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STATE OF NEW MEXICO
BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF THE PETITION FOR HEARING ON AIR QUALITY PERMIT NO. 9295, ROPER CONSTRUCTION INC.'S ALTO CONCRETE BATCH PLANT

No. EIB 22-34

ALTO COALITION FOR ENVIRONMENTAL PRESERVATION'S STATEMENT OF INTENT TO PRESENT FINAL TECHNICAL DIRECT AND REBUTTAL EVIDENCE

The Alto Coalition for Environmental Preservation, by and through its counsel of record, Hinkle Shanor LLP (Thomas M. Hnasko and Julie A. Sakura), pursuant to 20.1.2.206 NMAC and the Hearing Officer's Order at the close of the hearing held on October 18-20, 2022, hereby submits this Statement of Intent to Present Final Technical Direct and Rebuttal Evidence regarding Roper Construction, Inc.'s Petition for Hearing on Air Quality Permit Number 9295.

1. **Name of the Person Filing the Statement.**

   Alto Coalition for Environmental Preservation ("Alto CEP")

2. **Indication of Whether the Person Filing the Statement Supports or Opposed the Petition at Issue.**

   Alto CEP opposes this petition.

3. **Name of Each Witness.**

   1. Carlos Ituarte Villarreal, Ph.D.
      Air Quality and Modeling Specialist/Engineer
      SWCA Environmental Consultants
      2201 Brookhollow Plaza Drive, Suite 400
      Arlington, TX 76006

   2. Brad Sohm, P.E.
      Principal Air Quality Team Lead
      SWCA Environmental Consultants
      2201 Brookhollow Plaza Drive, Suite 400

Arlington, TX 76006

3. Breanna Bernal, B.S.
   Air Quality Specialist
   SWCA Environmental Consultants
   2201 Brookhollow Plaza Drive, Suite 400
   Arlington, TX 76006

4. Eluid L. Martinez, P.E.
   Water Resources Management Consultants, LLC
   Post Office Box 31066
   Santa Fe, NM 87505

4. <u>An Estimate of the Length of the Direct Testimony of Each Witness.</u>

Pursuant to the Scheduling and Procedural Order of September 2, 2022, the direct testimony of each of the witness listed above will be twenty (20) minutes, which may be extended to thirty (30) minutes for good cause.

5. <u>Summary or Outline of the Anticipated Direct and Rebuttal Testimony of Each Witness</u>

Pursuant to the Hearing Officer's Order at the hearing, the direct and rebuttal testimony of the witnesses listed above are attached hereto in full narrative question and answer format as follows:

ALTO Exhibit 1	Full testimony of Carlos Ituarte Villarreal
ALTO Exhibit 14	Full testimony of Brad Sohm
ALTO Exhibit 16	Full testimony of Breanna Bernal
ALTO Exhibit 20	Full testimony of Eluid Martinez
ALTO Exhibit 22	Full rebuttal testimony of Brad Sohm **(REDACTED)**
ALTO Exhibit 35	Full rebuttal testimony of Carlos Ituarte Villarreal **(REDACTED)**
ALTO Exhibit 43	Full rebuttal testimony of Breanna Bernal **(REDACTED)**
ALTO Exhibit 44	Full rebuttal testimony of Eluid Martinez **(REDACTED)**

