manual			
Disturbed soil			
Earth-moving activities			
Importing/exporting of bulk materials			

Fugitive Dust Control Plan
 For Projects < 10 Acres
 (Form CP, Page 3 of 5)

Project Phases

Source Category	Clearing, Grubbing, and Mass Grading <i>(Describe Control Actions)</i>	Finish Grading <i>(Describe Control Actions)</i>	Site Construction <i>(Describe Control Actions)</i>
Landscaping			
Road shoulder maintenance			
Screening			
Staging Areas			
Stockpiles/bulk material handling			

Fugitive Dust Control Plan
 For Projects < 10 Acres
 (Form CP, Page 4 of 5)

Project Phases

Source Category	Clearing, Grubbing, and Mass Grading <i>(Describe Control Actions)</i>	Finish Grading <i>(Describe Control Actions)</i>	Site Construction <i>(Describe Control Actions)</i>
Traffic areas for construction activities			
Trenching			
Truck unloading			
Turf overseeding			
Unpaved roads/parking lots			

Fugitive Dust Control Plan
 For Projects < 10 Acres
 (Form CP, Page 5 of 5)

Project Phases

Source Category	Clearing, Grubbing, and Mass Grading <i>(Describe Control Actions)</i>	Finish Grading <i>(Describe Control Actions)</i>	Site Construction <i>(Describe Control Actions)</i>
Vehicular track-out, handling, clean-up			
Weather monitoring/work practices			
<i>Other (describe)</i>			

FUGITIVE DUST CONTROL PLAN PREPARATION GUIDANCE FOR LARGER CONSTRUCTION PROJECTS (10 ACRES OR LARGER)

In addition to the Fugitive Dust Control Plan application (Form A), the dust control ordinance requires a City (County) approved Site-Specific Fugitive Dust Control Plan for projects with 10 acres or more of disturbed surfaces. The following guidance has been prepared to describe the required elements of a Site-Specific Fugitive Dust Control Plan. Remember: two copies of the Site-Specific Fugitive Dust Control Plan must be forwarded by the operator to the AQMD in an 8^{1/2} x 11” format, using the supplied form within 10 days after approval by the permitting authority. Please submit copies of approved Site-Specific Fugitive Dust Control Plans to:

Phill Hubbard
Supervising Investigator
South Coast AQMD
21865 East Copley Drive
Diamond Bar, CA 91765
(909) 396-2966
(909) 396-2608 [Facsimile]
phubbard@aqmd.gov

Required Elements of Site-Specific Fugitive Dust Control Plan

Project Description

This section of the Fugitive Dust Control Plan must provide a complete description of the project, a development plan, a schedule of activities, and a time frame for project completion. Additionally, this section must contain a description of soil types on site and an estimated proposed expenditure for the total project dust control budget.

Water Source Identification

This section must contain a description and location of the water supply that is dedicated to dust control. Also, identify sources of a back-up water supply if proposed in conjunction with a contingency measure. This section covers earth-moving activities for the life of the project.

Coachella Valley Best Available Control Measures:

This section must include a description of the primary dust control measures selected for each source at the project site (e.g., No. 1 - Earth-Movement, No. 2 – Unpaved Roads, etc.) based on the list of CV BACM included in this Handbook. This section must also have a description of the fugitive dust control measures to be implemented during non-working hours.

Control Measures Guidance:

Suggested minimum standards for a Site-Specific Fugitive Dust Control Plan are presented below. As a reminder, specific applicable dust control ordinance requirements are provided in italics. Additionally, grading plans must include a statement that incorporates the Site-Specific Fugitive Dust Control Plan into the approved grading plan.

No. 1 EARTH-MOVEMENT

Project Phasing

If feasible, use grading permit conditions to **break the project into phases** so that only a portion of the site is disturbed at any given time to ensure control of fugitive dust. This technique is critical for project sites with greater than 100 acres.

Pre-Watering

Prior to initiating activity, **pre-water site** through use of portable irrigation lines. At least 72 hours of pre-watering is recommended for each area prior to initiating earth-movement. The operator must specify water source and available flow rate (g/m).

Watering During Earth-Movement Activities

Water applied continuously to all disturbed portions of the site by means of water truck/water pull as necessary to maintain sufficient visible moisture on the soil surface. For reference, one 2,000 gallon water truck can treat approximately 4 acres of active construction per hour during non high-wind conditions. Also, for cut and fill activities, one 10,000 gallon water pull is estimated to be necessary for each 7,000 cubic yards of daily earth-movement. Multiple 4,000 gallon water trucks may be used in place of one 10,000 gallon water pull. Touch and visual contrast are reasonably good indicators of soil moisture. Surface areas that are dry to the touch and appear lighter-colored require the application of additional water to prevent fugitive dust. The operator must specify the number and type of watering vehicles available for dust control during each project phase as well as during off-hours and the availability of back-up water trucks if the site

experiences dust control problems (see also contingency measure requirements below).

Water towers are necessary for projects with more than 10 acres of active construction. Without a water tower, it can take up to 30 minutes to fill a 2,000 gallon water truck. Also, multiple water towers are necessary for projects that use water pulls as filling one 10,000 gallon water pull can drain a water tower that can take up to 40 minutes to refill.

Perimeter Controls

Wind fencing is necessary between the site and nearby residences or businesses. Off-site upwind fencing and on-site wind fencing for larger projects can also keep blowsand from being deposited onto the site or traveling through the site. Block walls, if part of the final project, can replace wind fencing during the site construction phase.

A perimeter **watering system** or fence line misting system consisting of portable irrigation equipment may be an effective fugitive dust mitigation system to protect surrounding residences and businesses. The local jurisdiction may also be provided access to this equipment.

Site Stabilization

Chemical dust suppressants are to be applied in accordance with the manufacturer's specifications and in sufficient concentrations and frequency to ensure compliance with the applicable test methods. Recordkeeping is necessary to demonstrate compliance. Wind fencing or other obstructions can keep areas previously treated with dust control suppressants free from future disturbances.

Vegetation can be a cost-effective alternative to chemical stabilization for areas that will remain inactive for long periods. Wind fencing or other obstructions can keep the vegetated area free from future disturbances.

Specific Dust Control Ordinance Requirements:

The dust control ordinance includes the following short-term and long-term stabilization requirements:

Short-term stabilization (after-hours/weekends) options include maintaining soils in a damp condition, watering to develop a surface crust, or use of chemical stabilization products.

Contingency Measures

This section must describe the contingency measures to be implemented if a primary control measure fails to adequately control dust emissions according to the applicable performance standards (e.g., plume length of greater than 100 feet, or crossing any property line, or 20 percent opacity).

Also, describe the steps that will be taken to initiate a contingency measure.

No. 2 – UNPAVED ROAD TRAVEL

Surface Improvements

Paving of the internal roadway network early in a project's development phase can reduce chemical dust suppressant reapplication costs. Periodic **street cleaning** throughout project construction will likely be required to ensure compliance with the dust control ordinance track-out requirements and to reduce entrained road dust.

Application of **gravel** or other material with a lower silt content than the underlying soils can be an effective surface improvement for dust control. For reference, the specific requirements for a gravel pad to prevent track-out are minimum one inch or larger washed gravel maintained to a depth of six inches. Periodic maintenance (grading and spot reapplication) may be required.

Surface Treatments

Chemical dust suppressants designed by the manufacturer for traffic areas, and applied in accordance with manufacturer's specifications and in sufficient concentrations and frequency to ensure compliance with the applicable test methods once final roadway elevations have been reached. Limiting/restricting access to non-road areas can also reduce the need to retreat areas previously stabilized.

Constant watering of unpaved roads, haul routes, and equipment paths represents a short-term, cost-effective dust control action. High evaporation rate may justify use of chemical dust suppressants for a longer-term control. For reference, U.S. EPA studies have documented a 50 percent reduction in PM10 emissions under a water application rate of 0.2 gallons per square yard per hour.

