



Air Pollution Control District
San Luis Obispo County

Most Frequently Asked Questions

from the Oceano Dunes Draft Particulate Matter Reduction Plan Public Workshop

1. Who has the final say for the mitigation efforts to be implemented and how long do you anticipate that it will take to reach your air quality goals?

State Parks has proposed a Preliminary Concept Draft Particulate Matter Reduction Plan dated March 28, 2019 ("DPMLRP"). The Air Pollution Control Officer (APCO) has approved the DPMRP subject to certain conditions. Mitigation efforts will be included in Draft Reports submitted to the APCO on or before August 1 of each year and will be subject to APCO approval. Some mitigations included may require Coastal Commission approval. The Stipulated Order of Abatement Number 17-01 (SOA) then further specifies the timing to reach the air quality goals.

2. How will you make changes to the plan based on information gathered over time?

Changes will be done through the annual workplans that are included in the SOA. The PMRP is a plan of State Parks and annual meetings will be held in the fall of each year throughout the course of the Plan.

3. Why are the recommendations from the Scientific Advisory Group (SAG) not being followed?

State Parks submitted a revised DPMRP on April 1 where recommendations from the SAG were addressed and included.

4. What will be the repercussions if State Parks fails to comply with the terms of the stipulated agreement?

If it is determined that there is a lack of compliance with the SOA, penalties could range from substantial fines according to the Health and Safety Code through the APCO's enforcement authority, to the Hearing Board restricting access to sections of the Dunes.

5. Will progress on preparations for upcoming mitigation and implementation of PM dust control measures be reported to the APCD/APCO and the public in between the required annual workshops?

Yes, the APCO will routinely report progress made and upcoming implementation steps at Air Pollution Control District Board Meetings. Meeting dates are posted on SLOCleanAir.org.

6. Will you publish daily, or at least weekly, ambient vs non-ambient monitors so we can be informed of the efficacy of the abatement effort?

Realtime and archival data from all permanent air quality monitors run by the APCD as well as the Oso Flaco monitor are already available online in several places:

- <https://storage.googleapis.com/slocleanair-org/pages/air-quality/dailysummary.txt> and <https://storage.googleapis.com/slocleanair-org/pages/air-quality/yesterday.txt> show data from the current and previous days, respectively. Note that the Oso Flaco site is listed as OFS. These data are also available as an interactive map at <https://ktupper.shinyapps.io/SLOAPCDWebDataDisplay/>.
- The California Air Resources Board's AQMIS2 tool provides these data as well as archival data: <https://www.arb.ca.gov/aqmis2/aqmis2.php>. Note that on this website, CDF is called "Arroyo Grande-2391 Willow Road", Mesa2 is "Nipomo-Guadalupe Road", NRP is "Nipomo-Regional Park" and Oso Flaco is "Nipomo-Oso Flaco Lake Road."
- Official, validated data are available from the EPA's AQS Data Mart at https://aqs.epa.gov/aqsweb/documents/data_mart_welcome.html.

7. What measures are being taken to protect the health of the growing population that lives on the Nipomo Mesa?

The APCD is working to make sure that residents are aware of health impacts associated with particulate matter and make sure they have the tools necessary to be better informed during blowing dust events. Monitoring data, as well as current and forecasted air quality levels are available on SLOCleanAir.org. Residents can also sign up for the AirAware text notification program by visiting: SLOCleanAir.org/air-quality-alerts.php. Alerts are issued through this program whenever the CDF Nipomo monitor registers an hourly PM10 concentration above 175 ug/m3 between the hours of 9:00am and midnight. This value indicates a blowing dust event is underway and a health advisory may be issued that day.

8. The Special Master specifically stated that "natural sources" were preferred to temporary fencing. Given this information, why are wind fences still included in the DPRMP?

The wind fences are temporary because only so much vegetation can be planted at a given time. APCD is evaluating a variety of measures at this time.