6. <u>A List of Final Exhibits offered into Evidence</u>

ALTO Exhibit 1 Full testimony of Carlos Ituarte Villarreal

ALTO Exhibit 2	Curriculum Vitae of Carlos Ituarte Villarreal
ALTO Exhibit 3	AP-42 Guidance, Table 13.2.1-3
ALTO Exhibit 4	Isopleth 24-hr PM10 NAAQS-Revised Permit Application
ALTO Exhibit 5	Isopleth 24-hr PM10 Class II Increment-Revised Permit Application
ALTO Exhibit 6	Isopleth 24-hr PM10 NAAQS-Revised Silt Content
ALTO Exhibit 7	Isopleth 24-hr PM10 Class II Increment-Revised Silt Content
ALTO Exhibit 8	Model Summary
ALTO Exhibit 9	Isopleth 24-hr PM10 Class II Increment-NMED Guidance
ALTO Exhibit 10	Holloman AFB Windrose
ALTO Exhibit 11	Ruidoso Regional Windrose
ALTO Exhibit 12	40 C.F.R. 51, Appx. W, 8.4.1.b
ALTO Exhibit 13	Appendix W, Section 8.1(B)(2)(i) of 40 C.F.R. 51
ALTO Exhibit 14	Full testimony of Brad Sohm
ALTO Exhibit 15	Curriculum Vitae of Brad Sohm
ALTO Exhibit 16	Full testimony of Breanna Bernal
ALTO Exhibit 17	Curriculum Vitae of Breanna Bernal
ALTO Exhibit 18	Spray Technology for Dust Control
ALTO Exhibit 19	AP-42 Guidance, Section 11.19.2.2
ALTO Exhibit 20	Full testimony of Eluid Martinez
ALTO Exhibit 21	Curriculum Vitae of Eluid Martinez
ALTO Exhibit 22	Full rebuttal testimony of Brad Sohm **(REDACTED)**
ALTO Exhibit 23	Photo-plant site Version 1 – Original Application
ALTO Exhibit 24	Photo Concrete Plan Site Visualization
ALTO Exhibit 25	Photo-plant site Version 2 – Preliminary Injunction
ALTO Exhibit 26	Photo-plant site Versions 1 and 2 overlay
ALTO Exhibit 27	Approval Drawing for Roper Construction
ALTO Exhibit 28	Photo-plant site Version 3-EIB Proceeding **(WITHDRAWN)**
ALTO Exhibit 29	Photo-plant site Versions 1 and 3 overlay **(WITHDRAWN)**
ALTO Exhibit 30	Photo-plant site Versions 1, 2 and 3 overlay **(WITHDRAWN)**
ALTO Exhibit 31	Downwash Structures Modeled by Roper **(WITHDRAWN)**
ALTO Exhibit 32	Downwash Structures – Revised **(WITHDRAWN)**
ALTO Exhibit 33	Volume Sources Modeled by Roper **(WITHDRAWN)**
ALTO Exhibit 34	Stockpiles Modeled by Roper **(WITHDRAWN)**
ALTO Exhibit 35	Full rebuttal testimony of Carlos Ituarte-Villarreal **(REDACTED)**
ALTO Exhibit 36	AP-42 Table 13.2.1-3
ALTO Exhibit 37	Isopleth (24-hr PM10 Class II Increment-AP42 Industrial Roads) **(WITHDRAWN)**
ALTO Exhibit 38	Isopleth (24-hr PM10 NAAQS AP42 Industrial Roads) **(WITHDRAWN)**
ALTO Exhibit 39	NMED Guidance
ALTO Exhibit 40	Isopleth (24-hr PM10 Class II Increment-NMED Guidance) **(WITHDRAWN)**
ALTO Exhibit 41	Isopleth (24-hr PM10 NAAQS-NMED Guidance) **(WITHDRAWN)**
ALTO Exhibit 42	Summary of exceedances **(WITHDRAWN)**
ALTO Exhibit 43	Full rebuttal testimony of Brenna Bernal **(REDACTED)**

ALTO Exhibit 44	Full rebuttal testimony of Eluid Martinez **(REDACTED)**
ALTO Exhibit 45	Affidavit of Ryan Roper
ALTO Exhibit 46	Affidavit of Mike Dickerson

Respectfully submitted,

HINKLE SHANOR LLP

/s/ Thomas M. Hnasko
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CERTIFICATE OF SERVICE

I hereby certify that on October 28, 2022, I caused a true and correct copy of the foregoing to be served via email to the following:

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Counsel for Roper Construction, Inc.