Source Extent Reduction

Unpaved road emissions are a function of the number of vehicles traversing the area and the vehicle speeds. Accordingly, programs to **reduce vehicular trips or vehicle speeds** can reduce fugitive dust emissions. Frequent watering or application of chemical stabilizers would likely be required in addition to the source extent measures to ensure that the applicable performance standards are met.

Contingency Measures

Contingency measures must be identified for each unpaved haul road/internal access route. This section must describe the contingency measures to be implemented if a primary control measure fails to

adequately control dust emissions according to the applicable performance standards (e.g., plume length of greater than 100 feet, or crossing any property line, or 20 percent opacity). Also, describe the steps that will be taken to initiate a contingency measure.

No. 3 – STORAGE PILES/BULK MATERIAL HANDLING

Wind Sheltering

Install and maintain **wind barriers** with no less than 50 percent porosity on three sides of the pile, such that the barrier is equal to or greater than the pile height.

Coverings can be used on smaller storage piles to prevent windblown dust. Any covering must be secured to ensure that it remains in place and effective.

Storage Pile Stabilization

Water applied continuously to all disturbed portions of the storage piles by means of water truck or sprinkler system as necessary to maintain sufficient visible moisture on the pile surface.

Chemical dust suppressants can be an effective control measure for storage piles with infrequent disturbances. Any product used must be applied in accordance with the manufacturer's specifications and in sufficient concentrations and frequency to ensure compliance with the applicable test methods. Recordkeeping is necessary to demonstrate compliance.

Vegetation can be a cost-effective alternative to chemical stabilization for storage piles that will remain inactive for long periods. Wind fencing or other obstructions can keep the vegetated area free from future disturbances.

Material Handling

Confining **load-in/load-out** of material to the leeward (downwind) side of the pile can reduce wind erosion of storage piles. This control measure would likely need to be implemented in conjunction with other control measures to achieve the applicable performance standards.

Stockpiles within 100 yards of occupied buildings must not be greater than eight feet in height.

Stockpiles greater than eight feet in height and not covered must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.

Contingency Measures

Contingency measures must be identified for each storage pile/material handling source. This section must describe the contingency measures to be implemented if a primary control measure fails to adequately control dust emissions according to the applicable performance standards (e.g., plume length of greater than 100 feet, or crossing any property line, or 20 percent opacity). Also, describe the steps that will be taken to initiate a contingency measure.

NO. 4 – VEHICULAR TRACK-OUT, HAULING, CLEANUP

Track-Out Prevention

Construction site accesses are to be improved with paving or gravel. If the project site is not balanced (e.g., off-site material transport), a wheel washing system and/or ribbed steel plates must be placed in the roadway before the vehicle enters the paved/graveled area to clean the tires and prevent track-out.

Covering haul vehicles or utilizing **bedliners** can prevent material from being lofted out of the vehicle or from falling out of the bottom of the vehicle.

Specific Dust Control Ordinance Requirements:

The dust control ordinance also requires at least one of the following track-out control devices for projects greater than five acres or those that import or export more than 100 cubic yards of material per day:

Gravel pad consisting of minimum one inch or larger washed gravel maintained to a depth of six inches at least 50 feet long and 30 feet wide; OR

Paved surface extending at least 100 feet into the site and at least 20 wide; OR

Wheel shaker/wheel spreading device consisting of raised dividers (rails, pipes, or grates) at least three inches tall and at least six inches apart; OR

Installation and maintenance of a wheel washing system.

Track-Out Mitigation

Street sweeping can be an effective mitigation measure if material is tracked out on to paved roads surrounding the site. Efforts to prevent material track-out will reduce sweeping costs.

Specific Dust Control Ordinance Requirements:

The dust control ordinance requires removal of material anytime it extends for a cumulative distance of more than 25 feet from any site access and at the conclusion of the workday.

Contingency Measures

Contingency measures must be identified for each track-out source. This section must describe the contingency measures to be implemented if a primary control measure fails to adequately control dust emissions according to the applicable performance standards (e.g., track-out extending more than 25 feet from any site access point). Also, describe the steps that will be taken to initiate a contingency measure.

NO. 5 - DISTURBED SURFACES/INACTIVE SITES

During Dust Generating Activities

Water applied continuously to all disturbed portions of the site by means of water truck/water pull as necessary to maintain sufficient visible moisture on the soil surface. For reference, one 2,000 gallon water truck can treat approximately 4 acres of active construction per hour during non high-wind conditions. Also, for cut and fill activities, one 10,000 gallon water pull is estimated to be necessary for each 7,000 cubic yards of daily earth-movement. Multiple 4,000 gallon water trucks may be used in place of one 10,000 gallon water pull. Touch and visual contrast are reasonably good indicators of soil moisture. Surface areas that are dry to the touch and appear lighter-colored require the application of additional water to prevent fugitive dust. The operator must specify the number and type of watering vehicles available for dust control during each project phase as well as during off-hours and the availability of back-up water trucks if the site experiences dust control problems (see also contingency measure requirements below).

Water towers are necessary for projects with more than 10 acres of active construction. Without a water tower, it can take up to 30 minutes to fill a 2,000 gallon water truck. Also, multiple water towers are necessary for projects that use water pulls as filling one 10,000 gallon water pull can drain a water tower that can take up to 40 minutes to refill.

Perimeter Controls

Wind fencing is necessary between the site and nearby residences or businesses. Off-site upwind fencing and on-site wind fencing for larger projects can also keep blowsand from being deposited onto the site or traveling through the site. Block walls, if part of the final project, can replace wind fencing during the site construction phase.

A perimeter **watering system** or fence line misting system consisting of portable irrigation equipment may be an effective fugitive dust mitigation system to protect surrounding residences and businesses. The local jurisdiction may also be provided access to this equipment.

Temporary Stabilization During Weekends, After Work Hours, Holidays

Depending on site soil types, **water** can be used to either maintain soils in a damp condition or to develop a surface crust.

Chemical dust suppressants, diluted in accordance with the manufacturer's specifications for short-term stabilization can be an effective technique for areas that will be subject to future disturbances.

Access Restriction

Fencing or other obstructions can keep the stabilized area free from future disturbances and thereby reduce the potential for windblown dust.

Specific Dust Control Ordinance Requirements:

The dust control ordinance includes the following short-term (weekend, after hour, and holiday) stabilization requirements:

- *maintaining soils in a damp condition,*
- *watering to develop a surface crust, or*
- *use of chemical stabilization products.*

Long Term Stabilization

Chemical dust suppressants, applied in accordance with the manufacturer's specifications and in sufficient concentrations and frequency to ensure compliance with the applicable test methods can be an effective long-term stabilization technique. Recordkeeping is necessary to demonstrate compliance. Portable irrigation is necessary to ensure adequate site coverage. Wind fencing or other obstructions can keep areas previously treated with dust control suppressants free from future disturbances.

Vegetation can be a cost-effective alternative to chemical stabilization for areas that will remain inactive for long periods. Wind fencing or other obstructions can keep the vegetated area free from future disturbances.

Specific Dust Control Ordinance Requirements:

The dust control ordinance includes the following long-term stabilization requirement (required within 10 days of ceasing activity for sites with no planned activity for at least 30 days):

- *vegetation with an active watering system or*

- *application of chemical dust suppressants with physical access restrictions surrounding the disturbed surface.*

Perimeter Controls

Wind fencing is necessary between the site and nearby residences or businesses. Off-site upwind fencing and on-site wind fencing for larger projects can also keep blowsand from being deposited onto the site or traveling through the site. Block walls, if part of the final project, can replace wind fencing during the site construction phase.

A perimeter **watering system** or fence line misting system consisting of portable irrigation equipment may be an effective fugitive dust mitigation system to protect surrounding residences and businesses. The portable watering system may be used in place of or in conjunction with watering trucks. The local jurisdiction may also be provided access to this equipment.