9. Have the actions that are currently underway at the Oceano Dunes been evaluated through a CEQA (California Environmental Quality Act) process?

State Parks issued a 2016 EIR for the ODSVRA Dust Control Program. That CEQA based document evaluated measures that are currently underway, however, in our EIR comments, we stated that the EIR did not show how the proposed measures would be adequate to meet Rule 1001. We were also concerned that the limited mitigation locations in the plan would need to be expanded beyond what was proposed to be effective. We concluded that a revised or subsequent project description and EIR would need to be drafted after modeling was completed and that the EIR

would also need to address larger issues we pointed out in our letter. In the future CEQA process that State Parks discussed on May 1, we will be looking for our concerns to be addressed.

10. When will the CEQA findings be made publicly available?

The PMRP itself is not a project under CEQA. State Parks will take their project through the CEQA process later this summer subject to regulatory process.

11. What is the proposed cost of taxpayer dollars to comply with this plan?

California State Parks stated at the May 1, 2019 workshop that the current annual cost is \$1.5 million dollars per year to comply with this plan.

12. If crystalline silica is detected in monitors, will there be a cancer or toxic risk assessment performed to inform the impacted citizens of the risk to which they are being exposed?

In 2017 and 2018, the District collected 8 air samples for respirable crystalline silica analysis. All samples were collected at the CDF monitoring station during wind blown dust events when 24-hour PM₁₀ levels exceeded the state PM₁₀ standard. As discussed in detail in Appendix B of the 2017 Annual Air Quality Report (online at <https://storage.googleapis.com/slocleanair-org/images/cms/upload/files/2017aqrt-FINAL2.pdf>) none of these samples exceeded the OSHA workplace standard (50 µg/m³), but respirable crystalline silica was detected in 6 of them, with a maximum concentration of 20 µg/m³.

The District had questions about the sampling efficiency of the method used in 2017 and 2018, and therefore has undertaken additional sampling in 2019 using a different sampling method. As disclosed at the workshop, 4 samples have been collected so far, none of which have exceeded the OSHA standard.

A report will be issued once sampling and analysis has been completed, likely in late 2019. This report will compare the observed silica concentrations to relevant standards and reference exposure levels, including the OSHA standard and the California Office of Environmental Health Hazard Assessment's chronic reference exposure level of 3 µg/m³.

13. How does Mesa 2 compare to Oso Flaco?

Generally, Mesa 2 is much higher than Oso Flaco but lower than CDF. As discussed in the 2017 Annual Air Quality Report (online at <https://storage.googleapis.com/slocleanair-org/images/cms/upload/files/2017aqrt-FINAL2.pdf>) in 2017 the numbers of exceedances of the California PM₁₀ standard at CDF, Mesa2, and Oso Flaco were 97, 52, and 12, respectively; the annual averages were 38.8, 29.4, and 29.0 µg/m³, respectively. In 2018, there were 47, 39, and 2 exceedances at these sites.

14. Is there a noticeable difference in PM10 between the days with high riding vs those days where riding levels were low?

We cannot completely rule out the possibility of a “noticeable” difference in PM₁₀ levels between high and low activity days on the ODSVRA, but the difference, if any, is very small.

Saltation is the primary mechanism for PM₁₀ generation on the ODSVRA. Under high winds, sand grains briefly become airborne. When these lofted sand grains fall back to the surface, their impacts release PM₁₀-sized fragments which can be transported by the wind as dust. Since the wind drives saltation, high PM₁₀ levels on the Nipomo Mesa correlate strongly with high winds from the WNW. (OHV activity increases the amount of dust released when saltation occurs, but whether saltation occurs is determined by the wind.) This relationship is visualized in several APCD reports, including the 2007 “Phase 1 Study” (Figures 28 and 29), the 2010 “Phase 2 Study” (Figures 3.15, 3.16, 3.25, 3.26, 3.31, 3.32, and 3.53), Appendix B of the 2012 Annual Air Quality Report, and Appendix B of the 2013 Annual Air Quality Report. All of these reports are available on the district website at <https://www.slcleanair.org/library/air-quality-reports.php>.

