

240 days (DEIR, p. B-5) and disturb only 11,000 cubic yards of soil (DEIR, p. 4-23):

$$\text{Truck Filling} = (0.02205 \text{ lb/ton})(11,000 \text{ yd}^3)(1.5 \text{ ton/yd}^3)/240 \text{ days} = 1.5 \text{ lb/day}$$

$$\text{Truck Dumping} = (0.009075 \text{ lb/ton})(11,000 \text{ yd}^3)(1.5 \text{ ton/yd}^3)/240 \text{ days} = 0.6 \text{ lb/day}$$

$$\text{Top Soil Removal} = (2 \text{ units})(20 \text{ lb/mi})(3 \text{ mi/hr})(8 \text{ hr/day}) = 960 \text{ lb/day}$$

$$\text{Cut and Fill (excavating)} = (2 \text{ units})(4.3 \text{ lb/mi})(3 \text{ mi/hr})(8 \text{ hr/day}) = 206.4 \text{ lb/day}$$

$$\text{Dirt Hauling} = (2 \text{ units})(10 \text{ lb/mi})(3 \text{ mi/hr})(8 \text{ hr/day}) = 480 \text{ lb/day}$$

$$\text{Wind Erosion (DEIR, p. B-5)} = (9.977 \text{ lb/day/acre})(2 \text{ acre/day}) = 19.95 \text{ lb/day}$$

$$\text{Total} = 1.5 + 0.6 + 960 + 206.4 + 480 + 20.0 = 1,668.5 \text{ lb/day}$$

Therefore, using the emission estimating procedure recommended in the SCAQMD's guidelines (and relied on in the DEIR), the peak uncontrolled fugitive construction PM10 emissions from the project would be 1,668.5 lb/day, which is about 20 times higher than the value of 81.6 lb/day estimated in the DEIR. This value is consistent with the average value of 1,832 lb/day estimated in the MRI study for uncontrolled emissions. Further, it is much lower than the two sites that MRI studied in the South Coast, which ranged from 2,400 lb/day to 6,344 lb/day. (MRI 1996, Table ES-1.) Assuming, as did the DEIR, that the proposed mitigation program reduces fugitive dust by 50% (DEIR, p. B-5), controlled emissions would be 834 lb/day. These emissions alone exceed the significance threshold of 150 lb/day and thus constitute a significant impact not discussed in the DEIR.

I.C Amount Of Disturbed Soil Was Underestimated

The above calculations assume that only 11,000 cubic yards of soil would be disturbed. However, it is unclear whether this soil volume is for the entire project, consisting of on-refinery plus pipeline corridor construction, or only the pipeline corridor. (DEIR, p. 4-23.) Regardless, the 11,000 cubic yard estimate in the DEIR appears to be a substantial underestimate.

The project includes several new pipelines. Three new 10-inch pipelines would be constructed between the Refinery and ARCO for the transport of isooctane/alkylate, butane, and propane/propylene. These would be placed into the same trench and constructed at the same time. Three new pipelines would also be constructed from the Refinery to the LADWP terminal, one 6-inch and two 16-inch pipelines. (DEIR, p. 2-15.)

The location of these new pipelines as depicted on Figure 2-7 was transferred to 7-1/2 minute USGS quad maps for Long Beach and Torrance and

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the distance determined electronically to be 3.2 miles. The DEIR, however, claims the distance of the new pipelines is 6 miles. (DEIR, p. 4-34.) Clearly, either Figure 2-7, which shows 3.2 miles of pipeline, or page 4-34, which claims 6 miles of pipeline, is incorrect. Regardless, either estimate -- 3.2 miles or 6 miles -- indicates that the DEIR has underestimated the amount of soil that would be disturbed by construction.

