Appendix C

BASELINE ENVIRONMENTAL CONSULTING

28 February 2022
22204-00

Carmen J. Borg
Shute, Mihaly & Weinberger LLP
396 Hayes Street
San Francisco, CA 94102-4421

Subject: **Review of Air Quality Analysis for the Cottonwood Sand Mine Project, Draft Environmental Impact Report**

Dear Ms. Borg:

D-O8-83

Baseline Environmental Consulting (Baseline) has reviewed the environmental analysis of air quality impacts associated with development of the proposed Cottonwood Sand Mine Project (project). The project proposes sand mining activities on 251 acres of an approximately 280-acre site in the unincorporated community of Rancho San Diego in eastern San Diego County.

Based on our review of the Draft Environmental Impact Report (DEIR) for the proposed project, we have identified flaws in the air quality analysis, such as unsubstantiated calculations for evaluating the project's air pollutant emissions and associated health risks. Our specific concerns regarding how the DEIR analyzed potential environmental impacts related to air pollutant emissions are described in detail below.

D-O8-84

Underestimated Fugitive Dust Emissions

The DEIR quantified respirable particulate matter (PM10) emissions from the exhaust of off-road equipment operations and on-road vehicle trips, as well as PM10 emissions from fugitive dust generated by mining pit operations, groundline conveyor transfers, processing area operations, on-site vehicles movement, on-road vehicle trips, and demolition activities. Based on review of the PM10 calculations documented in DEIR Appendix I, it appears that the estimated fugitive dust emissions associated with on-site vehicle movement were miscalculated and substantially underestimated.

To demonstrate the calculation errors in the DEIR, Baseline has recalculated the project's PM10 fugitive dust emissions using the same modeling inputs and methods reported in the DEIR. As shown in **Table 1**, the total controlled PM10 fugitive dust emissions from on-site vehicle movement would be about 112.8 pounds per day. The DEIR estimated that the total controlled PM10 fugitive dust emissions from vehicle movement would be about 12.5 pounds per day, which is about 100 pounds per day lower than the actual emissions.

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D-O8-83 The County acknowledges these introductory comments. Please see Responses to Comments D-O8-84 through D-O8-88, below, as well as earlier Responses to Comments DO8-25 through D-O8-28, for further detailed responses to these general introductory comments.

D-O8-84 Please see Response to Comment D-O8-25 regarding fugitive dust emissions.

D-O8-84 cont.

According to page 99 of 455 in the DEIR Appendix I (Volume 2), two control measures were assumed by the preparers of the DEIR to be fully implemented when they quantified the estimated unmitigated fugitive dust emissions generated by vehicle movement at the mining pit, processing area, and on-site haul roads: Watering twice per day and limiting vehicle speeds below 45 miles per hour (mph). The preparers of the DEIR used the Western Regional Air Partnership (WRAP) Fugitive Dust Handbook[1] to estimate the total reduction in fugitive dust emissions from the two control measures. According to the WRAP Fugitive Dust Handbook, watering twice per day would result in a 55% reduction in PM10 fugitive dust emissions and limiting speeds below 45 mph would result in an additional linear reduction in fugitive dust emissions.[2] The DEIR assumed on-site vehicles speeds would range from 5 to 15 mph, which would result in a 67% to 89% reduction in fugitive dust emissions. As shown in **Table 1**, combining the watering and speed control measures would reduce the project's total PM10 fugitive dust emissions from vehicle movement by 85% to 95%.

However, based on review of the controlled fugitive dust emissions reported on page 99 of 455 in DEIR Appendix I (Volume 2), the preparers of the DEIR miscalculated the controlled fugitive dust emissions by applying a 98.3% to 99.4% reduction in fugitive dust emissions. These higher emission reductions are not supported by the references and methods cited in the DEIR, and the miscalculations resulted in a substantial underestimate of the total PM10 fugitive dust emissions from vehicle movement.