Contingency Measures

Contingency measures must be identified for disturbed surface areas or inactive portions of a construction site. This section must describe the contingency measures to be implemented if a primary control measure fails to adequately control dust emissions according to the applicable performance standards (e.g., plume length of greater than 100 feet, or crossing any property line, or 20 percent opacity). Also, describe the steps that will be taken to initiate a contingency measure.

NO. 6 – UNPAVED PARKING LOTS

Areas Subject to Frequent Disturbances

Equipment staging areas are to be treated with at least one inch washed gravel maintained to a depth of four inches or treated with chemical dust suppressants designed by the manufacturer for traffic areas, and applied in accordance with the manufacturer's specifications and in sufficient concentrations and frequency to ensure compliance with the applicable test methods.

Employee parking areas are to be covered with at least one inch washed gravel maintained to a depth of four inches or treated with chemical dust suppressants designed by the manufacturer for traffic areas, and applied in accordance with the manufacturer's specifications and in sufficient concentrations and frequency to ensure compliance with the applicable test methods. If an internal roadway network is paved, employees are to be instructed to park only on paved areas.

Contingency Measures

Contingency measures must be identified for each unpaved parking lot. This section must describe the contingency measures to be implemented if a primary control measure fails to adequately control dust emissions according to the applicable performance standards (e.g., plume length of greater than 100 feet, or crossing any property line, or 20 percent opacity). Also, describe the steps that will be taken to initiate a contingency measure.

NO. 7 – EMPLOYEE TRAINING

Employee Dust Control Training and Compliance:

This section must describe how on-site personnel will ensure that the project remains in compliance with the Site-Specific Fugitive Dust Control Plan. This section must include a statement of the authority and training of personnel that will allow the attainment of this goal.

Specific Dust Control Ordinance Requirements:

The dust control ordinance requires that any Fugitive Dust Control Plan preparer, environmental observer, and at least one representative of any on-site general contractor or subcontractor involved in soil disturbance activities to complete the AQMD Coachella Valley Fugitive Dust Control Class and maintain a valid certificate of completion.

Environmental Observer

The dust control ordinance requires an environmental observer for projects with greater than or equal to 50 acres of disturbed surfaces. The environmental observer must have completed the AQMD Coachella Valley Fugitive Dust Control Class and have dust control as the primary responsibility with the authority to immediately employ additional dust control efforts.

DUST CONTROL PLAN TEMPLATE

A template to assist in the preparation of a Site-Specific Fugitive Dust Control Plan is provided in the following pages. Operators may use this template as a guide, however, all the elements listed in the preceding pages must be included in the Site-Specific Fugitive Dust Control Plan. Additionally use of an 8 ½ by 11 inch, stand alone Site-Specific Fugitive Dust Control Plan is required regardless if the information is included on an approved grading plan.



SITE-SPECIFIC FUGITIVE DUST CONTROL PLAN* (SITES 10 ACRES OR GREATER)

Site Description

Please ensure that Fugitive Dust Control Plan Application (Form A) is completed and attached to the Site-Specific Fugitive Dust Control Plan.

Project Description

Please provide the following information as completely as possible.

- No.** **Description of Source(s)** [Please provide best estimates]
- 1** **Earth-moving** (If not applicable, check here)
Maximum cubic yards of earth-movement: _____/month or _____/year
Anticipated start date: _____ End date _____; or Ongoing _____ (Check)
Amount of export: _____ (Disposal site) _____
- 2** **Unpaved roads** (If not applicable, check here)
Mileage: _____ Estimate of average daily traffic levels: _____
Type of motor vehicles using roads: _____
- 3** **Storage piles/Bulk Material handling** (If not applicable, check here)
Maximum number of piles: _____
Average height: _____, length/width: _____
Configuration: cone, windrow, other (specify) _____
- 4** **Vehicular track-out/Cleanup** (If not applicable, check here)
Number of access points which connect to public roads: _____
Estimate of the maximum number of vehicles that will exit the site: _____/ day
- 5** **Disturbed surface areas** (If not applicable, check here)
Maximum acreage: _____
Will any disturbed surface areas remain inactive for at least 10 days? Yes No
- 6.** **Unpaved Parking Lots** (If not applicable, check here)
Number of unpaved lots at this site: _____
Size of each lot: _____

Soil Types

Primary soil type on site: _____

Dust Control Budget

Estimate of project dust control budget: _____

Water Source Identification

Water source (g/m): _____

Back-up water source: _____

* Use of an 8 ½ by 11 inch, stand alone site-specific fugitive dust control plan is required regardless if the information is included on an approved grading plan.



No. 1 - EARTH-MOVEMENT

Coachella Valley Best Available Control Measures:

In the space provided below, please check and describe your dust control measures.

<u>Control Measure</u>	<u>Control Action</u>
Pre-grading	Number of acres to be graded at one time: _____
Planning	Number of parcels to be phase-graded: _____
Watering (pre-grading)	Number of water trucks: _____ Frequency of application: _____ Sprinkler/hose system: _____ Describe: _____
Watering (during grading)	Number of water trucks: _____ Frequency of application: _____ Sprinkler/hose system: _____ Describe: _____
Watering (post grading)	Number of water trucks: _____ Frequency of application: _____ Sprinkler/hose system: _____ Describe: _____
Wind fencing	Maximum height: _____ Location: _____ Describe: _____ _____
Chemical stabilization	Type of product: _____ Frequency of application: _____ Concentration: _____ Describe: _____ _____ _____
Cover haul vehicles/Bedliners in haul vehicles	Operator of haul vehicles, if other than site owner: _____ _____ _____
Other (specify)	_____ _____
Contingency Measure(s)	_____ _____

If necessary, attach additional information.



No. 2 - UNPAVED ROAD TRAVEL*

Coachella Valley Best Available Control Measures:

In the space provided below, please check and describe your dust control measures

<u>Control Measure</u>	<u>Control Action</u>
Paving	Frequency of street sweeping: _____ Describe: _____ _____ _____
Gravel	Depth of gravel: _____ Describe: _____ _____ _____
Chemical stabilization	Type of product: _____ Frequency of application: _____ Concentration: _____ Describe: _____ _____ _____
Watering	Frequency of application: _____ Describe: _____ _____ _____
Reduce speed	Maximum speed limit: _____ miles per hour How are speeds controlled: Post signs _____; Briefings to workers _____
Trip reduction	Describe how achieved: _____ _____ _____
Other (specify)	_____ _____ _____
Contingency Measure(s)	_____ _____ _____

If necessary, attach additional information.

* All unpaved haul roads and parking areas must be identified on the Dust Control Plan site map and all vehicles shall only use established haul routes and parking areas.



No. 3 - STORAGE PILES/BULK MATERIAL HANDLING

Coachella Valley Best Available Control Measures:

In the space provided below, please check and describe your dust control measures

<u>Control Measure</u>	<u>Control Action</u>
Wind sheltering	Type of barriers: _____ Average height of barriers: _____ Describe: _____ _____ _____
Coverings	Types of coverings: _____ Describe: _____ _____ _____
Watering	Method of application: _____ Frequency of application: _____ Describe: _____ _____ _____
Chemical stabilization	Type of product: _____ Frequency of application: _____ Concentration: _____ Describe: _____ _____ _____
Vegetation	_____ _____ _____
Loadin/loadout	Orientation of loadin/loadout procedures: N S E W Describe: _____ _____ _____
Contingency Measure(s)	_____ _____ _____ _____

If necessary, attach additional information.



No. 4 - VEHICULAR TRACK-OUT, HAULING, CLEANUP

Note: If trackout, spillage, or carry-out extend more than 25 feet along a paved public roadway, finalize clean-up activities within one hour. Also remove any track-out, spillage or carry-out at the conclusion of the workday.