Christopher J. Vigil
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ksoloria@nmag.gov

Counsel for the Environmental Improvement Board

Pamela Jones
Hearing Administrator
Environmental Improvement Board
Pamela.Jones@state.nm.us

/s/ Thomas M. Hnasko
Thomas M. Hnasko

Q. WOULD YOU STATE YOUR NAME FOR THE RECORD?

A. My name is Carlos Ituarte-Villarreal.

Q. WHERE ARE YOU CURRENTLY EMPLOYED?

A. I am an environmental specialist in the areas of atmospheric dispersion modeling, employed by SWCA Environmental Consultants ("SWCA"). Our business address is 20 E. Thomas Road, Suite 1700, Phoenix, Arizona.

Q. WOULD YOU SUMMARIZE YOUR EDUCATIONAL BACKGROUND?

A. I received a Bachelor of Science in industrial engineering from the Instituto Tecnologico de Parral in Mexico in 2008, a Master of Science in industrial engineering from the University of Texas at El Paso in 2010, and a Ph.D. in environmental engineering from the University of El Paso in 2015. My curriculum vitae is attached as ALTO Exhibit 2.

Q. WOULD YOU PLEASE EXPLAIN YOUR EMPLOYMENT HISTORY AS AN AIR QUALITY ENGINEER?

A. In August 2013, I began work as an air quality engineer at SWCA. From January 2012 through August 2013, I worked as an air quality engineer here at El Paso Electric Company. I was a teaching assistant at the University of Texas at El Paso from May 2011 through August 2013, and a research associate and assistant at the University of Texas at El Paso from June 2009 through May 2011.

Q. WOULD YOU PLEASE EXPLAIN YOUR EXPERIENCE IN AIR DISPERSION MODELING?

A. Yes, I have performed numerous air quality dispersion models for industrial clients and am familiar with U.S. EPA requirements for the use of AERMET modeling. During my career,

ALTO
EXHIBIT 1

I have performed over 100 air dispersion models and am knowledgeable concerning the appropriate data to be inputted to obtain accurate modeling results.

Q. DID YOU TESTIFY AT THE PUBLIC HEARING HELD ON FEBRUARY 9, 2022?

A. Yes I did.

Q. COULD YOU PLEASE SUMMARIZE THE SUBSTANCE OF YOUR TESTIMONY AT THAT HEARING?

A. I analyzed the various iterations of Roper's air quality construction permit application and the various modeling runs conducted by their air quality consultant, Paul Wade. My opinions at that proceeding were that the modeling results presented by Roper were unreliable and not representative of the meteorological conditions at the proposed site. I also expressed the opinion that the application itself used incorrect emission factors which improperly resulted in lower emission factors than the results that would be obtained by using the factors set forth in the U.S. EPA guideline (AP-42) and even the surface material silt content set by the NMED's own internal guidance. Additionally, the application was deficient in my opinion because it did not take into account emissions from the water trucks that would be necessary to deliver water to the facility to implement the wet dust suppression system, the sole means to control emissions on Process Units 2 through 6. Based on these deficiencies, it was my opinion that the applicant had not met its burden to prove that the project qualified for an NSR minor source construction permit, particularly with respect to the national ambient air quality standards ("NAAQS") for particulate matter ("PM") on a 24-hour basis and the 24-hour PM standards for the Class II PSD increment.

Q. PLEASE EXPLAIN WHY YOU ARE OF THE OPINION THAT THE APPLICANT DID NOT ESTABLISH THAT IT WAS ENTITLED TO MINOR SOURCE STATUS

FOR THE PM_{10} 24-HOUR NAAQS AND THE 24-HOUR PAST CLASS II INCREMENT.

A. Because even without using the correct emission factors for industrial haul roads within a concrete batch facility and failing to use representative meteorological data and to account for emissions from an unknown number of water trucks, the application acknowledged that the plant would already consume 99.3% of allowable PSD increment and 83.1% of the allowable standard for NAAQS. Accordingly, at that time, even though we did not have the ability to verify the exceedance of the standards by using the correct inputs to the model, it was clear to me that the application significantly understated the emissions from the proposed batch plant.