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The DEIR does not contain any information on the dimensions of the trench that would be excavated for these pipelines. However, generally, trenches must be wide enough to accommodate the outside diameter of the pipe, plus room for workers to stand while connecting pipe joints. This requires about a foot extra on each side of the pipe.⁵ Assuming the pipes are laid at the same depth, side by side, rather than being stacked, and allowing 6 inches between pipes for access, the two pipe trenches would be about 5.5 feet wide and 6.2 feet wide. According to the DEIR, the depth of the pipeline would be about 4 feet. (DEIR, p. 4-40.) Adding 1 foot for the pipe diameter and bedding and using the smaller width, the project would disturb from 17,200 cubic yards of soil, assuming the pipelines are 3.2 miles long, to 32,300 cubic yards of soil, assuming the pipelines are 6 miles long.⁶

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Thus, more soil would be disturbed than the 11,000 cubic yards estimated in the DEIR for excavation of the pipeline alone. Additional soil would be disturbed within the refinery to accommodate new equipment, including two bullets, a truck loading rack, and a mercaptan treater. (DEIR, pp. 2-8/15.) The emissions calculated in Comment I.B would be proportionately larger. The DEIR should be revised to include the volume and area of soil that would be disturbed and to support this estimate with the pipeline length and the dimensions of the required trenches so that construction impacts can be accurately estimated.

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I.D Entrained Road Dust Emissions Were Underestimated

Entrained road dust is a major source of PM10 emissions in urban areas. The most recent CARB emission inventory for the South Coast indicates that entrained dust from paved roads alone accounts for 36% of the PM10 emissions in the region.⁷ The DEIR estimated that PM10 emissions from 354 passenger vehicles and 10 trucks traveling on paved roads would only be 22.6 lbs/day. An

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⁵ R.C. Ringwald, Means Heavy Construction Handbook, RS Mean Company, Inc., Kingston, MA, 1993.

⁶ Excavated soil = (5 ft)(5.5 ft)(3.2 mi)(5,280 ft/mi)(0.037037 yd³/ft³) = 17,208 yd³.

⁷ The most recent emissions inventory (year 2000) for the South Coast Air Basin can be found at: http://www.arb.ca.gov/app/emsmcat_query.php?F_DIV=0&F_YR=2000&F_AREA=AB&F_AB=SC. The year 2000 PM10 emissions from paved road dust are 137.44 ton/day and the total PM10 emissions from the South Coast are 374.32 ton/day.

additional 17.8 lbs/day of PM10 would be generated from a single truck traveling on unpaved roads. (DEIR, p. B-6.)

The DEIR does not explain how it calculated the emission factors that it used to make these estimates, beyond stating they are based on the SCAQMD CEQA Guidelines, Table A9-9. This is not sufficient to allow a knowledgeable individual to verify the DEIR's low estimates. In order to use the procedures contained in the SCAQMD Guidelines, one must know the road silt loading, vehicle speed, number of wheels, mean vehicle weight, and length of roads by type (e.g., freeway, highway, local). The DEIR contains none of this essential information.

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However, it is evident that the DEIR has substantially underestimated entrained road dust emissions. The DEIR's calculations assume that street cleaning would be used to control road dust. The DEIR does not explain what control efficiency was assumed for street cleaning, the frequency of street cleaning, or present any evidence that the roadways used by project vehicles would be routinely swept.

Roadways are not routinely swept. Freeways, which would likely be the major type of roadway used by project vehicles, are rarely swept due to safety considerations. Further, even assuming 100% of the project roadways were routinely swept, this control measure would only reduce PM10 emissions by 4% to 11%,⁸ substantially less than apparently assumed in the DEIR, as demonstrated below. While SCAQMD Rule 1186 requires street sweeping in certain limited cases, primarily to remove accumulations resulting from wind, water erosion, haul vehicle spillage, or vehicular track-out, we are not aware of any requirement to routinely sweep all of the roadways in the South Coast. The DEIR does not include any conditions or mitigation measures that would require that roadways along transportation routes be swept. Thus, the calculations of entrained road dust do not accurately reflect conditions that would occur during project construction.