Coachella Valley Best Available Control Measures:

In the space provided below, please check and describe your dust control measures

<u>Control Measure</u>	<u>Control Action</u>
Gravel pads	Location: _____ Size: _____ <i>(Minimum dimensions: 1" or larger washed gravel, maintained at 6" depth, 50' long x 30' wide)</i>
Paving	Location: _____ <i>(Minimum dimensions: 100' long x 20' wide)</i>
Track-out device	Locations: _____
Type of device	Describe: _____
Wheel washers	Location: _____ Describe: _____ _____ _____
Cover haul vehicles/ Bedliners in haul vehicles	Operator of haul vehicles, if other than site operator: _____ _____ _____
Sweep/clean roadways	Frequency: _____ Type of equipment: _____ Describe: _____ _____ _____
Other (specify)	_____ _____ _____ _____
Contingency Measure(s)	_____ _____ _____

If necessary, attach additional information.



No. 5 - DISTURBED SURFACES/INACTIVE SITES

Coachella Valley Best Available Control Measures:

In the space provided below, please check and describe your dust control measures

Control Measure

Control Action

During Dust Generating Activities

Watering Method of application: _____
Frequency: _____

Describe: _____

Wind fencing Location: _____
Height: _____
Describe: _____

Site access Method of vehicle restriction: _____

Chemical stabilization Type of product: _____
Frequency of application: _____
Concentration: _____
Describe: _____

Vegetation Location: _____
Plant type: _____
Describe: _____

Temporary Stabilization During Weekends, After Work Hours, and on Holidays

Watering Method of application: _____
Frequency: _____

Describe: _____

Chemical stabilization Type of product: _____
Frequency of application: _____
Concentration: _____

Site access Method of vehicle restriction: _____



No. 5 - DISTURBED SURFACES/INACTIVE SITES (Continued)

Coachella Valley Best Available Control Measures:

In the space provided below, please check and describe your dust control measures

Long-Term Stabilization

<u>Control Measure</u>	<u>Control Action</u>
Chemical stabilization	Type of product: _____ Frequency of application: _____ Concentration: _____
Vegetation	Location: _____ Plant type: _____
Wind fencing	Location: _____ Height: _____ Describe: _____ _____
Other (specify)	_____ _____ _____
Contingency Measure(s)	_____ _____ _____ _____

If necessary, attach additional information.



NO. 6 – UNPAVED PARKING LOTS

Coachella Valley Best Available Control Measures:

In the space provided below, please check and describe your dust control measures

Control Measures

Control Action

Gravel

Location: _____

**Chemical
stabilization**

Type of product: _____

Frequency of application: _____

Concentration: _____

Pave

Material to be used as dust suppressant: _____

Other (specify)

Contingency

Measure(s)

If necessary, attach additional information.



Justification

If you believe that none of the control measures for a given source category are technically feasible or if they would conflict with other regulations please describe the justification in the space provided. Please be specific. If necessary, attach additional information.

NOTIFICATION FORMS

- **Summary of Dust Control Ordinance Requirements**
- **Project Initiation Form**
- **Project Completion Form**

NOTIFICATION FORMS

Summary of Dust Control Ordinance Requirements

The dust control ordinance requires the project operator for sites with 10 acres or more of soil disturbance to notify the local permitting authority and the AQMD at the following construction phases:

Project Initiation Phase

Project Initiation Form must be submitted to local permitting authority and AQMD at least 24-hours prior to conducting earth-movement activities

Project Completion Phase

Project Completion Form must be submitted to local permitting authority and AQMD within 10 days of establishment of final elevations or at the conclusion of the finished grading inspection.

The following sample forms have been prepared to assist project operators in complying with these requirements. Once complete, the AQMD contact where forms can be directed to is:

Phill Hubbard
Supervising Investigator
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, CA 91765
(909) 396-2608 (Facsimile)
phubbard@aqmd.gov (e-mail)

Questions on submittal of the forms can be directed to Phil Hubbard at (909) 396-2966.



Project Initiation Form
 For Projects \geq 10 Acres
 (Form PI)

The dust control ordinance requires notification at least 24-hours prior to initiating earth-moving activities (includes clearing and grubbing). Submittal of the form to the local permitting authority and the AQMD satisfies this requirement.

PROJECT INFORMATION	PLEASE ENTER INFORMATION BELOW
PLAN/PERMIT NUMBER	
CONSTRUCTION PROJECT NAME	
PROJECT ADDRESS/LOCATION	
OWNER NAME	
PHONE NUMBER	
24-HOUR, MANNED AFTER-HOURS PHONE NUMBER	
OWNER (DESIGNEE) STATEMENT	
Earth-moving activities for the above entitled project will commence on the following dates:	
Clearing and/or grubbing: <i>(If Applicable)</i>	_____ _____ _____
Earth-moving	_____ _____ _____
Owner (Designee) Signature _____	
Date _____	



Project Completion Form
 For Projects \geq 10 Acres
 (Form PC)

The dust control ordinance requires submittal of the following form to the local permitting authority and the AQMD within 10 days of establishment of final elevations or at the conclusion of the finished grading inspection, whichever is first.

PROJECT INFORMATION	PLEASE ENTER INFORMATION BELOW								
PLAN/PERMIT NUMBER									
CONSTRUCTION PROJECT NAME									
PROJECT ADDRESS/LOCATION									
OWNER/DESIGNEE NAME									
PHONE NUMBER									
24-HOUR, MANNED AFTER-HOURS PHONE NUMBER									
<p>OWNER (DESIGNEE) STATEMENT</p> <p>I certify that all exterior construction activity has ceased on all of the land area subject to the approved Fugitive Dust Control Plan. No further soil disturbing activity will be occurring. All soil areas have been stabilized to prevent wind erosion of soil by the following method(s):</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">_____ landscaping</td> <td style="width: 50%; border: none;">_____ paving</td> </tr> <tr> <td style="border: none;">_____ chemical dust suppressants</td> <td style="border: none;">_____ other method</td> </tr> <tr> <td style="border: none;">_____ gravel cover</td> <td style="border: none;"><i>(describe)</i></td> </tr> <tr> <td style="border: none;">_____ buildings covering entire surface</td> <td></td> </tr> </table> <p>Owner Signature _____ Date _____</p> <p>Inspection Results</p> <p>An inspection by a representative of the City (County) of _____ has been performed with the following results noted:</p> <p>_____ Construction has ceased and the entire site has been adequately treated for long-term stabilization</p> <p>_____ Construction has ceased, but portions of the site have not been adequately treated for long-term stabilization <i>(Attach additional stabilization requirements)</i></p> <p>Enforcement Officer _____ Date _____</p>		_____ landscaping	_____ paving	_____ chemical dust suppressants	_____ other method	_____ gravel cover	<i>(describe)</i>	_____ buildings covering entire surface	
_____ landscaping	_____ paving								
_____ chemical dust suppressants	_____ other method								
_____ gravel cover	<i>(describe)</i>								
_____ buildings covering entire surface									

DUST CONTROL SIGNAGE GUIDELINES

- **Summary of Dust Control Ordinance Requirements**
- **Signage Guidelines**

SUMMARY OF DUST CONTROL ORDINANCE REQUIREMENTS

The dust control ordinance requires construction projects that are subject to Fugitive Dust Control Plan requirements must install and maintain signage that identifies 24-hour manned phone numbers for dust complaints. The following guidance has been prepared to assist project operators in complying in this requirement.

CONSTRUCTION SITE SIGNAGE GUIDELINES (Minimum Requirements)

- ✓ The purpose of this signage is to allow the public to contact the responsible party if visible dust emissions or track-out of material is observed from a construction site.
- ✓ Projects less than two weeks in duration may request a waiver of the construction site signage requirements.