Q. **BASED ON YOUR TESTIMONY, ARE YOU AWARE THAT THE HEARING OFFICER EXPRESSLY FOUND THAT ROPER FAILED TO MEET ITS BURDEN TO ESTABLISH THAT THE PROPOSED PLANT WOULD ACHIEVE THE EMISSION STANDARDS REQUIRED TO OBTAIN A MINOR SOURCE PERMIT FOR THE APPLICABLE NAAQS AND PSD INCREMENT LEVELS.**

A. Yes, I am. The Hearing Officer acknowledged that Roper had used unrepresentative meteorological data and, more importantly, had used a silt-loading factor for a public's paved road, instead of the factor required for paved haul roads within a concrete batch industrial facility, which resulted in understating emissions for the haul road by a factor of 15.

Q. **WE'LL DISCUSS THESE PARTICULAR ELEMENTS IN MORE DETAIL LATER IN YOUR TESTIMONY, BUT, FOR THE TIME BEING, CAN YOU STATE WHETHER YOU HAVE HAD AN OPPORTUNITY, SINCE THE DATE**

OF THE HEARING OFFICER'S REPORT ON MAY 6, 2022, TO DETERMINE WHETHER THE USE OF THE CORRECT EMISSION FACTORS WOULD RESULT IN EMISSIONS THAT EXCEED THE APPLICABLE NAAQS AND PSD INCREMENT LEVELS?

A. Yes, I have. We have been able to re-run the model used by Mr. Wade, but only with the Holloman Air Force data, which we do not believe is representative. Even using that meteorological data, however, inputting the correct haul roads silt loading factor for concrete batch plants results in an emission exceedance of the applicable NAAQS and PSD increment levels. Consequently, although it is not our burden to establish this conclusion, Roper's proposed facility does not qualify for a minor source construction permit.

Q. BEFORE WE DISCUSS YOUR MODELING RESULTS, PLEASE EXPLAIN WHAT A SILT LOADING FACTOR IS AND ITS RELATIONSHIP TO HAUL ROADS.

A. The silt loading refers to the mass of silt-size material per unit area of the travel surface, which is expressed as grams per meter squared (ug/m2). The U.S. EPA has calculated specific silt loading factors for particular haul roads associated with industrial facilities, including concrete batch plants.

Q. WHERE ARE THOSE EMISSION FACTORS FOUND?

A. They are found in the U.S. EPA Guidance, AP-42. Table 13.2.1 – 3 expresses the typical silt content and loading values for paved roads at industrial facilities.

Q. LET ME DIRECT YOUR ATTENTION TO ALTO EXHIBIT 3. COULD YOU PLEASE IDENTIFY THIS?

A. Yes, this is the AP-43 Guidance, specifically Table 13.2.1-3, which includes the silt loading values and emission rates for paved roads at a variety of industrial facilities, including copper smelting facilities, iron and steel production, asphalt batching, sand and gravel processing, municipal solid waste landfill, quarry, and, particular to this case, concrete batching plants.

Q. SO THERE IS A PARTICULAR SILT LOADING EMISSION FACTOR USED FOR CONCRETE BATCHING PLANTS BY THE U.S. EPA?

A. Yes there is. It is expressed as 12 grams ug/m2.

Q. IS IT ACCEPTABLE PRACTICE IN THE AIR DISPERSION MODELING FIELD TO USE THE SPECIFIC FACTORS RECOMMENDED BY U.S. EPA AND AP-42?

A. Yes, it is. Both Mr. Wade and I testified at the hearing that the U.S. EPA AP-42 Guidance is the accepted document used to determine the appropriate calculations and emissions for specific sources. The Hearing Officer also made this finding.

