

APPENDIX E

Construction-Related Emissions Calculations and Fugitive Dust Control
Requirements

Short-Term Construction Emissions (Alternatives 2 & 3 - ASB and ISL Alternatives)

Equipment	Number	ROG	NOX	PM10
Light Duty Trk (grams/mile)		0.24	0.44	0.04
HH Trk Diesel (grams/mile)		0.65	7.23	0.24
Assumptions: EMFAC2002 emission factors for 2007 conditions based on an average trip speed of 30 mph, 60%/40% cold/hot start, and 75 degrees Fahrenheit.				
Mobile Source Emissions (Slurry Wall and Levee)				
Excavator	6.00	22.08	77.84	4.08
Other Construction	3.00	12.48	56.58	3.12
Rubber Tired Dozer	6.00	43.56	258.60	13.44
Cranes	1.00	2.88	12.32	0.68
Grader	4.00	9.60	77.84	4.24
Off-Highway Trucks	2.00	14.40	55.92	2.88
Roller	4.00	4.72	35.76	1.92
Scrapper	10.00	72.80	319.20	17.00
Loader	1.00	1.34	9.08	0.76
Subtotal		183.86	902.94	48.12 lbs/day
Assumptions: Emission factors from the Road Construction Emissions Model, Version 5.1 (Sacramento Metropolitan Air Quality Management District 2004), which assumes equipment operates for 16 hr/day, and equipment usage information from preliminary design information.				

Con. Employee Trips	Total Miles/Day	Miles/Trip	Total Miles/Day	ROG	NOX	PM10
	2000.00	10.00	2000.00	1.06	1.94	0.17 lbs/day
Haul Truck Trips Onsite and Offsite (Transport of Fill)						
Haul Truck Trips Onsite (Aggregate base, Concrete, Drain Rock)	375.00	2.00	750.00	1.07	11.95	0.40 lbs/day
Haul Truck Trips Offsite (Materials Delivery)	56.00	5.50	308.00	0.44	4.91	0.16 lbs/day
Subtotal	13.00	80.00	1040.00	1.49	16.58	0.55 lbs/day
Assumptions: Transportation of 3,300,000 yd ³ of fill 2 miles and 17,000 yd ³ of aggregate base and other material 5.5 miles. 2,700 truck loads for transport of misc. material (dry bentonite, geotextile fabric, concrete, demolition debris, etc.) from Marysville. 440 (22 days/month for 20 months) work days from 2007-2008.						

Fugitive Dust Source Emissions

Disturbance Area	Duration (Days)	Tons/Cubic Yards	Total Tons/Day	ROG	NOX	PM10
(acre)	2.80					169.99 lbs/day
Assumptions: SMOQMD emission factor of 60.71 lbs/scrub/day (Sacramento Metropolitan Air Quality Management District 1994) for a total daily disturbance of 2.8 acres.						
Scrapper (Loading)	440.00	1.25	9375.00			543.75 lbs/day
Scrapper (Batch Unloading)	440.00	1.25	9375.00			375.00 lbs/day
Scrapper (Travel Mode)						
Where: $E_{(lbs/VMT)} = (6.2) (10)^{-6} (SM)^{1.4} (W)^{2.5} (0.60)$						
W = Weight of Scrapper (tons)						
S = Soil Content of Material (percent)						
V = Volume of Material (lbs/VMT)						
Total Miles/Day	Miles/Trip	Total Miles/Day				
250.00	0.75	187.50				309.72 lbs/day
Assumptions: Transportation of 3,300,000 yd ³ of fill. 75 mile on-site, 440 work days from 2007-08, load capacity of 30 yd ³ , and AP-42 emission factors (U.S. Environmental Protection Agency 1995).						

Total Mobile Equipment	ROG	NOX	PM10
	186.87	936.38	49.23
Total Employee	1.06	1.94	0.17
Total Fugitive Dust	187.92	938.32	1447.86 lbs/day
Total (Total Construction North)-unmitigated	178.58	751.04	376.86 lbs/day
Total (Total Construction North)-mitigated			

FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

Serving the Counties of Yuba and Sutter

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Air Pollution Control Officer

REQUIREMENTS FOR THE CONTROL OF FUGITIVE DUST EMISSIONS

Introduction

The Feather River Air Quality Management District (FRAQMD) is designated nonattainment for the California PM₁₀ health standard (particulate matter less than 10 microns in size; also referred to in this document as respirable particulate matter and fugitive dust). This means that Yuba and Sutter Counties violate the state PM₁₀ air quality health standard. Construction activities, agricultural operations, unpaved roads, and windblown dust contribute heavily to these emissions. According to the U.S. EPA, exposure to high concentrations of particulate matter, including airborne dust, affects breathing, aggravates existing respiratory and cardiovascular disease, and alters the body's defenses against foreign materials, lung damage, skin cancer and premature death. Further studies have linked respirable particulate matter with health problems like asthma and chronic bronchitis.

