APPENDIX Q VALLEY FEVER TECHNICAL REPORT

El Monte Sand Mining Project

Valley Fever Technical Report Project # PDS2015-MUP-98-014W2/PDS2015-RP-15-001; Record ID #: PDS2015-MUP-98-014W2; PDS2014-RP-15-001; Environmental Log #: PDS2015-ER-98-14-016B

Prepared for: County of San Diego Planning and Development Services 5510 Overland Avenue, Suite 310 San Diego, CA 92123 July 2018



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El Monte Sand Mining Project

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El Monte Sand Mining Project

Valley Fever Technical Report

1. Introduction

The El Monte Sand Mining Project (project) is proposed by the El Monte Nature Preserve, L.L.C. (Proponent) to extract 10.3-million tons of mineral resources within the El Monte Valley. The sixteen-year project would include mineral extraction (twelve years) and reclamation (additional four years), trails, staging areas, and fuel modification over approximately 262 acres of a 479.5-acre site. The site is zoned for extractive use (S82).

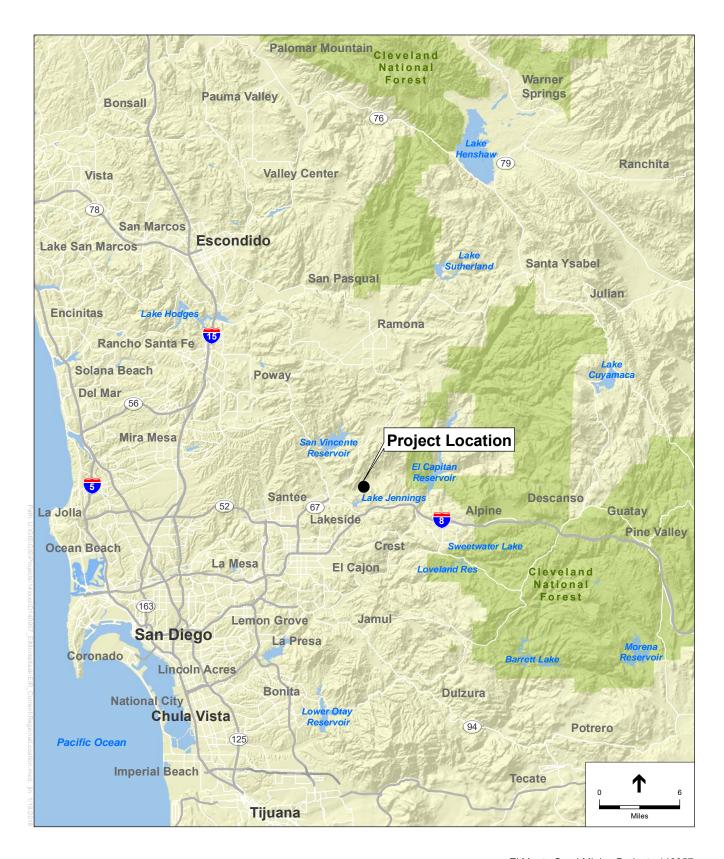
1.1 Purpose of the Report

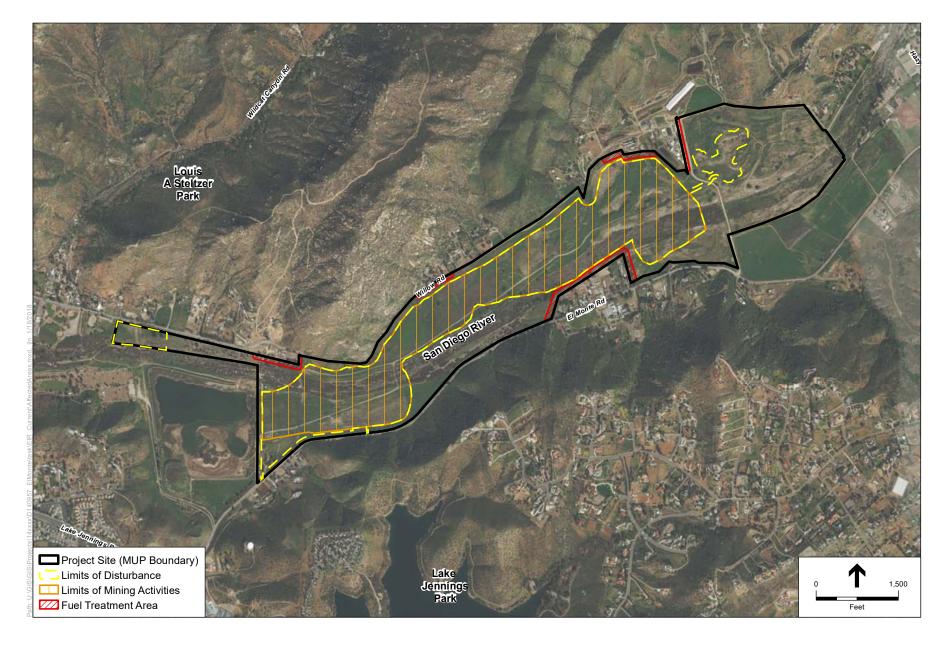
This technical report has been prepared to support the Project's CEQA environmental review process and provide information regarding potential public health hazards related to exposure to *Coccidioides* spores and contracting coccidioidomycosis (Valley Fever). The information presented in this report serves to fulfill one of the main tenets of CEQA, that being for the EIR to serve as a public disclosure document. However, this discussion concerning Valley Fever is not a discussion of the effect of the project on the environment, but rather how the Proposed Project may complicate a possible environmental condition of the site that has the potential to affect people's health. Appendix G of the CEQA Guidelines does not present significance thresholds for potential to contract reportable diseases such as Valley Fever, and neither has the County's Planning and