Q. DO YOU RECALL WHETHER MR. WADE AGREED THAT SILT LOADING FACTOR FOR CONCRETE BATCHING PLANTS, AS SET FORTH IN AP-42, SHOULD BE USED IN THIS INSTANCE?

A. My recollection of Mr. Wade's testimony was that, for some unexplained reason, he was not familiar with the silt loading factor specific to concrete batching plants. My recollection also is that the NMED witnesses likewise were unfamiliar with the use of that loading factor.

Q. IN THE AIR DISPERSION MODELING CONDUCTED FOR THIS PARTICULAR FACILITY, WHAT LOADING FACTOR DID MR. WADE USE FOR THE HAUL ROADS?

A. Mr. Wade used a loading value applicable to paved public roads, as opposed to concrete batching plants, which calculates an emission rate as only 0.6 grams ug/m2. The proper loading factor applicable to this facility, which is a concrete batching plant, is 12 grams ug/m2. This is clearly set forth in ALTO Exhibit 3.

Q. WHAT WAS THE CONSEQUENCE OF THE USE OF A REDUCED LOADING VALUE TO CALCULATE EMISSIONS BASED ON A PUBLIC PAVED ROAD, INSTEAD OF A CONCRETE BATCHING PLANT?

A. The result was that Mr. Wade understated the emissions from the haul roads by a factor of 15.

Q. HAVE YOU HAD THE OPPORTUNITY TO CONFIRM THE USE OF THE LOADING VALUES FOR PAVED ROADS AT OTHER CONCRETE BATCHING FACILITIES?

A. Yes, we have. In reviewing a number of applications in the state of Texas, we determined that the concrete batching facilities routinely use the specific loading factor set forth in U.S. EPA AP-42, which is 12 grams ug/m2.

Q. AND DID YOU HAVE THE OPPORTUNITY TO RE-RUN THE MODEL USED BY MR. WADE TO CALCULATE THE CORRECT EMISSIONS WHEN USING THE APPROPRIATE HAUL ROAD EMISSION FACTOR?

A. Yes I did.

Q. PLEASE EXPLAIN HOW YOU RE-RAN THE MODEL?

A. We received all of the data inputs provided by Mr. Wade and replicated them exactly, with the exception of the haul road emissions. As I testified previously, the data included the physical configuration of the plant as set forth in the application, and not the configuration that Roper's noise consultant changed during the court case, to try to minimize excessive noise from the plant. The only input we changed was to use the correct haul road emission factor, which we raised from 0.6 grams ug/m3 to 12 grams ug/m2. This resulted in concentrations of PM10 for a 24-hour period of 77.58 ug/m3, in excess of the PSD increment and in excess of the NAAQS. These results indicate that the proposed plant does not qualify for a minor source construction permit.

Q. PLEASE IDENTIFY ALTO EXHIBIT 4 AND ALTO EXHIBIT 5.

A. These are isopleths showing the results of the air dispersion modeling. ALTO Exhibit 4 is the isopleth depicting the 24-hr PM10 NAAQS using the lower haul road silt loading factor of 0.6 grams ug/m2 applicable to paved public roads. ALTO Exhibit 5 is the isopleth depicting 24-hr CLASS II PSD increment using the lower haul road silt loading factor of 0.6 grams ug/m2 applicable to paved public roads. ALTO Exhibit 6 shows the emissions concentrations for 24-hr NAAQS using the correct silt loading factor of 12 grams ug/m2 for paved roads with a concrete batching facility. ALTO Exhibit 7 shows the emissions concentrations for CLASS II PSD increment using the correct silt loading factor of 12 grams ug/m2 for paved roads with a concrete batching facility. As you can see on ALTO Exhibits 6 and 7, the emissions on the south side of the facility exceed the 24-hr Class II PSD increments for PM10 and consume 258.7% of the standard and the NAAQS consume 114.9% of the standard. This is summarized on ALTO Exhibit 8, attached.