This document serves to address the aforementioned health concerns by informing the public of applicable state laws and local rules and regulations governing fugitive dust emissions and the capacity for the air district to issue violations (refer to Attachment A). Also attached to this document are a list of approved mitigation measures (refer to Attachment B) and a fugitive dust control plan to be submitted by the project proponent for FRAQMD approval (refer to Attachment C).

Discussion

Frequent nuisance complaints are received at the air district in regard to construction site fugitive dust emissions. Standard CEQA mitigation recommendations approved for the project are not always implemented by the project proponent. Appropriate emphasis on the need for fugitive dust controls and the potential impacts of air district enforcement actions need to be stressed.

In accordance with California Health and Safety Code (H&S) section 42400 et seq., the FRAQMD can assess civil and criminal penalties for violations of the FRAQMD Rules and Regulations and the H&S. Violations are misdemeanors and can carry potential penalties from \$1,000 to \$1,000,000 per day per violation and/or imprisonment in the county jail.

This document cites applicable air pollution regulations, defines performance criteria and acceptable control strategies to implement, and specifies emission levels and standards not to exceed in order to prevent a violation (refer to Attachment A). The project proponent should have a thorough understanding of these regulations. If additional information is required please contact the District at the location provided above.

Prevention

Fugitive dust control strategies are composed of a balance of available dust mitigation techniques applied on an as needed basis by construction site supervision to

- prevent dust from exiting the property,
- prevent visible emissions from exceeding opacity regulations, and
- prevent public nuisance.

This implies the use of adequate measures during the appropriate evolution of each construction activity and may include wind breaks and barriers, frequent water applications, application of soil additives, control of vehicle access, vehicle speed restrictions, covering of piles, use of gravel at site exit points to remove caked on dirt from tires and tracks, washing of equipment at the end of each work day and prior to site removal, wet sweeping of public thoroughfares, and work stoppage (refer to Attachment B).

Site-Specific Considerations

Time of year, length of project, and acres per day undergoing vegetative removal, excavation, backfilling, hauling and grading should be the primary focus for implementation of dust control measures. The plan must also consider dust emissions associated with construction activities after completion of grading activities including installation of infrastructure (including water, electric, roads, sidewalks, and sewer), digging of building foundations, site vehicle traffic, and landscaping activities.

Knowledge of soil types may be important to understand the free silt content and the ability to hold moisture. Some soils are hydrophobic – repel water - and may require the addition of surfactants during water applications to facilitate penetration and achieve appropriate moisture adsorption. Surfactants may also be used to reduce the amount of water needed.

Activities occurring near sensitive receptors should receive a higher level of preventative planning. Sensitive receptors include school-aged children (schools, daycare, playgrounds), the elderly (retirement community, nursing homes), the infirm (medical facilities/offices), and those who exercise outdoors regularly (public and private exercise facilities, parks).

Other Regulatory Requirements

The project proponent should evaluate water quality, flora and fauna and other environmental impacts (e.g. wildlife, drinking water, stormwater runoff, and surface water impacts) prior to the use of water/soil additives including binders, tackifiers, surfactants, and other materials and methods. All additives at a minimum must meet Regional Water Quality Control Board (RWQCB) requirements and all applicable federal, state, and local environmental regulations regarding the use of the material.

Fugitive Dust Control Plan Submittal

Complete and sign Attachment C, Fugitive Dust Control Plan, and submit to FRAQMD prior to start of work.

ORIGINAL SIGNED

Larry D. Matlock
Senior Air Quality Planner

Note: This document may be downloaded from our web site at
[http:// www.fraqmd.org/Downloads/FugitiveDustControlPlan.doc](http://www.fraqmd.org/Downloads/FugitiveDustControlPlan.doc) or
[http:// www.fraqmd.org/Downloads/FugitiveDustControlPlan.pdf](http://www.fraqmd.org/Downloads/FugitiveDustControlPlan.pdf)

FugitiveDustControlPlan09_09_03.doc

LOCAL AND STATE REGULATIONS APPLICABLE TO FUGITIVE DUST

I. FRAQMD Rules and Regulations

Note: The following District Rules and Regulations are enforced for each project regardless of lead agency or Board approved project CEQA mitigation requirements.

FRAQMD RULE 3.0 - VISIBLE EMISSIONS (Adopted 6/91)

As provided by Section 41701 of the California Health and Safety Code, a person shall not discharge into the atmosphere from any single source of emissions whatsoever, any air contaminants for a period or periods aggregating more than three minutes in any one hour which is:

- a. As dark or darker in shade as that designated as No. 2 on the Ringlemen Chart, as published by the United States Bureau of Mines; or
- b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection 'a' above.

Enforcement: The District has trained staff capable of performing a Visible Emissions Evaluation (VEE). VEE courses are offered to regulators and the regulated community (for a fee) at regular intervals by staff of the California Air Resources Board.

FRAQMD RULE 3.16 - FUGITIVE DUST EMISSIONS (Adopted 4/11/94)

A. PURPOSE

The purpose of this Rule is to reasonably regulate operations which periodically may cause fugitive dust emissions into the atmosphere.