Development Services developed such significance guidelines. This report presents relevant background information regarding Valley Fever, potential for the Proposed Project to result in the exposure of onsite workers, nearby residents, and visitors to potential health hazards, and identifies measures to reduce potential exposure to the fungus.

1.2 Project Location and Description

The site is situated in the El Monte Valley within the San Diego River watershed and in the floodplain of the San Diego River. The project site is located approximately 1.5 miles east of where the San Diego River is crossed by Highway 67 and is 4.8 miles west of the El Capitan Reservoir dam. The San Diego River channel (dry) runs through the central part of the project site, which lies between El Monte and Willow Roads in Lakeside, CA. **Figure 1** and **Figure 2** show the regional location and the area affected by the project, respectively.

Access to the project site is located 0.5 miles northeast of the intersection of El Monte Road and Lake Jennings Road. Project traffic would use El Monte Road which is also the primary route to the Van Ommering Dairy Farm, El Monte County Park, and El Capitan Reservoir.





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Figure 2
El Monte Sand Mining Area Affected by the Project

Residential properties located within the project vicinity use both El Monte and Willow Roads to access their properties.

As stated previously, the project would extract 12.5 million tons) of mineral resources, then reclaim and restore the site. The mining process would be completed in four phases over a 12-year period. As mining is completed in phases, the disturbed areas previously mined would be progressively reclaimed starting in year four of the project. Reclaimed areas would be restored to an end use of undeveloped open space and recreational trail easements. Reclamation is anticipated to extend four years past the end of mining, giving the project a total lifetime of 16 years.

