


DUST CONTROL AND AIR QUALITY MONITORING PLAN

THE HOMES AT DEER HILL
LAFAYETTE, CALIFORNIA

The logo for ENGEO, featuring the word "ENGEO" in large, white, 3D block letters. The letters are set against a background of a green, rolling hillside with a few trees under a blue sky. The logo is positioned in the center of the page, overlapping a blue horizontal band.

ENGEO

Expect Excellence

A photograph of a rocky, brownish-orange terrain, possibly a construction site or a natural rock formation. The rocks are of various sizes and are scattered across the ground. The image is positioned in the lower-left quadrant of the page, overlapping the blue band and the white background.

Prepared for:
Mr. David R. Baker
Baker Thorn, Inc.
3527 Mount Diablo Boulevard, Suite 133
Lafayette, CA 94549

Prepared by:
ENGEO Incorporated

March 11, 2016

Project No.
9181.000.005

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Mr. David R. Baker
Baker Thorn, Inc.
3527 Mount Diablo Boulevard, Suite 133
Lafayette, CA 94549

Subject: The Homes at Deer Hill
Lafayette, California

DUST CONTROL AND AIR QUALITY MONITORING PLAN

Dear Mr. Baker:

As required by the City of Lafayette, ENGEO has prepared for submittal this Dust Control and Air Quality Monitoring Plan for the Homes at Deer Hill project. A copy of this Dust Control Plan shall be kept onsite for review, implemented during construction, and include BAAQMD's basic control measures.

The purpose of this plan is to discuss the dust control measures and requirements for the Homes at Deer Hill site development. Specifically, the plan presented in this report addresses the Condition of Approval 68 and sections AIR-1 and AIR-2a of the EIR relative to the dust control and air quality monitoring concerns during site activities.

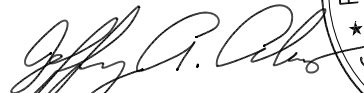
If you have any questions or comments regarding this report, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated



Robert Peck
Environmental Scientist
rp/jaa/jf



Jeffrey A. Adams, PhD, PE
Associate

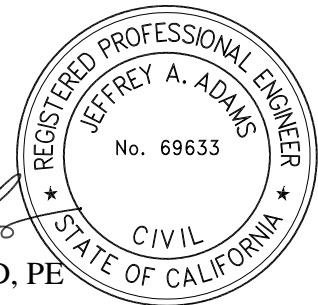


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1.0 INTRODUCTION

We have prepared the Dust Control and Air Quality Monitoring Plan (DCAQMP or Plan) for construction activities as part of the Homes at Deer Hill project (Property). The Property is located north of Highway 24 and west of Pleasant Hill Road, in Lafayette, California. The Property is generally characterized by two grass-covered terraces. Current elevations range from a high of about 462 feet above mean sea level (msl) on the upper terrace in the northwestern portion of the Property to a low of about 310 feet above msl in the east where the Property meets Pleasant Hill Road.

The proposed development for the Property consists of 44 single-family residential units, sports fields, community parking lot, neighborhood park, multi-use trail, dog park, and open space. The development will also include underground improvements, sidewalks, pavements, landscaping, and retaining walls.

Dust control is one of the specific mitigation measures applicable to the project, and this plan specifically identifies the steps that will be taken to reduce fugitive dust emissions during soil disturbance or excavation in connection with the construction of the project.

The planned site activities have the potential to generate emissions in the form of fugitive dust and vehicle emissions. The possible sources of emission and project construction activities include the following:

1. Clearing and grubbing in the work area, including removal of trees.
2. Corrective grading earthwork and construction.
3. Mass grading earthwork, including engineered fills, engineered fill slopes, retaining walls, storm drain improvements, and associated site improvements.
4. Fine grading construction activities, including pad grading, roadway paving, and associated improvements.

2.0 CONTROLLED ACTIVITIES

The project activities to be controlled under this Plan include soil grading, stockpiling, and vehicle traffic over paved and unpaved areas. These activities are subject to the DCAQMP because they may cause particulate matter to become airborne. This DCAQMP was developed to provide dust suppression practices, as described below, including the following methods:

- Damp sweeping of haul routes, parking and staging areas.
- Installation of sandbags or other erosion control measures to prevent silt runoff to public roadways in accordance with the project Storm Water Pollution Prevention Plan (SWPPP).