SIGN AND LETTER SIZE REQUIREMENTS			
Project size	≤ 1 Acre	1.01 – 9.99 Acres	Over 10 Acres
Sign size	24" H x 36"W	36" x 48"	48" x 96"

Permit # (if applicable)	2"	3"	4"
Developer's Name	2"	3"	4"
Project Name / Tract #####	2"	3"	4"
IF YOU SEE DUST COMING FROM THIS PROJECT CALL:	2"	3"	4"
Name, Phone Number XXX-XXXX	3"	4.5"	6"
If you do not receive a response, Please call	1.5"	2.25"	3"
City (County) at xxx-xxxx	1.5"	2.25"	3"
and call the AQMD 1-800-CUT-SMOG	1.5"	2.25"	3"

Notes:

- ✓ Quantity and location of signs is subject to prior approval by the local permitting authority. Generally, signage should be located on each side of the project area and within 50 feet of the project site boundary.
- ✓ Text height shall be at a minimum as shown on right side of sign template above.
- ✓ Sign background must contrast with lettering, typically black text with white background.
- ✓ Sign should be 1 inch A/C laminated plywood board.
- ✓ The lower edge of the sign board must be a minimum of 6 feet and a maximum of 7 feet above grade.
- ✓ The telephone number listed for the developer contact must be a local or a toll-free number and manned 24-hours a day, seven days per week.

RECORDKEEPING FORMS

- **Summary of Dust Control Ordinance Requirements**
- **Sample Recordkeeping Forms for Routine Construction Activities**
- **Chemical Dust Suppressant Recordkeeping Form**

RECORDKEEPING FORMS

Summary of Dust Control Ordinance Requirements

Under dust control ordinance requirements, construction activities are required to maintain daily self-inspection records and this information must be retained for at least three years after project completion.

Additionally, any activity that utilizes chemical dust suppressants for dust control is required to maintain records indicating type of product applied, vendor name, and the method, frequency, concentration, and quantity of application.

All recordkeeping information must be made available to the local permitting authority and the AQMD immediately upon request. A copy of the recordkeeping must also be retained on-site.

The following forms have been prepared to assist in complying with these requirements.



Daily Self-Inspection Recordkeeping Form - AM HOURS

Elements Monitored	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Comments
Forecasted high winds													
Wind speed													
Wind direction													
# Water trucks operating													
# Water trucks available													
Roads moist/watered													
Unstabilized areas moist/watered													
Dry areas observed													
Irrigation working													
Water tanks filled													
Water pumps working													
Chemical stabilization used													
Track-out observed													
Blow sand observed on-site													
Blowing dust observed on-site													
Blowing dust observed off-site													
Wind/snow fencing maintained													
# Complaints received													
Corrective action taken													

N= No or none Y = Yes N/A = Not applicable Name: _____ Date: _____



Daily Self-Inspection Recordkeeping Form - PM HOURS

Elements Monitored	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Comments
Forecasted high winds													
Wind speed													
Wind direction													
# Water trucks operating													
# Water trucks available													
Roads moist/watered													
Unstabilized areas moist/watered													
Dry areas observed													
Irrigation working													
Water tanks filled													
Water pumps working													
Chemical stabilization used													
Track-out observed													
Blow sand observed on-site													
Blowing dust observed on-site													
Blowing dust observed off-site													
Wind/snow fencing maintained													
# Complaints received													
Corrective action taken													

N= No or none Y = Yes N/A = Not applicable Name: _____ Date: _____



Chemical Dust Suppressant Recordkeeping Form
 (Form CDS)

The dust control ordinance requires activities that utilize chemical dust suppressants must retain records indicating the type of product applied, vendor name, and the method, frequency, concentration, quantity and date of application. A copy of invoices for chemical dust suppressant products or application services is also required. These records must be retained for at least three years after project completion.

PROJECT INFORMATION	PLEASE ENTER INFORMATION BELOW
PLAN/PERMIT NUMBER <i>(IF APPLICABLE)</i>	
PROPERTY OWNER NAME/PHONE	
CONSTRUCTION PROJECT NAME	
PROJECT ADDRESS/LOCATION	
DUST SUPPRESSANT PRODUCT INFORMATION	
DATE/TIME OF APPLICATION	
NAME OF PRODUCT	
DILUTION RATE	
APPLICATION RATE	
ACREAGE/SQUARE FOOTAGE TREATED	
TRAFFIC OR NON-TRAFFIC AREA	
DUST SUPPRESSANT APPLICATOR INFORMATION	
APPLICATOR NAME	
CONTACT	
PHONE	
WARRANTEE TERMS <i>(IF APPLICABLE)</i>	

Signature of Form Preparer: _____ Date: _____

WIND MONITORING GUIDANCE

- **Summary of Dust Control Ordinance Requirements**
- **Guidance for Conducting Wind Monitoring**

SUMMARY OF DUST CONTROL ORDINANCE REQUIREMENTS

Monitoring of wind speed is necessary to potentially qualify for an exemption from the dust control ordinance performance standards (e.g., 100 foot plume length, exceeding 20 percent opacity, visible emissions crossing a property line, etc.). Please note that it is an affirmable defense to qualify for an exemption from the ordinance's performance standards during high wind conditions. Site specific wind monitoring is encouraged due to improved accuracy when compared to regional wind monitors. Additionally, site-specific wind monitoring may document high winds that are not captured by regional wind monitors.

The following guidance has been prepared to assist activities that conduct wind monitoring. As indicated in the guidance, activities should develop a draft site-specific wind monitoring program and forward this information to AQMD for review. The wind monitoring guidance, based on an AQMD-issued Order for Abatement, is also summarized in Attachment A to this Chapter.

Draft wind speed monitoring programs can be directed to:

Kevin Durkee
Meteorology Section
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, CA 91765
(909) 396-3252 (Facsimile)
kdurkee@aqmd.gov (e-mail)

Questions on submittal of a draft wind monitoring program can be directed to Kevin Durkee at (909) 396-3168.

GUIDANCE FOR CONDUCTING WIND MEASUREMENTS

The following are AQMD requirements and recommendations for wind measurements used for data reporting or analysis. The meteorological data submitted to AQMD must be accurate and representative. To insure that the meteorological data is acceptable, facilities that wish to deviate from these recommendations must consult with AQMD staff prior to collecting data. In some cases, less stringent procedures may suffice. For example, a lower sensor height may be acceptable for windblown dust analysis from smaller construction sources. It is recommended that all facilities request that AQMD staff review and approve their monitoring plans and sensor specifications prior to the purchase and installation of equipment.

Aspects of a successful monitoring program include the selection of proper equipment, instrument siting, instrument and site maintenance, periodic audits and frequent data review. The instruments should be sited so as to characterize air flow between the source and receptor areas. In flat terrain, or where receptors are close to the source, one meteorological site may be adequate. Additional wind monitoring sites may be needed in complex terrain.

Wind Sensor Siting

The standard sensor height for measuring surface winds is 10 meters (33 feet) above ground level (AGL) over open, level terrain. This usually requires the installation of a tower or mast. For the instrument to be sited over open terrain, there shall be minimal obstructions to the wind flow, such as from buildings, hills or trees. In general, wind sensors should be located where the distance from the sensors to any obstruction is at least 10 times the height of that obstruction. When mounted on a building, wind sensors should be mounted at least 1.5 times the height of the building above the rooftop. Since these siting guidelines are sometimes not possible, especially in urban areas, it is recommended that siting that deviates from these guidelines be reviewed by AQMD staff or an experienced consultant prior installation.

Data Recording Devices

Data loggers are the preferred method of recording and archiving the data. They are more precise and require less maintenance than strip chart recorders. Data loggers also allow data to be transmitted by telephone or radio to a central computer. All data records must be kept for a period of at least three years after the need for data collection has ended. Data recovery from a well-maintained meteorological system should be at least 90% complete on an annual basis, with no large data gaps (i.e., gaps greater than two weeks).