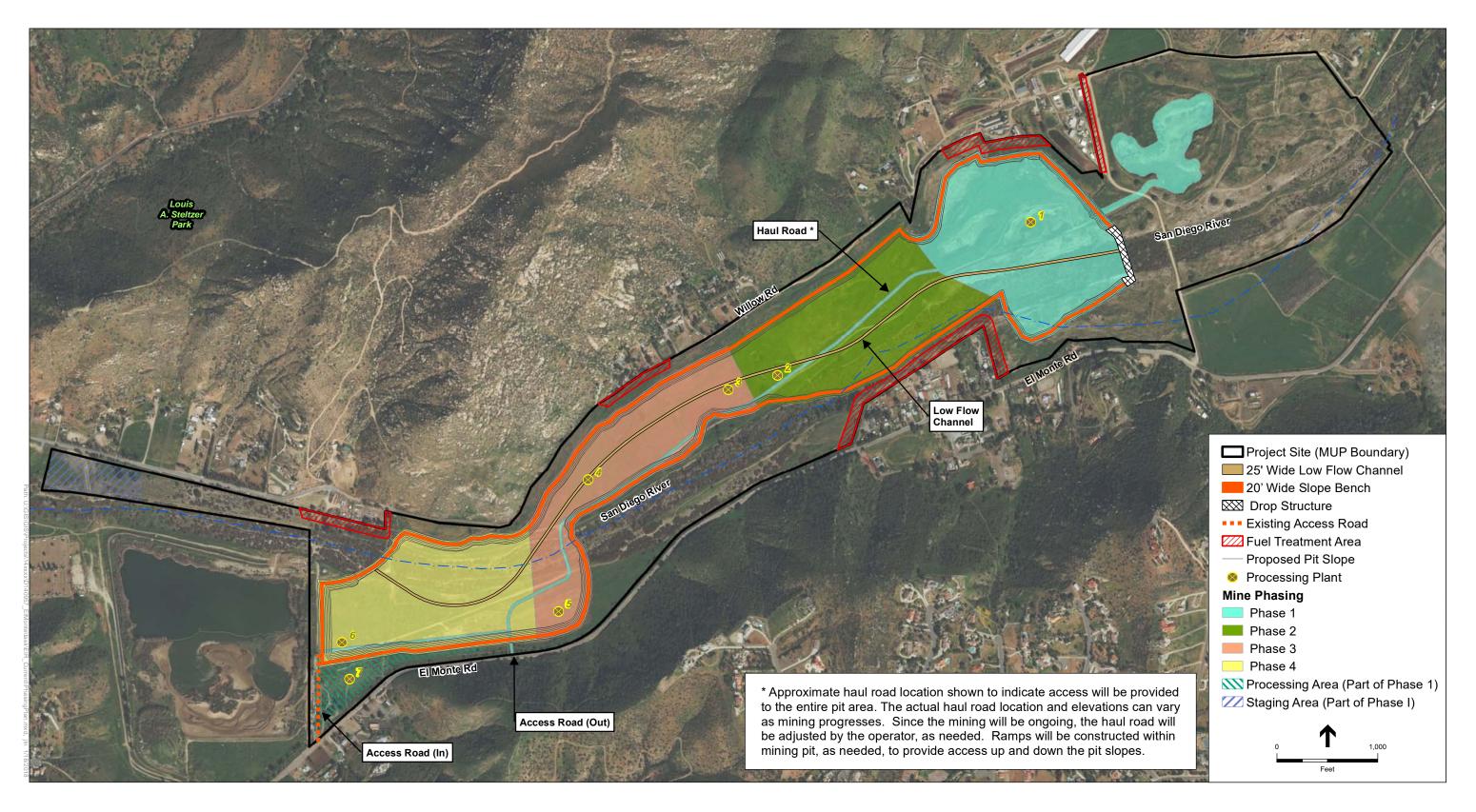
Activities associated with the project include an aggregate processing facility, a portable processing wash plant, storage container, weight scales, and modular scale house. The project would have a Reclamation Plan boundary of 479.5 acres which includes the disturbed areas, the previously excavated areas intended for use as golf course ponds, the 100-foot setback from El Monte Road and Willow Road and a 300-foot setback from the eastern parcel line of APN 391-071-04 and Dairy Road. The project would eliminate the approved golf course use and would include the backfilling of the previously excavated area east of Dairy Road. The footprint of the project and areas of disturbance are shown in Figure 2. **Figure 3** shows the site plan and phasing.

The project is anticipated to produce 12.5 million tons over the lifetime of the project. There are currently no plans to have need of or operate a batch plant or rock crushing facilities and the mining operations would not require blasting activities.

2. Valley Fever Background

Valley Fever is an illness caused by the *Coccidioides* fungus that usually affects the lungs. The fungal spores are generally found in the upper 20 to 30 centimeters of the soil horizon, especially in virgin, undisturbed soils. The spores become airborne when uncultivated soil is disturbed by natural or anthropogenic means (winds, grading, mining, farming, and recreational activities). Soils that are more likely to support *Coccidioides* are areas with rodent burrows, old (prehistoric) Indian campsites near fire pits, areas with sparse vegetation and alkaline soils, areas with high salinity soils, areas adjacent to arroyos, packrat middens, silty soils, and well aerated soils with relatively high water holding capacities. Areas less likely to support *Coccidioides* include cultivated fields, heavily vegetated areas, higher elevations (above 7,000 feet), areas where commercial fertilizers have been applied, areas that are continually wet, paved or oiled areas, soils containing abundant microorganisms, and heavily urbanized areas where there is little undisturbed virgin soil.