- Watering or the use of soil stabilizers on haul routes, parking, and staging areas.
- Hydroseeding areas where grading is completed or inactive for more than 14 days.
- Covering stockpiles and loads in haul vehicles.

This plan identifies dust transportation pathways by means of track-out on tires, carry-out on vehicles and equipment, windblown dust, transport as sediment load by runoff, and material made airborne by grading. Dust suppression practices are to be implemented prior to and during all construction activities.

The Bay Area Air Quality Management District (BAAQMD) developed Additional Construction Measures for projects that include extensive earthwork activities. The Project shall comply with the following BAAQMD Basic Control Measures for reducing construction emissions of PM10. To ensure compliance, the City of Lafayette shall verify that the following measures have been implemented during normal construction site inspections:

- All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent moisture content. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- Reclaimed water should be used whenever possible.
- Suspend ground-disturbing activities when wind speeds exceed 20 miles per hour. Work stoppage based on wind speeds shall be done within 1 hour of detection. Construction can resume the next day or when sustained wind speeds decrease to below 20 miles per hour.
- Wind breaks (e.g. trees, fences) shall be installed on windward sides of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
- Vegetative ground cover shall be planted in disturbed areas as soon as possible and shall be watered appropriately until vegetation is established in accordance with the project Storm Water Pollution Prevention Plan (SWPPP).
- The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one given time.
- All trucks and equipment including tires shall be free of soil before leaving the Property.

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 24 inches of freeboard (i.e. the minimum required space between the top of the load and the top of the trailer).
- Site access to a distance of 50 feet from the paved road shall be treated with a 6- to 12-inch compacted layer of gravel in accordance with the project SWPPP.
- Sandbags or other erosion control measures shall be installed to prevent site runoff to public roadways in accordance with the project SWPPP.
- Non-essential idling of construction equipment shall be limited to no more than 5 consecutive minutes. Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be properly serviced and maintained to the manufacturer's standards to reduce operational emissions. All equipment shall be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 24 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep streets (with water sweepers using reclaimed water if possible) at the end of each day, if visible soil material is carried onto adjacent paved roads.
- Low-volatile organic compounds coatings shall be used, beyond local requirements.
- All contractors shall be required to use equipment that meets the California Air Resource Board's most recent certification standard for off-road heavy-duty diesel engines.
- A copy of this Dust Control and Air Quality Monitoring Plan shall be kept onsite for review and implemented during construction.

3.0 DUST DISTURBANCE COORDINATOR

The Dust Disturbance Coordinator will respond to any local complaints about construction activities and work closely with Planning Staff in resolving complaints.

The acting Dust Disturbance Coordinator for the project is:

David Baker
Baker Thorn, Inc. (License # 996280)
916-521-4240
dave@bakerthorn.com

The construction schedule and coordinator's contact information will be updated as needed prior to issuance.

4.0 GENERAL DUST CONTROL METHODS

General dust control methods discussed in this document fall into the nine elements listed below and are briefly discussed in the following sections.

1. Track-out prevention and control measures.
2. Traffic control over unpaved areas.
3. Controls for offsite handling of excavated soil.
4. Controls during earthwork activities.
5. Protection of active soil stockpiles.
6. Protection of inactive stockpiles and disturbed soil areas.
7. Excavation areas.
8. Loading operations.
9. Post-construction stabilization of disturbed areas.

Control methods for fugitive dust generated by soil disturbance or excavation include:

- Dust entrained during onsite travel on paved and unpaved surfaces.
- Dust entrained during site grading, excavation and backfilling at the Property.
- Dust entrained during aggregate and soil stockpiling, loading and unloading operations.
- Wind erosion of area disturbed during construction activities.

4.1 TRACK-OUT PREVENTION AND CONTROL MEASURES

Track-out occurs when vehicles and equipment exiting the Property carry soil and rock debris beyond the Property boundary. Each egress location shall contain a facility to control track-out of loose materials and will include gravel pads. The gravel pads shall be installed according to the specifications provided in the Erosion and Sediment Control Plan of the Storm Water Pollution Prevention Plan (SWPPP), provided under separate cover, for the project. Prior to entering the paved road areas, traffic shall traverse gravel ramps at least 50 feet long to prevent track-out. The track-out control measures shall be applied to any vehicles, including personal and delivery that enter areas disturbed by grading activity.