The U.S. Environmental Protection Agency (EPA) recommends a sampling frequency of once per second (EPA, 2000), which is typical for quality data loggers. Wind averaging

periods may depend on the purpose of the data collected and the need to meet specific regulatory requirements. Either 1-hour or 15-minute averaging periods are common.

For each averaging time, wind speed and direction are usually scalar-averaged. Wind direction is defined as the direction from which the wind is blowing, measured in degrees from true north. Since wind direction has a numerical discontinuity between 360 and 001 degrees, scalar averaging of the wind direction is usually calculated using the unit vector method (EPA 2000). Resultant or vector averages are also often calculated, where the 1-second wind speeds and directions are added vectorially by breaking them into their horizontal components, adding the vector components, then recalculating a magnitude (speed) and direction. Both types of horizontal wind averaging, as well as the collection of peak instantaneous wind gusts during the averaging period and sigma theta, the standard deviation of the wind direction, are typical calculations for meteorological data loggers.

Time for the data recording system must be within five minutes of the correct local time, with data archived in Pacific Standard Time (PST) on a 24-hour clock. Thus there should be no change to Daylight Savings Time. It must also be noted whether the time stamp is at the start or the end of the averaging period. When reporting data, the convention is that time-ending data shall range from 0100 to 2400 PST for hourly averages and 0015 to 2400 PST for 15-minute averages. Time-beginning averages are reported with clock times starting at 0000 PST and ending with 2300 PST for hourly averages or 2345 PST for 15-minute averages. Reported data should have the site identification, year, day and time included at the beginning of the record.

Wind Sensor Accuracy

For wind sensors, the starting threshold must be rated as no higher than 0.5 meters per second. If there is some suspicion that the site would have a significant number of hours of wind speeds under 0.5 m/s, sensors with a lower threshold, such as 0.22 m/s, should be used. Wind speed systems shall be accurate to within $0.2 \text{ m/s} \pm 5$ percent of the observed speed. Total wind direction system errors shall not exceed 5 degrees. This includes an instrument accuracy of ± 3 degrees for linearity and ± 2 degrees for alignment to a known direction. Table 1 summarizes these accuracy guidelines.

Table 1. Summary of Performance Criteria for Wind Sensors.

Sensor Type	Sensor Height	Range	Accuracy	Resolution	Starting Threshold	Procedural References
Wind Speed (Horizontal)	10 meters*	0.5 – 50 m/s	0.2 m/s ± 5% of observed wind speed	0.1 m/s	0.5 m/s	EPA, 2000 EPA, 1995
Wind Direction (Horizontal)	10 meters*	0 – 360 degrees (or 0 - 540°)	+/- 5 degrees	1 degree	0.5 m/s	EPA, 2000 EPA, 1995

* Other sensor heights may be used when appropriate and approved by AQMD.

Maintenance

Frequent data review, preferably on a daily basis, is critical for collecting good meteorological data. In addition, visual inspections of each site should be made at least once every month. This will help to identify sensor alignment problems that may not be obvious in the data. During the inspections, it is recommended that the sensors be compared to the current conditions, possibly by using hand-held instruments such as a compass or GPS and portable anemometer.

In order to ensure that the sensors operate within the manufacturer’s specifications, a calibration of the sensors should be performed once every six months by a trained technician or the sensor manufacturer. In corrosive, marine or dusty conditions, more frequent calibrations may be needed. Spare sensors are helpful to avoid data loss while sensors are brought down for calibration and repairs. A logbook of calibrations and repairs is required.

Furthermore, data that is critical for regulatory purposes should be independently audited by a qualified individual who is not affiliated with the organization that maintains and calibrates the instrument. The audits should be on a schedule that is appropriate for the measurements. Typically, once per year is adequate if a routine maintenance and calibration schedule is kept. An audit report shall be written and problems shall be corrected as soon as possible. The audit shall compare the individual sensors to the sensor performance criteria (Table 1) and also look at the data collection system as a whole, including the data logger and siting, to ensure that the data are representative and accurate.

References

EPA, 1995: Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements. Document EPA/600/R-94-038d. United States Environmental Protection Agency Atmospheric Research and Exposure Assessment Laboratory, Research Triangle Park, North Carolina.



EPA, 1998: Technical Assistance Document for Sampling and Analysis of Ozone Precursors. Document EPA-600/R-98-161. United States Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory, Research Triangle Park, North Carolina.

EPA, 2000: Meteorological Monitoring Guidance for Regulatory Modeling Applications. Document EPA-454/R-99-005. United States Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory, Research Triangle Park, North Carolina.

Attachment A

WIND MONITORING SPECIFICATIONS

The following information is designed to provide installation and operating parameters for a wind monitoring station or device. It is to be used for Orders for Abatement and is not designed to represent approved AQMD specifications for a wind monitoring instrument or station.

- This station, or device shall be capable of indicating the wind speed with an accuracy of 0.2 meters/sec. \pm 5% of observed speed
- The instrument or station should be located on-site so as to accurately characterize the air flow field on this construction project.
- The starting threshold shall be rated as no higher than 0.5 meters per second. ¹
- Data will be recorded on a data logger, which has been chosen over a strip chart recorder because they are: more precise, require very little maintenance, and allow data to be transmitted by telephone or radio. ¹
- Three months worth of wind monitoring data will be available on-site in the form of hard copies, and made available at the Inspector's request.
- All records will be maintained by the operator for a period of two years and made available upon request.
- The logger time shall be within 5 minutes of the correct time. ¹
- A sampling rate of once per second will be employed by the monitoring station or instrument. This sampling frequency is commonly used and recognized as an industry standard.
- The operator shall submit the specifications and operating parameters, for the wind monitoring instrument or station, to AQMD for approval as an appropriate measuring instrument.
- This instrument or station shall be calibrated and maintained in accordance with the manufacturer's specifications.
- The standard height for measuring surface winds is 10 meters above ground over level, open terrain. Open terrain is defined as being away from obstructions to flow, such as buildings, hills or trees. Generally, the wind sensors should be located where the horizontal distance between the sensors and any obstruction is at least ten times the height of that obstruction. ¹

- If wind sensors are to be mounted on a building, they should be mounted at a height at least 1.5 times the building height above the roof. It is usually not a good idea to mount wind sensors on stacks, unless the sensors can be mounted on booms at least two stack widths away from the stack, and with a wind measurement system mounted on both sides of the stack.¹

¹ EPA, 1995: Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements. Document EPA/600/R-94-038d. United States Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory, Research Triangle Park, North Carolina.

TEST METHODS

- **Opacity**
- **Stabilized Surface**
- **Threshold Friction Velocity**
- **Silt Loading/Content**

OPACITY TEST METHOD

Introduction:

The purpose of this test method is to estimate the percent opacity of fugitive dust plumes.

Note: This method can only be conducted by an individual who is a California Air Resources Board (CARB) certified Visible Emission Evaluation (VEE) observer. Qualification and testing requirements for a CARB-certified VEE observer can be obtained from the AQMD.

Step 1:

Stand at least 16.5 feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140-degree sector to the back. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

Step 2:

Record the fugitive dust source location, source type, method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position to the fugitive dust source, and color of the plume and type of background on the visible emission observation form both when opacity readings are initiated and completed.

Step 3:

Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make opacity observations approximately 1 meter above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per source, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

Step 4:

Record the opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a 5-second period.

Step 5:

Repeat Step 3 and Step 4 until you have recorded a total of 12 consecutive opacity readings. There is no limit as to when the 12 consecutive readings must be taken. Observations immediately preceding and following interrupted observations can be considered consecutive.

Step 6:

Average the 12 opacity readings together. If the average opacity reading equals 20% or lower, the source is in compliance with the dust control ordinance's opacity standard.

Question and Answer - Opacity Test Method

Question:

If not all of the procedural conditions specified in Step 1 or Step 3 can be met, can the test method still be done?