Off highway vehicles also release tail-pipe emissions and often generate “rooster-tails” as they traverse the dunes. Emissions from these mechanisms would be expected to correlate with OHV activity, but any contribution to ambient PM levels from these mechanisms is swamped by saltation-derived dust.

The “Phase 1 Study” (pp. 33-36) compared downwind PM₁₀ levels between weekdays and weekends, since OHV activity increases on the weekends. It found small but inconsistent differences and concluded that “activity at the Oceano Dunes Park could be causing measurable air quality impacts on the Mesa. However, the conflicting data from Ralcoa, as well as the possibility that other weekend/weekday activity patterns may be influencing this analysis, make this conclusion quite tentative.”

The “Phase 2 Study” includes a plot (Figure 3.64) of the daily number of vehicles entering the ODSVRA versus Mesa2 PM₁₀ concentrations and states “the data shows no statistical correlation between the two. This is not surprising given the predominant role of wind speed and direction in determining PM₁₀ concentrations.” This study also compared the average PM₁₀ concentration of the 50 days with the most vehicles entering the park to the average of the 50 days with the fewest entries (pp 3-52 – 3-53). There was a weakly significant difference between PM₁₀ levels at Mesa2 (with higher levels on the highest traffic days) but no significant difference at CDF or the Oso site. Since vehicle entries are likely to vary seasonally and correlate with weather, this analysis may not be valid. The study concluded that: “The mixed message from this analysis shows that the direct emissions impacts of vehicle activity on the SVRA, even if statistically measurable, are small compared to the indirect impacts caused by OHV activity increasing the ability of winds to entrain sand particles from the dunes and carry them to the Mesa.”

15. In the Plan, saltation is mentioned (as it has been in the past) as a rather benign process of pushing sand around. However, in the recently published paper in the “ACP Journal,” the remarkably high concentration of feldspar is highly susceptible to breaking down into PM10 and PM2.5 particles. What are the practical implications of this new information for the active and inactive dunes and the abatement strategies and plans?

The article referenced in the question is Huang, Y., J. F. Kok, R. L. Martin, N. Swet, I. Katra, T. E. Gill, R. L. Reynolds, and L. S. Freire (2018), “Fine dust emissions from active sands at coastal Oceano Dunes, California,” Atmos. Chem. Phys. Discuss., 2018, 1-29, available online at <https://www.atmos-chem-phys.net/19/2947/2019/>. The article is cited in the DPMRP, and one of the SAG members (Rayleigh Martin) is a coauthor. The goal of the study was to better understand dust emissions from saltation processes in order to improve climate models.

While the data was collected within the ODSVRA (in a non-riding area), the study did not investigate how OHV activity impacts dust generation there. One of the study's findings is that compared to other beaches, the sand at Oceano has “substantial clay-mineral coatings” and a relatively high feldspar content. This may explain the relatively high PM_{2.5} content of the dust (as compared to other sand dunes). The District does not see any “practical implications” for the mitigation strategy.

16. How do you distinguish between dust from a construction site nearby and dust from the Oceano Dunes riding area?

It is easy to distinguish between emissions from construction, agriculture, and unpaved roads in the area on the one hand and the ODSVRA on the other, on the basis of meteorology. Under high wind from the W to NW, PM levels are elevated at both CDF and Mesa2. Under these conditions, the ODSVRA is upwind of these sites, and any of these other sources in the area are downwind.

As noted in the 2017 Annual Air Quality Report (online at <https://storage.googleapis.com/slocleanair-org/images/cms/upload/files/2017aqrt-FINAL2.pdf>), under other meteorological conditions, construction in this area has likely contributed to elevated PM₁₀ levels at Mesa2, including the highest 24-hour average recorded in 2017. The District has taken enforcement action in response to construction-related dust complaints from the area and will continue to enforce construction mitigation requirements.