Endemic areas for the fungus are usually arid to semiarid with mild winters and extended hot seasons (USGS, 2000). Areas endemic for *Coccidioides* include portions of the southwestern United States and northern Mexico. San Diego County is a suspected endemic area for *Coccidioides* (CDC, 2014b). The climatic conditions and type of soils and vegetation found in the El Monte Valley (including the project site) make it fairly conducive for the occurrence and growth of *Coccidioides*.



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2.1 Life Cycles of Coccidioides Spores

The life cycle of the *Coccidioides* spore is linked with the changes in local climate conditions. The *Coccidioides* spores start their lives within fungus beneath the soil and begin to grow after being in contact with water, usually during the spring months after winter rainfall has ended (Brown, 2013). During the dry months, the hyphae of the fungus begin to desiccate and maturate into arthroconidia (spores), which can be become airborne and inhaled by people. Once arthroconidia are inhaled and settle into the lungs, the arthroconidia spherules begin to divide internally until they are filled with endospores. Once the spherules rupture, the endospores are released and disseminated within the surrounding tissue increasing the extent of infection. Over time, the endospores that were ruptured by their host spherules redevelop into new spherules; thus repeating the cycle (CDC, 2015). **Figure 4** illustrates the life cycle of *Coccidoides*. Valley Fever can also be contracted by domestic and wild animals including burros, cattle, dogs, horses, sheep, bats, coyotes, mountain lions, rodents, and reptiles (USGS, 2000).

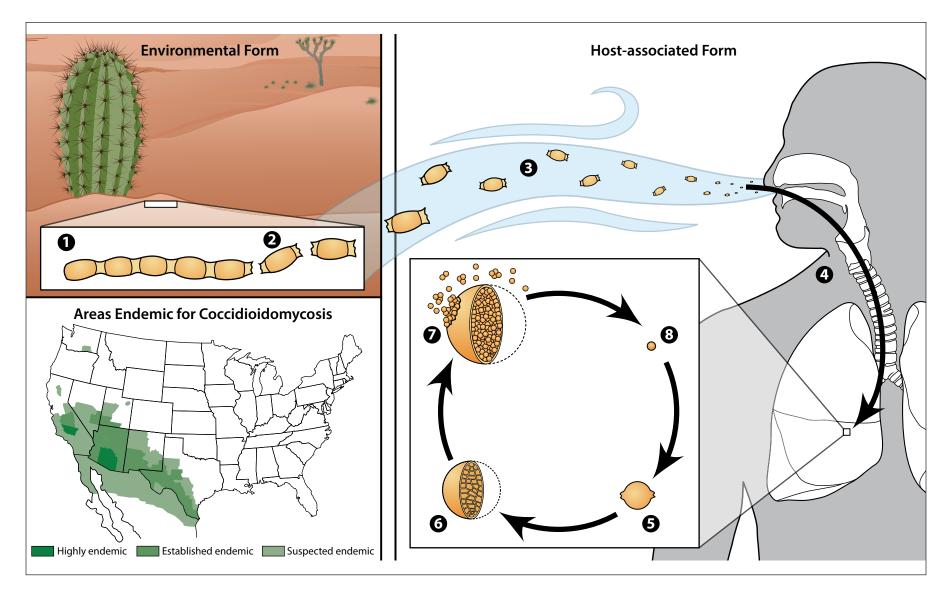
Because Valley Fever is mainly contracted through inhalation of airborne spores that are present in suitable soils, dust emissions are a good indicator that spores may be present in the air. However, due to the spores' very small size and buoyancy, spores can remain aloft for great distances and thus may be present in air that appears quite clear. Dust control is still considered a primary tool to reduce potential exposure to the spores. Conversely, dust in the air may not contain the spores if the airborne soil material has not originated from a location where the fungus and spores are present. (CDPH, 2017; USGS, 2000)

Unfortunately, there are no commercially available tests to detect *Coccidioides* in soil. Although testing is done for scientific purposes to understand more about the fungus' habitat and effects of weather and climate on growth, the testing methods do not always detect the spores even if they are present (CDC, 2017).