Answer:

The conditions specified in the test method are necessary for the test to be done properly. The U.S. EPA recommends that, if the conditions can only be met at a certain time of day or a certain location, then the test method should be conducted at the appropriate time and/or location. If the test method cannot be done under the correct conditions due to logistics, the U.S. EPA recommends that the test be done as consistently as possible with the specified conditions and that the source also be tested using the silt content test method.

STABILIZED SURFACE TEST METHOD

Introduction:

The purpose of this test is to check whether a property is sufficiently crusted to prevent windblown dust. (Note: This test's primary function is to provide a simplified initial assessment of surface stability. If there is any doubt as to a property's stability after performing this test, the Threshold Friction Velocity test should be conducted to more thoroughly determine a surface's erodibility potential.)

Equipment:

- One steel ball. Diameter - 5/8 (0.625) inches. Mass - 16-17 grams
- A ruler or measuring tape
- A cardboard frame with a 1 ft. by 1 ft. opening (optional)

Step 1:

Select a 1 by 1 foot Survey Area that is representative, or a typical example, of the crusted surface.

Step 2:

Hold the small steel ball one (1) foot off the ground directly above your survey area. Use a ruler or measuring tape to make sure that your hand is at the correct distance above the ground. Drop the ball within the survey area.

Step 3:

Pass/Fail Determination. Observe the ground around the ball closely before picking it up. Did the ball sink into the surface so that it is partially or fully surrounded by loose grains of dirt? Has it dropped out of view entirely? Then pick up the ball. Look closely where the ball fell. Are loose grains of dirt visible?

If you have answered "yes" to any of the previous questions, the surface has failed the first drop test. Note that if the ball causes a slight indentation on the surface but you do not see loose grains, the surface has passed the test.

Step 4:

Select two additional areas within the 1 by 1 foot survey area to drop the ball. Repeat Steps 2 and 3. If the surface passes two or all three of the drop tests, the survey area is considered as passing the test.

Step 5:

Select at least two other survey areas that are representative of the crusted surface. Pick the areas randomly and make sure they are spaced some distance apart. Drop the ball 3

times within each of these additional survey areas. Once again, if the surface passes the test twice or three times, count the survey area as passing the test.

Step 6:

Examine Results. If all of the survey areas have passed the test, the surface is stable, or sufficiently crusted. If one or more survey areas have failed the test, the surface is insufficiently crusted. If the surface fails the visible crust test, but there are minimal loose grains on the surface, the U.S. EPA recommends that the Threshold Friction Velocity test be done. Where there is little loose material that can be collected, the surface is likely to pass the Threshold Friction Velocity test.

Question and Answer – Stabilized Surface Test Method

Question:

What if blowsand is on the crusted surface? (Blowsand is thin deposits of loose grains which have not originated from the surface you are testing, but have been blown there from some surrounding area. Blowsand tends to collect in certain areas rather than uniformly over the surface. If present, it will generally cover less than 50% of the entire surface.)

Answer:

Clear the blowsand from the survey area surfaces on which you plan to drop the ball. Blowsand should not be a factor in your results.

Question:

What if material has been dumped or piled on the surface that is not blowsand, such as dirt or swimming pool waste?

Answer:

Do not do the Stabilized Surface test on those surfaces unless they have crusted over. Instead, do the Threshold Friction Velocity test on any loose surface material.

Question:

What if two of the survey areas pass with flying colors and the third survey area fails miserably?

Answer:

Chances are that the third survey area is either part of an uncrusted portion of the lot or has a much lighter kind of crust or different soil type than that of the other two survey areas. This means that the third survey area represents a different kind of surface than the other survey areas. If this is the case, examine the disturbed surface areas on the lot carefully. Using measuring tape, segment off (literally or mentally) the portion(s) of the lot that the third survey area represents. Size it up in feet and select two additional 1 by 1 foot survey areas on which to do the visible crust test. Keep in mind that if all other areas on the lot have a stable crust except for the newly identified area, it would need to be at



least 5,000 square feet in size or subject to motor vehicle disturbance (i.e. trespassing) for disturbed vacant land requirements to apply.

THRESHOLD FRICTION VELOCITY

Introduction:

The purpose of the Threshold Friction Velocity, or TFV, test method is to determine a site's susceptibility to wind-driven soil erosion. TFV can differ among disturbed vacant lots depending on the type of soil and to what extent it is disturbed. The lower the TFV, the greater the propensity for fine particles to be lifted at relatively low wind speeds. Since rocks and other non-erodible elements add protection against soil erosion, they raise TFV if present on the disturbed surface. A TFV of 100 cm/sec or greater is considered sufficiently protective.

Equipment:

- A set of sieves with the following openings: 4 millimeters (mm), 2mm, 1 mm, 0.5 mm and 0.25 mm and a lid and collector pan
- A small whisk broom or paintbrush with stiff bristles and dustpan. (*The broom/brush should preferably have one, thin row of bristles no longer than 1.5 inches in length.*)
- A spatula without holes
- A cardboard frame with a 1 ft. by 1 ft. opening
- Basic calculator
- Graduated cylinder or measuring cup (*may possibly need*)

Step 1:

Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.

Step 2:

Select a 1 foot by 1 foot survey area that is representative, or typical, of the disturbed surface. Mark this area using a cardboard frame. Check whether the surface is wet or damp. If so, return later to do this test method when the surface has dried.

Step 3:

Collect a sample of loose surface material to a depth of approximately 3/8 inch (1 cm) into a dustpan. This can best be done using a lightweight whisk broom/brush to carefully sweep the surface material within the marked survey area onto a spatula and lifting it into the dustpan. If you reach a hard, underlying subsurface that is less than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface.

Step 4:

Check the dustpan for rocks or hard-packed clumps of soil collected in your sample. Measure their diameter and remove those larger than 3/8 inch (1 cm) in diameter from the sample.

Step 5:

Carefully pour the sample into the stack of sieves, minimizing release of dust particles by slowly brushing material into the stack with a whisk broom or paintbrush. (On windy days, use the trunk or door of a car as a wind barricade.) Cover the stack with a lid. Lift up the sieve stack and gently move it using broad, horizontal circular arm motions. Complete 10 clockwise and 10 counter-clockwise motions at a speed of approximately 1 second per motion. Be careful not to move the sieve too roughly in order to avoid breaking up any naturally clumped material.

Step 6:

Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass; e.g. material in each sieve (besides the top sieve that captures a range of larger elements) should look the same size. If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and gently rotate it using the same circular arm motions as before an additional 10 times. (You only need to reassemble the sieve(s) that contain material which requires further sifting.)

Step 7:

Line up the sieves in a row as they are disassembled, with the 4 mm sieve at one end and the collector pan at the other. Slightly tilt and gently tap each sieve and the collector pan so that all material is collected on one side. The material in the sieves and collector pan should be on the same side relative to your position. Observe the relative amount of material in each sieve and the collector pan to determine which contains the greatest volume. If this is difficult to determine, use a graduated cylinder or a measuring cup to measure the relative volume.

Step 8:

Use the table below to estimate TFV for the sieve catch with the greatest volume estimated in Step 7. For example, if the sieve containing the greatest volume is the one with the 0.5 mm opening, TFV = 58 cm/second.

Sieve Size Opening (mm)	TFV (cm/sec)
4	> 100
2	100
1	76
0.5	58
0.25	43
Collector Pan	30

* TFV values in this table take into account the aggregate size distribution of particles between the different sieve size openings.

Step 9:

Repeat this procedure on at least two other representative areas on the disturbed surface. Average your TFV results from the three samples collected.

Step 10:

Examine Results. If the TFV you've calculated is greater than or equal to 100 cm/sec, the surface is stable.

Question and Answer – Threshold Friction Velocity Test Method

Question:

If there are hard-packed clumps of dirt on the surface, do I sieve these clumps along with the rest of the soil sample?