17. Why have other sources of dust not been addressed? Particularly the sources reported in the Scripps study.

The “Scripps study” (online at http://ohv.parks.ca.gov/pages/25010/files/Oceano_Dunes_SVRA_Scripps_Investigation_Planktonic_Aerosolized_Partacula.pdf) was released on Parks’ website a few days in advance of the March 21, 2018, meeting of the District’s Hearing Board. It was never proffered into evidence before the Hearing Board, and Parks has never submitted the study to District. The District only became

aware of the study from public comments received in advance of the Hearing Board meeting.

The Scripps study is addressed in the District's Preliminary Review Letter for the February 21 version of the DPMRP. (The letter is online at <https://www.slocleanair.org/air-quality/oceano-dunes-efforts.php>; the relevant section begins on page 9). As discussed in greater detail there, it is very unlikely that marine aerosols contribute significantly to the high PM₁₀ levels observed at CDF and Mesa2 during windblown dust events. This is because:

- The study did not quantify the mass contributed by the aerosols to the PM₁₀ samples that were analyzed. DNA can be detected in vanishingly small quantities, so merely detecting it does not imply that biological material is present in significant quantities.
- Previous studies have analyzed dust samples from windblown dust events and found that they are composed primarily of "crustal materials" consistent with being derived from sand.
- Marine aerosols constituting a significant fraction of PM₁₀ mass is not consistent with spatial patterns of ambient PM₁₀ observed in the regulatory data (e.g. CDF versus Oso Flaco) or other reports and analyses. All show that areas downwind of the riding area receive more dust than non-riding areas and/or that the riding area is more emissive than the non-riding areas. This would not be consistent with an offshore source unless that source was very close to the shore and coincidentally right in front of the riding area, which is very unlikely.
- Finally, we know of no evidence from anywhere in the world of marine aerosols causing inland PM₁₀ concentrations like those routinely seen downwind of the ODSVRA.

Other potential PM₁₀ sources have been thoroughly investigated and found to be low to negligible during windblown dust events. The contribution of sea salt was investigated in the Phase 1 and 2 Studies as well as the South County Community Monitoring Project. Agricultural emissions and sulfate- and ammonium-based aerosols were investigated in the Phase 1 and 2 Studies; refinery emissions in the Phase 2 Study; and dirt roads in the Phase 1 Study. All of these reports are available online at <https://www.slocleanair.org/library/air-quality-reports.php>

18. Do any of the off-road vehicles require a smog certification?

According to the California Air Resources Board's (CARB) website, in 1994, CARB began regulating Off-Highway Recreational Vehicles (OHRV's) with the mission to reduce the air quality impact of this category. OHRVs primarily include off-highway motorcycles, all-terrain vehicles (ATV), utility-terrain vehicles and side-by-sides. In 1998, after extensive collaboration with industry, the red sticker program was created. Beginning with the 2003 model year, OHRVs that do not meet emission standards receive a red registration sticker from the DMV. During peak ozone season, the red sticker limits operation at certain off-highway recreational vehicle parks in non-attainment areas. For more information on OHRVs and their emission requirements, visit: <https://www2.arb.ca.gov/our-work/programs/highway-recreational-vehicles>

19. Since acreage has already been reduced, what is the current camping capacity? Will State Parks be reducing the number of campers or day passes allowed?

We recommend speaking with California State Parks about this question, as it falls under their jurisdiction.

20. If the riding area were to close down, what would happen to the amount of revenue that the county makes on an annual basis from the tourism? Would local taxes be raised? What about those that have jobs that rely on this level of tourism?

APCD is aware of the economic impact from tourism at the Oceano Dunes, and that is one reason why we continue to work with State Parks and all stakeholder groups to reduce particulate matter downwind of the riding area, while also keeping the interests of those that frequent the Park in mind.