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Entrained road dust is recalculated here, assuming 100% of truck travel is on freeways (yielding the smallest emissions) and 100% of passenger vehicle travel is on swept major highways, using the DEIR's assumptions as to number, type, and distance traveled, and SCAQMD emission factors:

$$\text{Passenger vehicles (paved)} = (0.0064 \text{ lb/mi})(354)(2)(11.5 \text{ mi}) = 52.1 \text{ lb/day}$$

⁸ SCAQMD, Revised Final Staff Report for Proposed Amended Rule 403 -- Fugitive Dust and Proposed Rule 1106 - PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations, February 14, 1997, Appendix F, p. F-6 and Table 2.

$$\text{Trucks (paved)} = (0.77[(0.00065)(0.35)]^{0.2}[(2)[(6)(11.5) + (3)(50) + (1)(4)]] = 27.7 \text{ lb/day}$$

$$\text{Trucks (unpaved)} = (2.1)(28/12)(15/30)(35/3)^{0.7}(18/4)^{0.5}[(365-18)/365] = 27.6 \text{ lb/day}$$

$$\text{Total Entrained Road Dust} = 52.1 + 27.7 + 27.6 = 107.4 \text{ lb/day}$$

The revised entrained PM10 emissions are 107.4 lb/day, compared to 40.4 lb/day estimated in the DEIR by assuming that 100% of paved roadways used by project vehicles would be swept. Actual emissions could be substantially higher if workers and delivery trucks used local and collector streets, rather than highways or major streets.

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I.E Off-Site Blending Terminal Construction Emissions Omitted

Ethanol would be imported by rail, presumably to the GATX Terminal in Carson. (DEIR, p. B-14.) The ethanol would then be transported by tanker truck to third-party blending and distribution terminals located in Carson, Colton, Orange, and Wilmington. (DEIR, p. 2-14.) This would require modifications at these terminals, including installation of truck racks, tanks, pumps, and piping. The DEIR did not discuss or include any emissions from these modifications.

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II. CONSTRUCTION MITIGATION IS INADEQUATE

The DEIR concluded that CO, VOCs, and NOx construction emissions would be significant. (DEIR, Table 4-3.) The analyses in Comment I indicate that PM10 construction emissions are also significant. Further, the DEIR concluded that cumulative peak day construction emissions would be significant for all criteria pollutants, CO, VOCs, NOx, SOx, and PM10. Therefore, all feasible mitigation is required to reduce the emissions of CO, VOCs, NOx, SOx, and PM10 below the significance thresholds. The mitigation program proposed in the DEIR is inadequate because the measures are not enforceable, the proposed measure would reduce very little of the emissions, mitigation plans would be developed in the future, and all feasible mitigation has not been required.

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II.A SCAQMD General Criteria For Mitigation Measures Not Satisfied

The SCAQMD CEQA Guidelines recommend six criteria for mitigation measures. Two of these criteria are not met by any of the mitigation measures proposed in the DEIR. (SCAQMD 3/93, pp. 11-2/3.) Other criteria are variously violated, as discussed below in Comments II.B and II.C.

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II.A.1 Mitigation Measures Are Not Enforceable

The SCAQMD CEQA Guidelines require that mitigation measures be enforceable to assure that they are actually implemented. (SCAQMD 3/93, p. 11-

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2.) Enforceability is normally achieved by including mitigation measures in the requests for bids and resulting construction contracts, posting bonds, drawing up legal agreements between the applicant and the implementing jurisdiction, or recording conditions of approval on property titles or in agency permits. (SCAQMD 3/93, p. 11-2.) None of the proposed mitigation measures include any legally binding commitments or methods to ensure implementation and enforcement and thus are not enforceable.

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II.A.2 Mitigation Measures Contain No Monitoring Provisions

The SCAQMD CEQA Guidelines require that mitigation measures contain methods to demonstrate their effectiveness. The effectiveness determination then becomes the basis for mitigation monitoring, to assure that the measure actually achieves the promised emission reductions. (SCAQMD 3/93, p. 11-3.) The DEIR is silent on mitigation effectiveness and the methods that would be used to monitor the implementation and effectiveness of the mitigation measures.

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The SCAQMD's CEQA Guidelines specifically require that "quantitative mitigation measures should be used to the extent possible to demonstrate reduction of emissions below thresholds of significance...Once all reasonably available mitigation measures have been applied to a project, it is appropriate to apply qualitative measures whose specific emission reductions are not known." (SCAQMD 3/93, p. 11-8.) The DEIR made no effort to evaluate the effectiveness of any of the mitigation measures except the PM10 fugitive dust measures. As discussed below, the effectiveness of many of the proposed measures could have been evaluated. This analysis demonstrates that the proposed program would do very little to mitigate construction impacts.