As shown in **Table 2**, the daily PM10 emissions from all sources on the project site were updated for each mining phase of the project and compared to the San Diego County Air Pollution Control District's screening-level threshold of significance. The DEIR reported that the total PM10 emissions would range from 83.6 to 85.0 pounds per day over the three mining phases of the project, which is below the threshold of 100 pounds per day. According to Baseline's updated analysis, the total PM10 emissions would range from 182.8 to 184.2 pounds per day over the three phases of the project, which substantially exceeds the threshold of 100 pounds per day. Therefore, the project would generate PM10 emissions that result in a significant impact to regional air quality.

The DEIR should be updated to show the correct quantification of PM10 fugitive dust emissions, as well as fine particulate matter (PM2.5) emissions, from on-site vehicle movement at the mining pit, processing area, and on-site haul roads. Health risks associated with fugitive dust emissions (e.g., exposure to silica dust) should also be updated and compared to the thresholds of significance. Mitigation measures should be prepared and implemented to reduce significant impacts from dust emissions to a less-than-significant level.

[1] Western Regional Air Partnership's (WRAP), 2006. WRAP Fugitive Dust Handbook. September 7.
[2] Applying a linear reduction means that the controlled fugitive dust emissions are equal to the uncontrolled emissions multiplied by the vehicle speed divided by 45 mph.

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D-O8-84 cont.

Table 1. Updated Analysis of Vehicle Movement PM10 Fugitive Dust Emissions

		Input Parameters[1]			Uncontrolled PM10[2]		Controlled PM10[3]			
Location	Source	Vehicle Weight (tons)	Average Speed (mph)	Daily VMT	Emission Factor (lbs/VMT)	Emissions (lbs/day)	Watering Control Efficiency	Speed Control Efficiency	Total Control Efficiency	Emissions (lbs/day)
Mining Pit Vehicles	Loaders	55.7	5	80	6.25	500.07	55%	89%	95%	25.0
	Excavator	58.75	5	32	6.40	204.89	55%	89%	95%	10.2
Processing Area Vehicles	Primary Loader	55.7	5	32	6.25	200.03	55%	89%	95%	10.0
	Backup Loader	25.6	5	8	4.41	35.25	55%	89%	95%	1.8
	Skidsteer Loader	3.6	5	20	1.82	36.45	55%	89%	95%	1.8
	Highway Delivery Trucks	30	15	22	4.73	104.10	55%	67%	85%	15.6
On-Site Haul Road	Fines/Backfill Haul Truck	39.3	15	48	5.34	256.46	55%	67%	85%	38.5
	Supervisor/Maintenance Truck	3.6	15	36	1.82	65.61	55%	67%	85%	9.8
									Total PM10 Fugitive Dust Emissions	**112.8**

Notes: PM10 = respirable particulate matter; mph = miles per hour; lbs = pounds; VMT =vehicle miles travelled

[1] Model input parameters from page 99 of 455 in the DEIR Appendix I (Volume 2).

[2] Consistent with the DEIR model assumptions, the emission factor (EPA AP-42, Chapter 13.2.2 Unpaved Roads) was calculated as follows: $E = k\left(\frac{s}{12}\right)^a\left(\frac{W}{3}\right)^b$

Where: E = PM10 emissions factors (lbs/VMT)
a = 0.9 empirical constant
b = 0.45 empirical constant
k = 1.5 empirical constant
s = 13.6% surface material silt content
W = average weight of vehicle (tons)

[3] Consistent with the DEIR model assumptions, the control efficiencies for watering twice per day and limiting speeds below 45 mph are based on the WRAP Fugitive Dust Handbook. Total control efficiency calculated as follows: $TC = 1 - (1 - SC)(1 - WC)$

Where: TC = Total control efficiency
SC = Speed control efficiency for speed less than 45 mph
WC = Water control efficiency for watering twice per day

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D-O8-84 cont.