Q. THE ANSWER FILED BY THE NEW MEXICO ENVIRONMENT DEPARTMENT STATES THAT THE USE OF THE EMISSION FACTOR FOR PAVED PUBLIC ROADS WAS APPROPRIATE BECAUSE ROPER ANTICIPATED FEWER THAN 500 TRIPS PER DAY IN ITS MODELING. IS

THAT A JUSTIFIABLE REASON NOT TO USE THE SPECIFIC SILT LOADING EMISSION FACTOR FOR CONCRETE BATCHING PLANTS SET FORTH IN AP-42?

A. No, it is not. The number of anticipated trips is irrelevant to using the correct emission factor. The number of trips will influence the total daily emissions, but will not have any influence on the appropriate silt loading factor to be used on a per trip basis. There is no justification for the NMED's statement in this regard.

Q. DO YOU RECALL THE TESTIMONY OF THE NMED WITNESSES CONCERNING THE USE OF THE AP-42 EMISSION FACTOR.

A. My recollection is that Ms. Romero, who is responsible for reviewing all applicable regulations, presented no testimony about the correct emission factor for the concrete batch plant haul roads as set forth in AP-42. The Hearing Officer specifically noted this omission in paragraph 96 of his findings of fact.

Q. DOES THE NMED ALSO HAVE GUIDANCE TO BE USED IN THE CALCULATION OF HAUL ROAD EMISSIONS?

A. Yes, NMED does have guidance, although it is not specific to paved haul roads within a concrete batching facility, as set forth in AP-42. That guidance generally calls for haul road emissions to be calculated using the methodology set forth in EPA's AP-42 Chapter 13.2.2 for unpaved haul roads. NMED's guidance also specifies the use of a surface material silt content default value of 4.8%, and the Department accepted control efficiencies for various haul road control measures.

Q. IS THIS EMISSION FACTOR LESS THAN THE AP-42 EMISSION FACTOR WHICH IS SPECIFIC FOR CONCRETE BATCHING PLANTS?

A. Yes it is. This is because the NMED guidance does not specifically refer to concrete batching facilities, like the more refined estimates contained in AP-42.

Q. DID THE APPLICATION EVEN USE THE NMED EMISSION GUIDANCE WHEN CALCULATING THE LOADING FACTOR FOR HAUL ROADS WITHIN THE CONCRETE BATCH PLANT?

A. No, it did not. The NMED apparently did not even use its own guidance when reviewing this particular application, but allowed Roper to use an emission rate applicable to paved public roads of 0.6 ug/m^2.

Q. DID YOU ALSO RUN THE MODEL USED BY MR. WADE BY USING THE NMED GUIDANCE INSTEAD OF THE SPECIFIC LOADING FACTOR APPLICABLE TO CONCRETE BATCH PLANTS, AS SET FORTH IN AP-42?

A. Yes, I did that, even though it would be more appropriate in this instance to use the specific silt loading factor set forth in AP-42 for concrete batching facilities.

Q. AND WHAT WERE THE RESULTS OF THAT MODELING RUN?

A. Even using the reduced emission rates generally applicable to paved roads, as set forth in NMED guidance, the results still exceeded the allowable Class II PSD increment standard for PM10. Using the NMED guidance for haul roads, the concentrations of PM10 were 101% of the allowable PSD increment.

Q. PLEASE IDENTIFY ALTO EXHIBIT 9.

A. This is the isopleth showing emission concentrations using the NMED guidance for haul roads. The isopleth shows the exceedance of the PSD increment on the northern side of the facility.

Q. DO YOU KNOW OF ANY BASIS FOR THE NMED TO DEPART FROM ITS OWN GUIDANCE IN DETERMINING HAUL ROADS EMISSIONS, OR NOT USING THE SPECIFIC STANDARDS SET FORTH IN AP-42 FOR HAUL ROADS WITHIN CONCRETE BATCH PLANTS?

A. No, I do not. That was never explained by Roper or by any NMED witness at the hearing. Based on my experience, it is not justifiable to depart from those common emission standards for this type of facility.