Answer:

If the hard-packed clumps are 1 cm or greater in size, extract them from the sample.

Question:

Can I combine all three collected soil samples into the sieve stack at once to save time?

Answer:

You may try combining the three samples after removing rocks or other non-erodible elements greater than 1 cm in diameter from each sample only if the mass of the three samples is approximately the same. However, combined samples may be more difficult to sieve and require reassembling and re-shaking of the sieves more than once. Also, it

may be difficult to visibly compare the volume of material caught in the sieves after they have been disassembled. Therefore, combining samples is not recommended.

Question:

If I see dust particles escaping when I collect a sample and transfer it to the sieves, should I start over?

Answer:

Not necessarily. A small amount of dust particles can escape without influencing the TFV results. In fact, it is very difficult to avoid having some dust escape. However, if you rush when collecting and/or transferring a sample to the sieves, you may cause too much dust to escape thus potentially causing error in your results. Or, on a relatively windy day you may lose too much dust unless you set up a wind barricade. Avoid doing this test at all on very windy days.

Question:

If you're not sure which sieve contains the greatest amount of material, can you weigh the sieves for comparison?

Answer:

While, typically, more volume corresponds to greater weight, this is not always the case. Use a measuring cup or graduated cylinder if necessary to determine the sieve that contains the greatest amount of material.

Question:

When determining TFV in step 8, can I combine material in the largest 2 sieves to estimate volume?

Answer:

No. This may fundamentally alter the premises on which the method is based and lead to an incorrect determination of stability.

SILT LOADING/CONTENT TEST METHOD

Introduction:

Silt Content Test Method. The purpose of this test method is to estimate the silt content of the trafficked parts of unpaved roads and unpaved parking lots. The higher the silt content, the more fine dust particles that are released when cars and trucks drive on unpaved roads and unpaved parking lots.

Equipment:

- A set of full height, eight inch diameter sieves with the following openings: 4 millimeters (mm), 2mm, 1 mm, 0.5 mm and 0.25 mm and a lid and collector pan
- A small whisk broom or paintbrush with stiff bristles and dustpan 1 ft. in width. *(The broom/brush should preferably have one, thin row of bristles no longer than 1.5 inches in length.)*
- A spatula without holes A small scale with half ounce increments *(e.g. postal/package scale)*
- A shallow, lightweight container *(e.g. plastic storage container)*
- A sturdy cardboard box or other rigid object with a level surface
- Basic calculator
- Cloth gloves (optional for handling metal sieves on hot, sunny days)
- Sealable plastic bags (if sending samples to a laboratory)
- Pencil/pen and paper

Step 1:

Look for a routinely traveled surface, as evidenced by tire tracks. [Only collect samples from surfaces that are not damp due to precipitation or dew. This statement is not meant to be a standard in itself for dampness where watering is being used as a control measure. It is only intended to ensure that surface testing is done in a representative manner.] Use caution when taking samples to ensure personal safety with respect to passing vehicles. Gently press the edge of a dustpan (1 foot in width) into the surface four times to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch or 1 cm in the 1 square foot area. If you reach a hard, underlying subsurface that is less than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a

surface sample of loose material down to 1 cm. In order to confirm that samples are collected to 1 cm in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a metric ruler is held perpendicular to the dowel.

At this point, you can choose to place the sample collected into a plastic bag or container and take it to an independent laboratory for silt content analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.

Step 2:

Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it. Transfer the entire sample collected in the dustpan to the container, minimizing escape of dust particles. Weigh the sample and record its weight.

Step 3:

Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.

Step 4:

Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush. (On windy days, use the trunk or door of a car as a wind barricade.) Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up, down and sideways for at least 1 minute.

Step 5:

Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass (e.g., material in each sieve - besides the top sieve that captures a range of larger elements - should look the same size). If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute. (You only need to reassemble the sieve(s) that contain material, which requires further sifting.)

Step 6:

After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container originally used to collect and weigh the entire sample. Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves -- only the collector pan. Weigh the container with the material from the collector pan and record its weight.

Step 7:

If the source is an unpaved road, multiply the resulting weight by 0.38. If the source is an unpaved parking lot, multiply the resulting weight by 0.55. The resulting number is the estimated silt loading. Then, divide by the total weight of the sample you recorded earlier in Step 2 and multiply by 100 to estimate the percent silt content.

Step 8:

Select another two routinely traveled portions of the unpaved road or unpaved parking lot and repeat this test method. Once you have calculated the silt loading and percent silt content of the 3 samples collected, average your results together.

Step 9:

Examine Results. If the average silt loading is less than 0.33 oz/ft², the surface is stable. If the average silt loading is greater than or equal to 0.33 oz/ft², then proceed to examine the average percent silt content. If the source is an unpaved road and the average percent silt content is 6% or less, the surface is stable. If the source is an unpaved parking lot and the average percent silt content is 8% or less, the surface is stable. If your field test results are within 2% of the standard (for example, 4%-8% silt content on an unpaved road), it is recommended that you collect 3 additional samples from the source according to Step 1 and take them to an independent laboratory for silt content analysis.

Independent Laboratory Analysis: You may choose to collect 3 samples from the source, according to Step 1, and send them to an independent laboratory for silt content analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is: "Procedures For Laboratory Analysis Of Surface/Bulk Dust Loading Samples", (Fifth Edition, Volume I, Appendix C.2.3 "Silt Analysis", 1995), AP-42, Office of Air Quality Planning & Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina.

Question and Answer - Silt Loading/Content Test Method

Question:

If I see dust escaping when I collect a sample and transfer it to the sieves, should I start over?

Answer:

Not necessarily. A small amount of dust can escape without influencing the silt content results. In fact, it is very difficult to avoid having some dust escape. However, if you rush when collecting and/or transferring a sample to the sieves, you may cause too much dust to escape thus potentially causing an error in your results. Or, on a relatively windy day you may lose too much dust unless you set up a wind barricade. Avoid doing this test on very windy days.

Question:

Once I calculate the percent silt content for 3 samples collected on one segment of an unpaved road, can I assume the same result for the whole length of the road?

Answer:

You may extrapolate results only to the extent that the rest of the unpaved road has the same average daily trips as the segment you tested and the surface condition on other segments of the road is the same.

Question:

If water is being used as a control measure on the source and this causes the surface to be damp, should I do the silt content test method on a damp surface?

Answer:

Do the silt content test method when the surface is dry in between water applications. The condition of the surface immediately following watering is different than after the water has evaporated. Since sources are required to be in compliance with the rule at all times, test the surface when it is dry.

Question:

If speed limit signs have been posted along an unpaved road as a control measure, do I need to test the surface for silt content?

Answer:

Yes. If speed limit signs have effectively lowered vehicle speeds on the road, the percent silt content may decrease. If signs have been ineffective in controlling speeds and no other controls are being applied, the source may be out of compliance. Either way, you should test to see whether the source meets the appropriate silt content standard.

APPENDIX A – BLANK FORMS

(TO BE PROVIDED IN FINAL ADOPTION PACKET FOR LOCAL GOVERNMENTS)

- **Fugitive Dust Control Plan Application Form (Form A)**
- **Ownership Designee Form (Form OD)**
- **Fugitive Dust Control Plan Template for Projects < 10 Acres (Form CP)**
- **Project Initiation Form for Projects \geq 10 Acres (Form PI)**
- **Project Completion Form for Projects \geq 10 Acres (Form PC)**
- **Sample Daily Self-Inspection Recordkeeping Form**
- **Chemical Dust Suppressant Recordkeeping Form (Form CDS)**

Once complete, these forms can be submitted to:

Phill Hubbard
Supervising Investigator
South Coast AQMD
21865 East Copley Drive
Diamond Bar, CA 91765
(909) 396-2966
(909) 396-2608 [Facsimile]
phubbard@aqmd.gov