Table 2. Updated Summary of Operational PM10 Emissions (pounds per day)

Category	DEIR PM10 Emissions[1]	Updated PM10 Emissions[2]
Phase 1		
Off-Road Equipment Exhaust	0.7	0.7
Mining Pit Operation Dust	59.0	59.0
Groundline Conveyor Dust	1.2	1.2
Processing Area Operation Dust	6.4	6.4
On-Site Vehicle Movement Dust	12.5	112.8
On-Road Vehicle Trips	2.9	2.9
Phase 2 Demolition	0.7	0.7
Phase 1 Total Emissions	**84.5**	**183.7**
SDAPCD Threshold	100	100
Exceed Threshold?	No	Yes
Phase 2		
Off-Road Equipment Exhaust	0.7	0.7
Mining Pit Operation Dust	59.0	59.0
Groundline Conveyor Dust	1.2	1.2
Processing Area Operation Dust	6.4	6.4
On-Site Vehicle Movement Dust	12.5	112.8
On-Road Vehicle Trips	2.9	2.9
Phase 3 Demolition	1.2	1.2
Phase 2 Total Emissions	**85.0**	**184.2**
SDAPCD Threshold	100	100
Exceed Threshold?	No	Yes
Phase 3		
Off-Road Equipment Exhaust	0.7	0.7
Mining Pit Operation Dust	59.0	59.0
Groundline Conveyor Dust	1.2	1.2
Processing Area Operation Dust	6.4	6.4
On-Site Vehicle Movement Dust	12.5	112.8
On-Road Vehicle Trips	2.7	2.7
Phase 3 Total Emissions	**83.6**	**182.8**
SDAPCD Threshold	100	100
Exceed Threshold?	No	Yes

Notes: PM10 = respirable particulate matter; lbs = pounds; SDAPCD = San Diego County Air Pollution Control District
[1] Total PM10 emissions and PM10 emissions from off-road equipment exhaust, on-road vehicle trips, and demolition are derived from Table 3.1.1-8 of the DEIR (page 3.1.1-29). The PM10 emissions from mining pit operations, groundline conveyors, processing area operations, and on-site vehicle movement are derived from page 99 of 455 in the DEIR Appendix I (Volume 2).
[2] PM10 emissions are updated for on-site vehicle movement as summarized in **Table 1** of this letter.

Failure to Evaluate the Effectiveness of the Fugitive Dust Control Plan to Reduce Air Quality Impacts

As described on page 3.1.1-12 of the DEIR, the project would implement a Fugitive Dust Control Plan. A copy of the plan is included in Appendix I of the DEIR. Similar to a mitigation measure, thorough implementation of the Fugitive Dust Control Plan would reduce the project's fugitive dust emissions and associated air quality impacts. The DEIR included the Fugitive Dust Control Plan in the analysis of the project's unmitigated air quality impacts. It appears that the preparers of the DEIR intended to incorporate the Fugitive Dust Control Plan into the project design; however, the plan was not identified as a design feature in the project description. Therefore, there is no assurance that the Fugitive Dust Control Plan will be implemented as a part of the project.

D-O8-85

Based on the *Lotus v. Department of Transportation* (223 Cal. App.4th 645) decision, the DEIR should first evaluate if the project's air quality impacts would exceed the thresholds of significance without implementation of the Fugitive Dust Control Plan, and then evaluate how the plan would reduce the impacts to, or maintain them at, a less-than-significant level. Furthermore, the dust control measures described in the plan need to be analyzed for their effectiveness in reducing air quality impacts, and a mitigation monitoring or reporting plan needs to be adopted to ensure the dust control measures are implemented. Based on review of the Fugitive Dust Control Plan in DEIR Appendix I, specific concerns related to the effectiveness of the control measures in the plan are discussed below.

Travel on Unpaved Roads. The Fugitive Dust Control Plan limits vehicle speeds on unpaved roadways to 10 mph. However, page 3.1.1-14 of the DEIR states that vehicle speeds on unpaved roads would be limited to 15 mph, which is inconsistent with the Fugitive Dust Control Plan. The DEIR air quality analysis should be updated to address this inconsistency.