2.2 Symptoms of Valley Fever

An estimated 150,000 *Coccidioides* infections occur each year in the United States, although more than half of these infections do not produce any symptoms (CDPH, 2015). In susceptible people and animals, infection occurs when a spore is inhaled.

Persons expressing symptoms of Valley Fever comprise approximately 40 percent of cases. Those persons usually show symptoms within one to three weeks after exposure (CDC, 2014a). Symptoms of Valley Fever include fatigue, cough, dyspnea, headache, night sweats, myalgias, and rashes.



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Figure 4
Life Cycles of Coccidioides Spores

In approximately 5 to 10 percent of cases, people exposed to *Coccidioides* can develop complications or chronic pulmonary diseases. Disseminated Valley Fever can occur in an estimated one percent of cases with higher rates observed in certain risk groups. Bones/joints, soft tissues and meninges are most commonly affected by disseminated disease (CDC, 2014a). Risk groups include people in endemic areas who have occupations or engage in activities that exposes them to dust, such as construction or agricultural workers, and archaeologists. Risk factors for severe or disseminated Valley Fever include those of African-American or Filipino ethnicity, those with HIV/AIDS, use of immunosuppressive medications, organ transplant, diabetes mellitus, or pregnancy (CDC, 2014a). People working in occupations such as construction, agriculture, and archaeology have an increased risk of exposure and disease because these jobs result in disturbance of soils where fungal spores may be found (CDPH, 2013).

2.3 Treatment of Valley Fever

Approximately 60 percent of people exposed to *Coccidioides* have no symptoms, and most Valley Fever cases are very mild, which makes it very difficult to diagnose. Most symptomatic cases are self-limited and require no treatment (CDC, 2014a). Although the only oral treatment approved by the Food and Drug Administration (FDA) is ketoconazole, other oral azoles are often used as first-line therapy. Severe illness is treated with intravenous amphotericin B.

2.4 Cases of Valley Fever

Because approximately 60 percent of infected people have no symptoms and many Valley Fever cases are very mild, most infected people rarely, if ever, seek medical attention. Of those who do seek medical attention with flu-like symptoms, many are not diagnosed with Valley Fever. This results in underreporting of the disease. Valley Fever is not contagious from person to person and it appears that after one exposure the body will develop immunity. A coccidioidin skin test can be done to determine prior exposure to Valley Fever. In about one percent of those infected, *Coccidioides* disseminates elsewhere in the body beyond the pulmonary system, with more serious, and in limited cases fatal, results. There is currently no vaccine, although efforts to develop a vaccine are ongoing (USGS, 2000).

Valley Fever has been reported in most counties in California with approximately 70 percent of the cases occurring within six counties including Kern, Kings, San Luis Obispo, Fresno, Tulare, and Madera Counties. The reported number of cases in California was 5,372 in 2016. The 2016 statewide incidence rate of 13.7 per 100,000 was similar to the 2011 incidence rate of 13.8 per 100,000. In San Diego County from 2012 to 2016, the numbers of Valley Fever cases reported were 159, 126, 117, 168, and 158, respectively (CDPH, 2017 and HHSA, 2017).

The County of San Diego, Health and Human Service Agency (HHSA), prepared case counts and rates of Valley Fever between years 2007 and 2016 for residences within zip codes 92040, 92021, and San Diego County, which can be found in Table 1. The numbers of cases and rates of exposure of Valley Fever within zip codes 92040 and 92021 are representative of people residing in the vicinity of and north and south of the project area, but are not necessarily representative of the location of exposure.

As shown in Table 1, between years 2007 and 2016 there have been 20 cases of Valley Fever in zip code 92040 and 22 cases in zip code 92021. As shown in Table 1, the incidence rate of Valley Fever per 100,000 people during this time period was 4.8 within zip code 92040 and 3.4 within zip code 92021. The incidence rate of Valley Fever in these two zip codes is similar to the incidence rate for all of San Diego County (4.4 per 100,000 people).