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Finally, the measures contain no specific performance standards to allow for an appraisal of their effectiveness, as specifically required by SCAQMD CEQA Guidelines. (SCAQMD 3/93, p. 11-3.) The SCAQMD has been vigilant in requiring "specific performance standards.... Performance standards should be included to the degree feasible in all mitigation measures." (Smith 2/22/01,⁹ p. 3.) As demonstrated below, it is feasible to specify performance standards.

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⁹ Letter from Steve Smith, SCAQMD, to Bryan Speegle, County of Orange, Re: Draft Environmental Impact Report No. 573, Civilian Reuse of MCAS El Toro and the Airport System Master Plan for John Wayne Airport and Proposed Orange County International Airport, February 22, 2000.

II.B Proposed On-Road Mobile Source Mitigation Not Adequate Mitigation

On-road construction sources would emit 220 lb/day of CO, 21.4 lb/day of VOC, 30.2 lb/day of NOx, and 1.2 lb/day of PM10. (DEIR, p. B-3.) To mitigate these emissions, the DEIR proposes to develop a Construction Emission Management Plan, which would be developed in the future. Some of the measures that may be included in this Plan include scheduling truck deliveries to avoid peak hour traffic conditions, consolidating truck deliveries, and prohibiting truck idling in excess of 10 minutes.

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First, the detailed Plan would be developed outside of public view, at an unspecified point in the future. (DEIR, p. 4-17.) This Plan could have been and should have been included in the DEIR. The specific measures that could be implemented are well known, widely used, and listed in CEQA Guidelines of several air districts, as detailed below in Comment II.E. Thus, there is nothing that would have prevented the applicant from including the Plan in the DEIR.

Second, delivery scheduling does not represent bona fide mitigation. Truck deliveries are normally scheduled to avoid peak traffic conditions and to consolidate deliveries as a purely business decision, because time is money in the hauling business.

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Third, prohibiting idling for more than 10 minutes cannot be enforced for on-road delivery trucks. Even if it could be enforced, it would not reduce emissions because idle conditions rarely exceed 10 minutes. The SCAQMD mitigation measure that this measure was patterned after limits idle time to 2 minutes, not the 10 minutes advocated here. (SCAQMD 4/93, Table 11-2.) The DEIR does not discuss why it has not adopted the SCAQMD's recommended 2 minute limit, which is the limit most commonly recommended by other air districts. (Comment II.E.5.)

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II.C Proposed Off-Road Mobile Source Mitigation Not Adequate Mitigation

Off-road construction sources would emit 429 lb/day of CO, 190 lb/day of VOC, 483 lb/day of NOx, and 33 lb/day of PM10. (DEIR, p. B-1.) Thus, off-road mobile emissions are the major source of CO, VOCs, and NOx, and individually exceed the significance thresholds for VOCs and NOx. The DEIR only included seven mitigation measures, which are not described in sufficient detail to allow meaningful public review or to allow implementation. Even if they were successfully implemented, they would not result in substantial emission reductions.

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II.C.1 Limit Idling Time

The DEIR prohibits trucks from idling longer than 10 minutes, but does not explain how it would be enforced or how effective it would be in reducing emissions. (DEIR, p. 4-18, MM A-2.) This measure is patterned after a similar measure in the SCAQMD Guidelines, which limits idling time to 2 minutes. (SCAQMD 3/93, Table 11-3.) It is unlikely that trucks would idle for 10 minutes or longer as downtime is very expensive. Thus, this measure would not achieve any actual reductions in emissions. The DEIR has provided no justification for lengthening the SCAQMD recommended idling time from 2 minutes, which would achieve reductions, to 10 minutes, which would likely not achieve reductions.