Q. YOU STATED THAT USING HOLLOMAN AIR FORCE BASE METEOROLOGICAL DATA IS NOT REPRESENTATIVE OF CONDITIONS AT THE SITE. PUTTING ASIDE FOR THE MOMENT THAT THE ALLOWABLE PSD INCREMENTS AND NAAQS STANDARDS HAVE BEEN EXCEEDED WHEN APPROPRIATE HAUL ROAD SILT LOADING EMISSION FACTORS ARE USED, WHY IS IT ALSO TRUE THAT THE USE OF THE HOLLOMAN AIR FORCE BASE DATA IS NOT REPRESENTATIVE?

A. The meteorological data and topographical conditions used by Mr. Wade are not adequately representative of the dispersion conditions at the location of the proposed site. In this regard, please note the comparison of the windrose for each location and the topographical conditions. *See* ALTO Exhibit 10 and ALTO Exhibit 11. The Ruidoso Regional Airport, located only 8.5 miles from the proposed Alto concrete batch plant, does not match or even come close to depicting the wind directions recorded at Holloman Air Force Base. As a result, the modeling conclusions are not a reflection of the dispersion conditions at the proposed concrete batch plant site.

Q. ARE THE SURFACE CHARACTERISTICS AT THE HOLLOMAN AIR FORCE BASE SIMILAR TO THE CHARACTERISTICS AT THE PROPOSED CONCRETE BATCH PLAN LOCATION?

A. No, they are not. The Holloman Air Force Base meteorological station is located at an elevation of 1,248 meters above mean sea level, approximately 958 meters lower than the proposed concrete batch plant site elevation of 2,206 meters. As is evident from the comparison of the topographical maps, the surface characteristics are markedly different. Section 16 of Roper's application indicates that a surface characteristics analysis was conducted at the location of the Holloman Air Force Base meteorological station, but no such analysis was performed for the location of the proposed concrete batch plant. The land use conditions at both locations are markedly different, and the surface characteristics at both locations are also significantly different. As a result, use of the Air Force meteorological data is not adequately representative to obtain a reliable modeling for the proposed project's conditions.

Q. DO THE AIR DISPERSION MODELING REQUIREMENTS MANDATE THE USE OF REPRESENTATIVE METEOROLOGICAL DATA?

A. Yes. The U.S. EPA requires that the meteorological data inputs to AERMET be "adequately representative." 40 C.F.R. 51, Appx. W, 8.4.1.b, attached hereto as ALTO Exhibit 12, states:

> The meteorological data used as input into a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual

> parameters selected to characterize the transport and disposal conditions in the area of concern.

Here, Roper failed to follow the U.S. EPA's guidance in the selection of meteorological data sets for air quality monitoring. As indicated in the U.S. EPA's guidance, the representativeness of the measured data is dependent on a variety of factors, including the proximity of the meteorological monitoring site to the area under consideration, the complexity of the terrain, the exposure of the meteorological monitoring site, and the period of time during which data are collected.

Appendix W, Section 8.1(B)(2)(i) of 40 C.F.R. 51, attached hereto as ALTO Exhibit 13, succinctly summarizes this requirement to use representative data:

> Data used as input to AERMET should possess an adequate degree of representativeness to ensure that the wind temperature and turbulence profiles derived by AERMOD are both laterally and vertically representative of source impact area.

The modeling study for the Alto concrete batch plant does not meet this standard. Accordingly, the modeling is unreliable because it is not representative of the dispersion conditions at the proposed Alto concrete batch plant site and does not capture the dispersion and transport conditions expected to occur in the Alto, New Mexico area.

Q. I WOULD LIKE TO RETURN TO YOUR TESTIMONY CONCERNING THE APPLICATION'S IMPROPER USE OF A SILT LOADING FACTOR TO CALCULATE EMISSIONS FROM THE HAUL ROADS. DID YOU FIND ANY OTHER DEFICIENCIES BASED ON EMISSIONS FROM THE HAUL ROADS.