Whenever soil from the project is deposited on the public roadway, the contractor shall also employ wet sweeping as necessary to control soil on the roadway. The sweeping effort shall be sufficient to remove soil from public roadways and shall not result in runoff being discharged into the stormwater collection system or onto any neighboring properties.

4.2 TRAFFIC CONTROL OVER UNPAVED AND PAVED AREAS

For the project, the grading contractor shall post signage and enforce a vehicle and equipment speed limit of 15 miles per hour (mph). Contractor shall conduct tailgate meetings at the jobsite as required to achieve work force compliance of the 15 mph speed limit. The grading contractor shall prohibit workers and visitors from parking on bare soil surfaces. All onsite parking areas shall be gravel covered.

Unpaved roads within the Property shall be watered at the beginning of the workday, prior to the start of any personnel or equipment traveling on the unpaved surfaces, as well as at the end of the workday. The unpaved roads shall also be watered every 2 hours or frequently enough to maintain adequate wetness, at least three times daily. The frequency of watering can be reduced or eliminated, as appropriate, during periods of precipitation. Implementation of erosion control measure identified in the SWPPP, prepared under separate cover, will aide in control of fugitive dust emissions from public roadways and parking areas. An environmentally safe dust palliative may be applied to well-traveled haul roads upon approval by the Qualified SWPPP Practitioner.

For paved areas within the construction site, including but not limited to haul routes, parking and staging areas, the roadways shall be swept as necessary to control soil on roadway. In addition, at least the first 500 feet of any public roadway exiting from the construction site shall be monitored daily and swept as appropriate to control soil on roadway. Construction areas adjacent to and above grade from any paved roadway shall be treated with Best Management Practices, as specified in the SWPPP.

4.3 CONTROLS FOR OFFSITE TRANSPORT

All vehicles that are used to transport solid bulk material shall cover loads with a tarp cover, or sufficiently wet materials and load onto trucks that provide an adequate freeboard to prevent loss of materials. Although not anticipated, all trucks carrying loose soil or sand shall cover loads before leaving the construction site, and onsite vehicle speed will be limited to 15 miles per hour as discussed above.

Vehicles shall be checked to ensure that they are tarped and to remove any excess material from exterior surfaces of the cargo compartment. All haul trucks coming from offsite shall access the site via entrances conforming to track-out prevention as discussed above.

4.4 CONTROLS DURING EARTHWORK ACTIVITIES

During clearing and grubbing activities, surface soils shall be wetted to the depth of anticipated cut prior to equipment operation. If compaction is not to take place immediately following

clearing and grubbing, the surface soil shall be stabilized with dust palliative and water to form a crust on the soil.

The grading contractor shall use the application of water to suppress dust during earthwork activities. The contractor's water application shall be subject to approval of the Geotechnical Engineer regarding soil moisture conditions. Contractor's activities shall prohibit the presence of visible dust beyond the property boundaries. If the application of water is insufficient to prevent visible dust from being windblown beyond the property boundaries, the contractor shall suspend grading operations until dust suppression activities are successful. For construction of fill areas that have an optimum moisture content for compaction, completion of the compaction process will be performed as expeditiously as possible to minimize fugitive dust.

4.5 PROTECTION OF ACTIVE SOIL STOCKPILES

Active stockpiles are those that remain in use, with no more than 14 consecutive days of inactivity. Stockpiled soil shall be treated to prohibit the spread of materials. Stockpiles shall be protected from losses due to windblown dust using one or more of the following methods:

- Covering with a tarp or plastic sheeting
- Wetting using water spray

Plastic sheeting or tarps shall be of sufficient thickness to prohibit tearing by wind or rapid degradation by sunlight. Stockpile covers shall be secured to prevent flapping or uncovering by wind and weather.

Wetting methods may be used for active stockpiles or as an alternative to covering. Whenever wetting is employed, the amount of water added shall be controlled and no runoff shall be allowed as a result of wetting activities, and shall be applied at least twice daily.

4.6 PROTECTION OF INACTIVE STOCKPILES AND DISTURBED AREAS

Soil stockpiles and disturbed soil areas that will be inactive for more than 14 days shall be protected. In the event that a disturbed surface area or storage piles are inactive for more than 14 days, the implementation of one or more of the following shall be employed:

1. Adequate wetting of the disturbed area or stockpile surface. Wetting methods shall be subject to approval of the Geotechnical Engineer.
2. Application of chemical dust suppressants or chemical stabilizers according to the manufacturers' recommendations.
3. Use of tarp(s) or vegetative cover.
4. Any other measure as effective as the measures listed above.