TABLE 1
VALLEY FEVER CASE COUNTS AND INCIDENCE RATES
SAN DIEGO COUNTY RESIDENTS – 2007 TO 2016

Locations	Number of Cases	Annual Incidence Rate per 100,000 population
Zip Code 92040	20	4.8
Zip Code 92021	22	3.4
San Diego County	1,397	4.4

- Cases are grouped into CDC disease years based on the earliest of onset date, diagnosis date, specimen collection date, death date, and date received. Onset date is unavailable in over 60% of cases.
- 2. Case counts are 10-year aggregates due to small numbers per individual year.
- 3 Includes both acute and chronic cases.
- Location is location of residence when the case was reported to the County of San Diego Health and Human Services Agency, which may not be location of exposure.
- Rates are average annual rates of newly reported cases. Rates based on small case counts may vary considerably and should be interpreted with caution.
- 6. A revision to the surveillance case definition for coccidioidomycosis was adopted by California in June 2007; a single positive IgG result (in place of a rising IgG titer) became sufficient to meet laboratory criteria. National case definition changes occurred in 2008 and 2011.
- 7. Data are subject to change as cases are reviewed or new information becomes available.

SOURCE: U.S. Census Bureau, Census 2010; SANDAG Population Estimates (2010 and 2016 Updates; County of San Diego Communicable Disease Registry 12/13/2017

PREPARED BY: County of San Diego, Health and Human Service Agency, Public Health Services, Epidemiology and Immunization Services Branch, December 14, 2017.

3. Existing Conditions

3.1 Existing Setting

The project is set within the El Monte Valley, approximately 2 miles east of Lakeside. The project site is set in a fairly flat alluvial valley with mountains to the north and south. The dry channel of the San Diego River runs down the center portion of the site. The western portion is relatively flat while the eastern portion was previously graded with a rolling topography and excavations for golf course ponds. Across the site elevation ranges from 408 feet above mean sea level (AMSL) to 505 feet AMSL. The project site is currently vacant with existing vegetation composed of primarily exotic species and some native vegetation.

Previous uses of the property were predominately agricultural. In years past, commercial farms leased some of the land within the project area to produce hay crops and bamboo for animal feed. Thirty-five years ago sand mining operations also occurred on-site, primarily in the San Diego River channel to a depth of approximately 10 feet. Most recently a Major Use Permit P98-014 was approved by the Planning Commission for the El Capitan Golf Course on approximately 465 acres in February of 2000. Site grading was subsequently started; however, it was discontinued

due to declining market demand. Initial site grading included the establishment of a number of surface depressions intended as water hazards/storage ponds.

Within the project vicinity there is a variety of existing land uses. These include rural residential, dairy farming, field and orchard crops and open space. Immediately north and south of the project site are existing rural residences. These sensitive land uses have the potential to be exposed to fugitive dust emissions that may contain *Coccidioides* spores during construction and operation of the project.

4. Potential for Exposure

There is currently no established significance threshold for the potential exposure of workers, nearby residents, or visitors to *Coccidioides* spores. Onsite mining and plant operations would require the use of off-road equipment and heavy haul trucks. The transportation of off-road equipment and heavy haul trucks on the site and the use of excavators to dig up soil/material would result in fugitive dust emissions in the absence of project design features. Because the site is located in a region considered suspected endemic for *Coccidioides* spores and has suitable soil material and climatic conditions to support the lifecycle of this fungus, fugitive dust emissions could contain *Coccidioides* spores.

As previously mentioned, the project area has been used for sand mining and agriculture and is currently used by the public for recreational activities such as hiking, biking, and horseback riding. It is possible that some nearby residents and visitors may have already been exposed to *Coccidioides* spores. Indeed, several comments received from nearby residents stated that they or someone they know contracted Valley Fever, although it is impossible to state definitively that the exposure occurred in El Monte Valley. It is also possible that future employees of the sand mine and truck drivers may also have previous exposure due to other occupational and recreational activities in this suspected endemic region for *Coccidioides* spores.