B. DEFINITION

For the purpose of this Rule, the following definitions shall apply:

B.1 Fugitive Dust: Solid airborne matter emitted from any non-combustion source.

B.2 Emergency: Any act of God, but only if the owner of the property from which fugitive dust emissions originate establishes for the Feather River Air Quality Management District, by a preponderance of evidence, that he or she took reasonable precautions in light of the relevant facts and circumstances to minimize emissions.

B.3 Property Line: Adjacent properties which are owned by the same person shall be considered the same property for the purpose of determining the property line.

C. REQUIREMENTS

A person shall take every reasonable precaution not to cause or allow the emissions of fugitive dust from being airborne beyond the property line from which the emission originates, from any construction, handling or storage activity, or any wrecking, excavation, grading, clearing of land or solid waste disposal operation.

Reasonable precautions shall include, but are not limited to:

- C.1 use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, construction of roadways, or the clearing of land;
- C.2 application of asphalt, oil, water, or suitable chemical on dirt roads, material stockpiles, and other surfaces which can give rise to airborne dusts;
- C.3 other means approved by the Air Pollution Control Officer.

D. EXEMPTIONS

The provisions of this Rule shall not apply to the following:

- D.1 Agricultural Operations
- D.2 Currently unworked land designated as reclaimed for agriculture
- D.3 An Emergency
- D.4 Unpaved roads open to public travel (this inclusion shall not apply to industrial or commercial facilities).

II. State Laws

California Health and Safety Code

Section 41700. Except as otherwise provided in Section 41705, no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Section 41701. Except as otherwise provided in Section 41704, or Article 2 (commencing with Section 41800) of this chapter other than Section 41812, or Article 2 (commencing with Section 42350) of Chapter 4, no person shall discharge into the atmosphere from any source whatsoever any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three minutes in any one hour which is: (a) As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines, or (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subdivision (a).

California Vehicle Code

Section 23114 requires: No vehicle shall transport any aggregate material upon a highway unless the material is covered. Exception 23114(e)(4): Vehicles transporting loads of aggregate materials shall not be required to cover their loads if the load, where it contacts the sides, front, and back of the cargo container area, remains six inches from the upper edge of the container area, and if the load does not extend, at its peak, above any part of the upper edge of the cargo container area. For purposes of this section, "aggregate material" means rock fragments, pebbles, sand, dirt, gravel, cobbles, crushed base, asphalt, and other similar materials.

FRAQMD - FUGITIVE DUST CONTROL MITIGATION MEASURES

Sources: FRAQMD Indirect Source Review Guidelines and Best Available Mitigation Measures compiled by the air districts of the Greater Sacramento Region and approved for implementation by the FRAQMD Board of Directors.

All grading operations on a project should be suspended when winds exceed 20 miles per hour or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.

Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management District and as necessary to prevent fugitive dust violations.

An operational water truck should be onsite at all times. Apply water to control dust as needed to prevent visible emissions violations and offsite dust impacts.

Onsite dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce wind blown dust emissions. Incorporate the use of approved non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas.

All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions.

Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all inactive construction areas (previously graded areas that remain inactive for 96 hours) including unpaved roads and employee/equipment parking areas.

To prevent track-out, wheel washers should be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.

Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.

Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Department of Public Works and/or Caltrans and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph.

Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, onsite enforcement, and signage.

Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering.

Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et. al.) may be conducted at the project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning.

Fugitive Dust Control Plan

This plan, upon signature and submittal to the FRAQMD, will serve as an approved Fugitive Dust Control Plan to be implemented at the designated site. This plan must be submitted by the project proponent and received at the air district prior to start of work.

The approved plan serves as an acknowledgment by the project proponent of their duty to address state and local laws governing fugitive dust emissions and the potential for first offense issuance of a Notice of Violation by the air district where violations are substantiated by District staff.

• Site Location: _____

• Project Type (circle all that apply): Residential Commercial Industrial Transportation

• List of responsible persons:

Office (name, title, address, phone): _____

Field (name, title, phone): _____

• Projected Start and End Dates: _____

Project Proponent: _____

Printed Name

Company/Phone

Signature: _____ Title: _____

By signing this document I acknowledge that I have read the accompanying literature regarding state and local fugitive dust emission laws and understand that it is my responsibility as the project proponent to ensure that appropriate materials and instructions are available to site employees to implement fugitive dust mitigation measures (Attachment B) appropriate for each development phase of this project.

I further acknowledge that it is my responsibility to ensure that site employees are made formally aware of fugitive dust control laws, requirements, and available mitigation techniques, and that appropriate measures are to be implemented at the site as necessary to prevent fugitive dust violations.

_____ FRAQMD – Effective 09/09/03 _____

Please Submit to: FRAQMD, 938 14th Street, Marysville, CA 95901 Attn: Planning
Phone: 530-634-7659 x202 FAX: 530-634-7660 Email: imatlock@fraqmd.org