4.7 EXCAVATION AREAS

Excavation areas shall be visually monitored daily for the generation of fugitive dust. The area of excavation shall be wetted prior to mobilization of equipment. Additional water shall be added during active excavation, material handling and loading as necessary to reduce the generation of dust. Active excavation areas shall be wet a minimum of twice daily during dry weather, or more frequently as needed. The height from which the excavated soil is dropped either onto stockpiles or into other equipment shall be minimized.

4.8 LOADING OPERATIONS

Material to be moved during loading operations shall be adequately wetted during the loading process to minimize fugitive dust generation. Loader buckets shall be emptied slowly and the drop height from the loader bucket shall be minimized. In addition, loading activities shall be halted during periods of sustained strong winds (25 miles per hour).

4.9 POST-CONSTRUCTION STABILIZATION OF DISTURBED AREAS

All unpaved, non-landscape, or undeveloped areas disturbed during site activities shall be stabilized when construction activities are halted for an extended period of time and following the completion of site activities. The disturbed surfaces shall be stabilized with Best Management Practices, as specified in the SWPPP.

5.0 AIR QUALITY MONITORING

A monitoring program will be implemented to verify that dust control procedures discussed in Section 4 are effectively mitigating fugitive dust conditions. The monitoring program will include real-time recording of PM₁₀ and PM_{2.5} emissions levels, both upwind and downwind, along with monitoring of meteorological conditions.

5.1 METEOROLOGICAL STATION

A meteorological station will be deployed at the Property to monitor wind speed and direction. Measurements will be monitored in real-time to verify conditions and adjust dust monitoring locations. If the average wind speed rises to greater than 20 miles per hour (mph), construction operations that generate dust will cease. Wind direction measurements from the station will be used to determine the optimum locations for dust monitors.

5.2 FUGITIVE DUST MONITORING

DustTrak™ II aerosol monitors or equivalent will be used to measure real-time dust levels at a minimum of two upwind and two downwind locations. The meters will be mounted on surveyor's tripods approximately 5 feet above the ground surface. Dust meters will be equipped with telemetric capabilities for transmission of real-time data for remote access, which will be periodically downloaded. The location of the monitors will be determined by site conditions and

can be adjusted throughout the day based on wind direction data from the onsite meteorological station. The action level for the project will be based on a $50 \mu\text{g}/\text{m}^3$ differential between upwind and downwind monitoring stations. If the action level is exceeded for a period greater than 30 minutes, work operations will cease until adequate dust mitigation measures can be implemented.

6.0 GENERAL AEROSOL AND GASEOUS BY-PRODUCT CONTROL METHODS

Construction equipment exhaust has the ability to produce aerosols and gaseous by-products. As such, the construction contractor shall implement the following measures to reduce off-road exhaust emissions during grading and construction activities. To assure compliance, the City of Lafayette shall verify that these measures have been implemented during normal construction site inspections:

- Large off-road construction equipment with horsepower (hp) ratings of 50 hp or higher shall meet the United States Environmental Protection Agency-Certified emission standard for Tier 3 off-road equipment or higher. Tier 3 engines between 50 and 750 horsepower are available for 2006 to 2008 model years and Tier 4 equipment was phased in for off-road fleets between 2008 and 2014 and may be available. A list of construction equipment by type and model year shall be maintained by the construction contractor onsite.
- All construction equipment shall be properly serviced and maintained to the manufacturer's standards to reduce operational emissions.
- Nonessential idling of construction equipment shall be limited to no more than 5 consecutive minutes. The California Air Resources Board defines "essential" and "nonessential" idling as part of the Airborne Toxics Control Measures in the California Code of Regulations (Title 13). Essential idling is idling necessary for testing, service, repairs, idling is necessary to accomplish work for which the vehicle was designed, idling is necessary to operate defrosters, heaters, air conditioners, or other equipment to ensure the safety or health of the driver or passengers, etc.
- Construction activities that require use of large off-road equipment (50 hp or greater) shall be suspended on "Spare the Air" days.

7.0 RECORD KEEPING

Real-time data review will be conducted on a daily basis while monitors are deployed and operational. PM_{10} data will be uploaded via a telemetric network providing remote access. All data will be recorded in duplicate, both on the individual dust monitor as well as online. Monitoring results may be provided on a daily, weekly, or monthly basis.