Mining Pit Operations. The Fugitive Dust Control Plan describes measures for watering unpaved roads, but it does not discuss how often to use water or other methods to control dust in the mining pit area. The DEIR analysis of air quality impacts assumed that watering would occur twice per day, but this is not identified as a dust control measure in the Fugitive Dust Control Plan. As stated on page 1-2 of the DEIR, mining could disturb up to 30 acres at a time during each phase of operation. During dry weather conditions, wind erosion and equipment operation on 30 acres of disturbed sand could generate a substantial amount of fugitive dust emissions if not controlled. In addition, the DEIR and Fugitive Dust Control Plan do not discuss how dust will be controlled in the mining area during nonwork days (i.e., weekends and holidays) to minimize wind erosion. The DEIR air quality analysis should be updated to clearly identify how dust control measures will be implemented in the mining pit area during both work and nonwork days.

D-O8-85 Please see Response to Comment D-O8-26 regarding the Fugitive Dust Control Plan.

D-O8-85 cont.

Exposed Stockpiles. The Fugitive Dust Control Plan states that exposed stockpiles will be treated with water or non-toxic, environmentally safe soil stabilizers, or covered, as necessary. However, there is no clarification for determining when it is necessary to control dust from the stockpiles. Page 19 of the Air Quality Technical Report in DEIR Appendix I states that stockpiles which are unused for six or more months would either be seeded or covered to prevent wind erosion. This suggests that unused stockpiles could be subject to uncontrolled wind erosion for up to 6 months before being seeded or covered, which could generate substantial dust emissions that were no accounted for in the DEIR analysis.

Monitoring and Enforcement. The Fugitive Dust Control Plan is a self-implementing plan. There are no 3rd party monitoring or enforcement measures included in the DEIR or Fugitive Dust Control Plan that would ensure the dust control measures are properly implemented.

Perimeter Air Monitoring. The Fugitive Dust Control Plan should include periodic air monitoring along the downwind perimeter of the site with action levels to demonstrate the effectiveness of the dust control measures. If action levels are exceeded during air monitoring, then the Fugitive Dust Control Plan should identify additional dust control measures that can be implemented to ensure dust emissions are reduced below the action levels.

The DEIR should be updated to address the concerns identified above regarding the Fugitive Dust Control Plan. The DEIR should also be updated to properly incorporate the Fugitive Dust Control Plan into the project design or convert the plan into a CEQA mitigation measure and include it in the Mitigation Monitoring and Reporting Program. More importantly, the DEIR analysis of unmitigated air quality impacts should be updated to evaluate the effectiveness of control measures described in the Fugitive Dust Control Plan to reduce impacts to a less-than-significant level.

D-O8-86

Health Risk Assessment Lacks Substantial Evidence to Support Conclusions

The DEIR included a health risk assessment (HRA) for nearby sensitive receptors exposed to concentrations of toxic air contaminants (TACs) generated by the project. TACs of concern include diesel particulate matter (DPM), silica dust, and trace heavy metals, as described on page 3.1.1-17 of the DEIR:

> *Operation of the Project would result in the generation of DPM emissions and fugitive dust trace TACs from the use of off-road diesel equipment, on-road haul trucks, and sand processing operations. Fugitive dust trace TACs analyzed include arsenic, beryllium, cadmium, chromium (hexavalent and non-hexavalent), copper, manganese, mercury, nickel, selenium, and crystalline silica.*

D-O8-86 Please see Response to Comment D-O8-27 regarding health risk modeling.

The methodology and input parameters used for the HRA are documented in the Air Quality Technical Report included in Appendix I of the DEIR. The HRA included air dispersion modeling for the following sources of TAC emissions:

- Mining Pit Area
- Processing Area
- Conveyors
- Radial stackers
- On-site haul routes
- On-road delivery trucks

Based on the air dispersion modeling results, the HRA estimated the health risks for a sensitive receptor exposed to 17 different TACs beginning in the 3rd trimester of pregnancy for a duration of 10 years.

D-O8-86 cont.