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II.C.2 Use Electric Equipment Or Alternate Fuels

The DEIR recommends the use of electricity or alternate fuels for on-site mobile equipment instead of diesel equipment "to the extent feasible." (DEIR, p. 4-18, MM A-3.) The SCAQMD has opined in other cases that this language is not acceptable, *viz.*, "The enforceability of a mitigation measure is potentially compromised if it includes language such as "as much as possible", "supports the use", or "encourage." (Smith 2/22/00, p. 3.)

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This measure is also not enforceable because it does not set any specific mitigation goals, instead allowing the applicant to implement this measure to the "extent feasible" outside of public view. To be effective, this measure should be redrafted to require the use of a specific, named alternate fuel in a specified percentage of on-site vehicles, as discussed below in Comment II.E.1.

Additionally, electric powered on-site mobile construction equipment is not generally available. And elsewhere, the DEIR claims that alternate fueled construction vehicles are not available (use of methanol, natural gas, propane or butane powered construction equipment "is not commercially available" (DEIR, p. 4-19)).

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Finally, if electric equipment or alternate fueled equipment is used, the secondary impacts of using this equipment must be evaluated. Emissions would be generated from producing electricity or burning alternate fuels, which have not been considered in the DEIR.

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II.C.3 Engine Tuning

The DEIR recommends maintaining construction equipment in a tuned up condition. However, it does not explain how this would be enforced and sets no specific goals that would guarantee any particular emission reduction would be achieved. Further, equipment owners and operators have an incentive to keep their equipment tuned up because a poorly tuned engine consumes more fuel,

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increasing operating costs. Large construction companies, such as those that would be used to construct the project, would keep their engines tuned as a matter of good business practice. Therefore, this does not qualify as mitigation because it would not reduce emissions.

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II.C.4 Engine Timing Retard

The DEIR also recommends engine timing retard. However, it does not explain how this would be enforced and sets no specific performance standards that would guarantee any specific level of emission reduction, e.g., it does not specify degrees of retard or the number of units that would be retarded. Finally, it does not evaluate the secondary impacts of this measure or recommend co-measures to make the measure effective.

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This measure involves delaying the injection of fuel into the cylinder until after the piston has reached top-dead-center. This reduces combustion temperature and the residence time of combustion gases in the combustion chamber. Both of these factors reduce NOx formation. However, they also inhibit complete combustion of the injected fuel resulting in lower power, increase fuel consumption, and increase emissions of CO and VOC. The DEIR did not evaluate these secondary impacts.

These problems can be corrected by combining timing retard with ceramic engine coatings on pistons, valves, and cylinder head. These coatings reduce combustion heat loss by reflecting heat away from coated components back into the combustion gas path. This improves combustion efficiency and horsepower, reduces fuel use, and reduces emissions of unburned carbon, hydrocarbons, CO, and NOx. Ceramic coatings have been in use for many years, but traditionally suffered from long-term durability problems resulting from inadequate adhesion. However, Engelhard has developed an advanced ceramic coating for diesel engines, GPX Diesel-4M, that solves these problems and offers durability beyond the standard engine rebuild cycles.¹⁰

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The GPX system was tested by the Monterey Bay Unified Air Pollution Control District ("MBUAPCD") in a new 162 hp motor grader (CAT 3306 DIT) and an old 358 hp scraper (CAT 3406 DIT). The coating alone reduced NOx emissions from the old scraper by 20% and from the new grader by 2%. With 2 degrees of timing retard, NOx emissions from the scraper were reduced by 35% and from the new grader by 20%. With 4 degrees of timing retard, NOx emissions from the scraper were reduced by 45% and from the new grader by

¹⁰ Engelhard, GPX[®] Advanced Coatings, Surface Technologies for Automotive, Diesel and Natural Gas Engines, 1996; Personal Communication, Andy Garcia, President, Cinco Group, Inc., Menlo Park, 650-851-9255.

30%. Cost effectiveness with 4 degrees of timing retard was \$1,216 per ton of NOx.¹¹ The retrofit equipment has been in operation at a landfill in Santa Cruz County since 1996. The Engelhard coating has also been performance tested by the SLCOAPCD in a tractor and is currently being tested by the Sacramento Metropolitan Air Quality Management District ("SMAQPCD") in a bus demonstration project.