It is not currently feasible to test soil material over the entire site to a depth of 30 centimeters for the presence of *Coccidioides* spores, or to test all potential future workers, residents or visitors for previous exposure to the fungus. Because the Proposed Project will disturb a rather large area of soil material that may harbor *Coccidioides* spores, it has the potential to increase the exposure of workers, nearby residents, and visitors to the spores of this fungus.

5. Measures to Reduce Potential Exposure to Coccidioides Spores

Although onsite workers would likely be more at risk of being infected with Valley Fever than local residents as they would be working in closer proximity to soil particles and fugitive dust which may contain *Coccidioides* spores, the following measures would be implemented to reduce potential exposure to fugitive dust by onsite workers, nearby residents and visitors. These measures are largely based upon the recommendations provided in the fact sheet entitled "Preventing Work-Related Coccidioidomycosis (Valley Fever)" by the California Department of Public Health (CDPH, 2013).

Measures

- VF-1: VF-1 is the same as Air Quality Design Consideration (DC) DC-1. This measure requires application of water three times per day at all active construction areas sufficient to confine dust plumes to the immediate work area.
- VF-2: During clearing, grading, processing and/or stockpiling of the topsoil layer (to minimum depth of 30 centimeters (12 inches), water shall be applied as required sufficient to confine dust plumes to the immediate work area.
- VF-3: Clearing, grading, processing and/or stockpiling activities of the topsoil layer (to minimum depth of 30 centimeters (12 inches), shall be suspended when winds exceed 15 miles per hour.
- VF-4: Stockpiled topsoil (such as may be used for future reclamation activities) shall be covered or stabilized with an approved soil stabilizer.
- VF-5: Onsite topsoil that is used in future site reclamation activities shall be wetted during onsite transportation and application activities sufficient to confine dust plumes to immediate work areas. Once onsite topsoil is placed on reclaimed areas it shall be vegetated and stabilized with approved stabilizers to prevent wind erosion in accordance with the approved Reclamation Plan.
- VF-6: The sand mine employer/operator shall provide to all employees the fact sheet entitled "Preventing Work-Related Coccidioidomycosis (Valley Fever)" by the California Department of Public Health and ensure all employees are aware of the potential risks the site poses and inform them of all occupational responsibilities and requirements such as contained in these measures to reduce potential exposure to *Coccidioides* spores.
- VF-7: The sand mine employer/operator shall pay for any onsite worker who chooses, to be tested for prior exposure to *Coccidioides* spores with the coccidioidin skin test.
- VF-8: The sand mine employer/operator shall provide and require National Institute for Occupational safety and Health (NIOSH)-approved half or full-face respirators equipped with N-100 or P-100 filters to be worn by all employees during clearing, grading, processing and/or stockpiling activities of the topsoil layer (to minimum depth of 30 centimeters (12 inches).
- VF-9: The sand mine employer/operator shall ensure that workers that are required to use respirators as determined by a job hazard analysis shall be medically evaluated, fittested, and properly trained on the use of the respirators, and a respiratory protection program shall be implemented in accordance with the applicable Cal/OHSA Respiratory Protection Standard (8 CCR 5144).
- VF-10: The sand mine employer/operator shall provide separate, clean eating areas with hand-washing facilities.

- VF-11: The sand mine employer/operator shall ensure construction equipment, tools, and vehicles are thoroughly cleaned with water before they are moved offsite to other work locations.
- VF-12: The sand mine employer/operator shall provide disposable TyvekTM coveralls and change facilities for all on-site workers. Workers performing work involving the clearing, grading, processing or stockpiling of topsoil shall be required to change clothes after work every day before leaving the work site, to prevent possible distribution of *Coccidioides* spores.

6. Conclusion

The project site is in a suspected endemic region for *Coccidioides* spores and has soils and climatic conditions suitable for hosting the fungus. Proposed Project activities would increase potential exposure to the fungus by onsite workers, nearby residents and visitors. The project will be conditioned to implement measures to reduce fugitive dust emissions and provide certain personal protection for onsite workers to reduce potential exposure to *Coccidiodes* spores; however, the risk of potential exposure cannot be eliminated entirely.

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