As summarized in Table 3.1.1-9 of the DEIR, the estimated total cancer risk at the maximally exposed individual resident was reported to be 2.9 in a million, which is below the threshold of significance (10.0 in a million). The total cancer risk seems suspiciously low, which may be due to inaccuracies in the air dispersion modeling of TAC emissions from mining operations. One volume source with footprint of about 0.6 acres[3] was modeled in the center of each mining subphase area, which was intended to represent the emissions from mining operations across the entire area of the subphase. Since the area for each mining subphase can range up to 30 acres, using one relatively small volume source to model the emissions from mining operations across the entire subphase area is not likely representative of the conditions that would actually occur during mining, particularly emissions that would occur near the perimeter of the subphase area closest to sensitive receptors. However, there is no feasible way to review the validity of the HRA because the individual health-risk contributions from each emission source for each TAC and year of exposure are not documented or summarized anywhere in the DEIR.

As a result, there is no reasonable method for the public or decision makers to review the validity of the HRA findings. According to *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 442, the data in an EIR must be presented in a manner to adequately inform the public and decision makers. Here, the DEIR air quality analysis lacks substantial evidence to support its conclusions and should be revised to properly document and summarize the findings of the HRA.

[3] 50 meters by 50 meters.

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Inadequate Analysis of Valley Fever Concerns

Valley Fever, or coccidioidomycosis, is an infectious disease caused by inhaling spores of *Coccidioides*, a soil-dwelling fungus. The fungus lives in the top 12 inches of soil. When soil containing this fungus is disturbed by activities such as excavation and grading the fungal spores become airborne.[4] As stated on page 3.1.1-4 of the DEIR, San Diego County is a suspected endemic area for *Coccidioides* spores and has climatic conditions suitable for hosting the fungus. The preparers of the DEIR concluded that the project would have a less-than-significant impact related to the potential emissions of *Coccidioides* spores because the on-site soil properties and current and past golf course turf management activities do not favor the occurrence of the *Coccidioides* fungus, and because the project would implement a Fugitive Dust Control Plan as a project design feature to control emissions of fugitive dust and other soil materials. However, the DEIR air quality analysis lacks substantial evidence to support this conclusion.

D-O8-87

Page 3.1.1-21 of the DEIR states that the current irrigation, fertilization, and application of fungicides on the golf course of the project site deters the occurrence of *Coccidioides* fungus. However, the golf course on the western portion of the project site has been inactive since 2017. Furthermore, the use of irrigation, fertilizers, and fungicides on the eastern portion of the golf course would cease after implementation of the proposed project and the topsoil on large portions of the project site may remain undisturbed for many years before being removed for mining activities. As a result, the current golf course turf management practices would not affect the potential occurrence of *Coccidioides* fungus during future mining operations.

Page 3.1.1-21 of the DEIR also states that implementation of the Fugitive Dust Control Plan as a project design feature would reduce impacts from Valley Fever to a less-than-significant level. In addition to the concerns about the effectives of the Fugitive Dust Control Plan discussed above, the plan generally focuses on minimizing visible fugitive dust emissions at the property line. However, *Coccidioides* spores are too small to be seen by the naked eye, and due to the spores' very small size and buoyancy, the spores can remain aloft for great distances and thus may be present in air that appears quite clear. Therefore, minimizing visible fugitive dust emissions at the property line does not address the potential for nearby residents to be exposed to airborne *Coccidioides* spores generated during mining activities.

D-O8-88

The DEIR air quality analysis should be revised to provide a thorough analysis of how the project would reduce Valley Fever impacts to a less-than-significant level, if feasible. The Fugitive Dust Control Plan should include measures that specifically address the dust emissions generated by the disturbance of topsoil that could potentially contain *Coccidioides* spores. The plan should also include measures to prevent the potential transport of *Coccidioides* spores from the

[4] California Department of Industrial Relations, 2017. Protection from Valley Fever. https://www.dir.ca.gov/dosh/valley-fever-home.html. Last updated November 2017.

D-O8-87 Please see Response to Comment D-O8-28 regarding valley fever concerns and exposure to the *Coccidioides* fungus.