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II.C.5 Electric Welders

The DEIR recommends the use of electric welders in portions of the Refinery where electricity is available. (DEIR, p. 4-18, MM A-5.) This measure is not enforceable because it only requires the use of electric welders "if electricity is available," leaving it up to the applicant to decide out of public view at some point in the future. No specific performance standards are specified.

Even assuming that 100% of the welders were successfully converted to electricity, this measure would only reduce CO emissions by 2.77 lb/day, VOC emissions by 0.50 lb/day, NOx emissions by 4.54 lb/day, and PM10 emissions by 0.25 lb/day. (DEIR, p. B-1.) Thus, this measure would reduce emissions by less than 1% (0.3% - 0.9%).

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Further, this measure would cause indirect emissions from off-site power generation, which could offset 100% of the reduction otherwise achieved by this measure, depending on the source of the power. (Comment III.E.) The DEIR did not evaluate these indirect impacts of using electric equipment, as it must.

II.C.6 Electric Generators

The DEIR recommends the use of on-site electricity rather than temporary power generators in portions of the refinery where electricity is available. (DEIR, p. 4-18, MM A-6.) Assuming that 100% of the generators were successfully converted to electricity, this would only reduce CO emissions by 192.6 lb/day, VOC emissions by 7.03 lb/day, NOx emissions by 0.26 lb/day, and PM10 emissions by 0.03 lb/day. If fully implemented, this measure would reduce VOC emissions by 4%, NOx and PM10 emissions by less than 0.1%, and CO emissions by 45%. Thus, if fully implemented, this measure would reduce CO emissions below the significance threshold, but have a negligible impact on NOx and PM10. Further, this measure would cause indirect emissions from off-site power plants that could offset up to 100% of the reductions otherwise achieved by this measure. The DEIR did not evaluate the indirect impacts of using electric equipment, as it must.

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¹¹ OceanAir Environmental, Off-Road Motor Vehicle Clean Air Upgrade Project, Final Report Prepared for Monterey Bay Unified Air Pollution Control District, May 1996.

II.C.7 Engine Retrofits

The DEIR recommends evaluating "large" off-road construction equipment that will be operating for "significant" periods with controls such as selective catalyst reduction ("SCR"). These controls would only be required "if they are commercially available and can feasibly be retrofit onto construction equipment." (DEIR, p. 4-18.)

This measure is not enforceable because it contains no firm commitments or goals for emission reductions. It only requires the use of retrofits if available and feasible, leaving it up to the applicant to decide out of public view at some point in the future whether retrofits would be applied all. No specific performance standards are specified. The only thing that is guaranteed is an "evaluation," which may well conclude no retrofits are feasible. Thus, this measure potentially does nothing. Further, it does not define "large," it does not define "significant," and it does not contain a reasonable list of controls that would be evaluated.

Post-combustion controls have been extensively studied by others and are in wide use. Thus, there is no excuse for not performing the requisite analysis prior to publication of the DEIR and including the results as firm mitigation commitments in the DEIR. There are several types of retrofits that are widely used and clearly feasible and should be mandated. These are discussed below in Comment II.E.4.

II.D Proposed PM10 Mitigation For Grading, Open Storage Piles, And Unpaved Roads Not Adequate Mitigation

The DEIR lists a Fugitive Dust Emission Control Plan as mitigation measure A-8. However, this Plan does not constitute mitigation and should not be listed as such. The Plan includes six mitigation measures to reduce PM10 emissions. (DEIR, p. 4-18.) The DEIR claims that, with the exception of watering the site three times per day, emission reductions due to all of these measures are included in project emissions (DEIR, Table 4-3) and thus do not reduce emissions. (DEIR, pp. 4-18/19.) This is not bona fide mitigation.

First, the measure proposes to develop a future Plan, out of public review. This Plan could have been and should have been included in the DEIR. The specific measures that could be implemented are well known, widely used, and listed in SCAQMD Rules 403 and 1186, the Rule 403 Implementation Handbook,¹² and CEQA Guidelines of several air districts, as detailed below in Comment

¹² SCAQMD, Rule 403 Implementation Handbook, January 1999.