21. Why are particulate matter issues not included in the SLO County Health Department's Improvement Plan (CHIP)?

The development of the CHIP was driven by a wide group of community participants who came together as volunteers, advocates or as representatives from nearly 50 organizations. As such, certain issues emerged that struck each work group as the most important for the near term. In the case of the Environmental Health team, the group chose two priority goals aimed at tackling Valley Fever and water quality at beach and creek interfaces, both of which also have significant implications for the overall health of SLO County residents. However, other important health issues will continue to be addressed by the Public Health Department and other stakeholders in the near term as well as over the course of the current and, as warranted, future, Community Health Improvement Plans. The matter of high levels of particulate matter downwind of the Oceano Dunes riding area is just one such issue.

22. In the current Plan, why is the proposed foredune area not vegetated and the area in the back of the dunes, which is not the most emissive area, is vegetated? The area that is being called the riding area is used more for camping.

As shown in Figure 5-1 of the DPMRP, there are 29.2 acres of revegetation in the back-dune non-riding area. This was installed in 2014, before the development of the dust emission model. The District did not request or endorse this revegetation—our sense at the time (and later confirmed by the subsequent modeling) was that it would not have much impact on downwind PM₁₀ concentrations. Nonetheless, the Stipulated Order of Abatement and the dust emission model use 2013 as the baseline against which mitigation strategies are to be compared. It therefore makes sense to include this revegetation when modeling current and future mitigation scenarios.

The proposed foredune area is not currently vegetated because planting takes time and may require approval from other regulators such as the California Coastal Commission. The District

has been advocating for reestablishing the foredunes for years; however, we also recognize that for it to be sustainable, it not only must be ecological sound, but it also be legally sound.

23. If dust is truly affecting the health of the Nipomo Mesa residents, why is the County Health Officer not stepping in?

The SLO County Health Officer has made clear her position that the excessive particulate matter exposure to residents in the dust plume zone, as mapped by the Air Pollution Control District, does present health consequences to that group of residents. However, the County Health Officer does not have legal authority to take action, independent of the governing bodies, to mitigate the situation. A Health Officer's legal authority in matters of health impacts focuses on the realms of communicable disease and, in some cases, toxic waste situations.

24. Why was the Eucalyptus forest allowed to be cut down for development?

APCD does not have land use authority and therefore is not the agency responsible for regulating development activities

25. PI-SWERL measurements assumed surface roughness of all areas being the same and equal to unity. However, in the camping area, it is far more impacted by debris which increases surface roughness which can affect the reading and show higher dust emissions. How did APCD correct for this?

The PI-SWERL measurements referred to in this question are presumably those conducted in 2013 and used to develop the emissions model. These are discussed in the report "2013 Intensive Wind Erodibility measurements at and Near the Oceano Dunes State Vehicular Recreation Area: Preliminary Report of Findings", available at <https://www.slocleanair.org/who/board/hearing-board/actions.php> as State Parks Exhibit 53.

These measurements were made by Desert Research Institute at the request of and under contract with State Parks. They are not APCD's measurements, and it is not our responsibility to "correct" them. That being said, we believe that the measurements were conducted properly, and that the data were analyzed correctly.

We asked Dr. Etyemezian to respond this question. His answer is as follows: "Portions of the riding area that are very near the shoreline are aerodynamically rough because vehicles, including campers and trucks, drive on partially wet sand that maintains the imprint of their tires. PI-SWERL measurements cannot be conducted on such surfaces because the grooves in the sand are too deep and wet. However, slightly further from the shore, the top few inches of the surface is composed of dry sand and the imprints made by OHV tires are relatively shallow. There is sparse debris and sometimes windblown trash that can be found, but this constitutes a very small portion of the surface. The roughness in these areas is essentially that of a sandy surface and this is the same as the roughness in areas with less traffic as well as in areas where riding is

prohibited. Therefore, the use of the same roughness value in interpreting PI-SWERL measurements is reasonable given other uncertainties and variables."