D-O8-88 Please see Response to Comment D-O8-28 valley fever concerns and implementation of the Fugitive Dust Control Plan.

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D-O8-88 cont.

project site (e.g., thoroughly cleaning equipment and vehicles before moving offsite) and a medical surveillance program that includes periodic monitoring of workers for symptoms of Valley Fever.

Conclusions

D-O8-89

Based on our review of the DEIR and supporting appendices for the proposed project, Baseline recommends that the County revise and recirculate the environmental analysis to address the environmental concerns related to the issues described above.

Sincerely,

Patrick Sutton

Patrick Sutton, PE
Senior Environmental Engineer

PS:YT:km

D-O8-89 The County acknowledges this conclusory summary. As explained in Topical Response 1, portions of the DEIR were significantly revised and recirculated as part of the RDEIR based on updates and DEIR comments received. This comment does not raise an issue concerning the environmental analysis or adequacy of the DEIR; no additional response is required.

Patrick Sutton, P.E.

BASELINE ENVIRONMENTAL CONSULTING

Senior Environmental Engineer

Areas of Expertise

Air Quality, GHGs, Hazardous Materials, Geology, and Hydrology

Education

M.S., Civil and Environmental Engineering, University of California – Davis

B.S., Environmental Science, Dickinson College

Registration

Professional Engineer No. 13609 (RI)

Years of Experience

17 Years

Patrick Sutton is an environmental engineer who specializes in the assessment of hazardous materials released into the environment. Mr. Sutton prepares technical reports in support of environmental review, such as Phase I/II Environmental Site Investigations, Air Quality Reports, Greenhouse Gas (GHG) Reduction Plans, and Health Risk Assessments. He has prepared numerous CEQA/NEPA evaluations for air quality, GHGs, geology, hazardous materials, and water quality related to residential, commercial, and industrial projects, as well as large infrastructure developments. His proficiency in a wide range of modeling software (AERMOD, CalEEMod, RCEM, CT-EMFAC) as well as relational databases, GIS, and graphics design allows him to thoroughly and efficiently assess and mitigate environmental concerns.

For mixed-use development projects, Mr. Sutton has prepared health risk assessments for sensitive receptors exposed to toxic air contaminants based on air dispersion modeling. He has also prepared GHG Reduction Plans to demonstrate how projects can comply with State and/or local GHG reduction goals. For large highway infrastructure improvement projects, Mr. Sutton has prepared air quality and hazardous materials technical reports in accordance with Caltrans requirements. Air quality assessments include the evaluation of criteria air pollutants, mobile source air toxics, and GHG emissions to support environmental review of the project under CEQA/NEPA and to determine conformity with the State Implementation Plan. Hazardous materials investigations include sampling and statistically analysis of aerially-deposited lead adjacent to highway corridors.

Project Experience

Oakland Downtown Specific Plan EIR. Prepared a program- and project-level Air Quality and GHG Emissions analysis. Developed a mitigation measure with performance standards to ensure GHG emissions from future projects comply with the Citywide 2030 GHG reduction target.

I-680 Express Lanes from SR 84 to Alcosta Boulevard Project. Prepared Initial Site Assessment and Preliminary Site Investigation to evaluate contaminants of potential concern in soil and groundwater. Prepared Air Quality Report to determine the project's conformity to federal air quality regulations and to support environmental review of the project under CEQA and NEPA.

Altamont Corridor Expressway (ACE/Forward) Project EIR/EIS. Prepared a program- and project-level Hazardous Materials analysis for over 120 miles of railroad corridor from San Jose to Merced. Hazardous materials concerns, such as release sites, petroleum pipelines, agricultural pesticides, and nearby school sites were evaluated in GIS.

Stonegate Residential Subdivision EIR. Prepared a project-level Hydrology and Water Quality analysis for a residential development located within the 100-year floodplain. The proposed project included modifications to existing levees and flood channels.

BART Silicon Valley Extension Project. Prepared Initial Site Assessment and Hazardous Materials EIS/EIR section for extending 6 miles of proposed BART service through the Cities of San Jose and Santa Clara.