A. Yes. In addition to using an incorrect emission factor for the haul roads, the application is unreliable because it does not disclose how many trips water trucks will be made. We also do not know the source of the water to be transported on-site, nor do we know the quantity of water to be used to effectuate the emission controls.

Q. DOES THE APPLICATION IDENTIFY THE SPECIFICATIONS FOR WATER TRUCKS?

A. No, it does not. It is notable that on page 7, section 6 of the application, the applicant lists all of the specifications for fly-ash trucks, cement trucks, sand trucks and concrete trucks. As a result of these different specifications, each truck has different emissions. Moreover, the weight of the vehicle and whether it is a 4-wheel or 8-wheel would cause the emissions to vary considerably. We do not know the type or number of water truck the applicant proposes to use, nor do we know the weight or other specifications. None of that information is provided in the application.

Q. BUT MR. WADE STATES THAT THE TRUCK TRAFFIC WILL BE LIMITED TO 305 ROUND TRIPS PER DAY, REGARDLESS OF WHETHER THOSE TRIPS ARE TAKEN BY CEMENT TRUCKS, SAND TRUCKS, CONCRETE TRUCKS OR WATER TRUCKS. DOES THAT ANSWER YOUR CONCERNS?

A. No, it does not. It is not acceptable practice to simply state that 305 truck trips will be the limit and then conclude that emissions can be calculated on that basis. Stated another way, emissions must be calculated based on the particular type of truck to be used, together with the specifications; otherwise, the emission estimates are not reliable.

Q. DR. ITUARTE-VILLARREAL, COULD YOU SUMMARIZE THE CONCLUSIONS YOU HAVE REACHED IN THIS CASE?

A. Yes. The application is deficient in a number of respects. Using the correct silt loading factor for paved haul roads within a concrete batching facility – as required by the U.S. EPA and even by the NMED's own internal guidance – results in a conclusion that this facility will exceed applicable NAAQS and PSD increments. Additionally, the air dispersion modeling is not reliable because Roper has elected to use Holloman Air Force Base data, which is contrary to required modeling protocol and the requirement to use representative meteorological and terrain data. The use of Holloman data does not take into account the high wind speeds and effects on the sand and aggregate piles which routinely occur in the springtime blowing from the southwest and from the northeast in the wintertime. Finally, the application fails to even consider the type and number of water trucks, together with associated emissions, which will be necessary to achieve the emission controls and the emission limits proposed by use of a wet dust suppression system to maintain sufficient moisture in the aggregate piles. Based on these conclusions, Roper has failed to establish that the facility will meet applicable NAAQS and PSD increment levels. The Hearing Officer properly recommended denial of the proposed permit.

CARLOS ITUARTE VILLARREAL, PH.D., AIR QUALITY AND MODELING SPECIALIST

Mr. Ituarte-Villarreal is an environmental specialist with significant experience in the areas of atmospheric dispersion modeling, fate and transport, emissions inventory, air quality permitting, and environmental compliance and engineering. Mr. Ituarte-Villarreal is an engineer with knowledge in electric generation in both renewable and tradition energy sectors, specialized in wind farm siting and sizing. Carlos holds a PhD in Environmental Science and Engineering and a MS in Industrial Engineering and has more than 10 years of experience in electric utility environmental and regulatory compliance.

YEARS OF EXPERIENCE

10

EXPERTISE

Engineering and Modeling

Emissions Inventory

Noise Impact Assessment

Wind Turbine Siting

Environmental Permitting

Environmental Impact Assessment

EDUCATION

Ph.D., Environmental Science & Engineering, Energy Science & Engineering; The University of Texas at El Paso; El Paso, Texas; 2015

M.S., Industrial Engineering; The University of Texas at El Paso; El Paso, Texas; 2010

B.S., Industrial Engineering; Instituto Tecnologico de Parral; Mexico; 2008

TRAININGS

Lean Manufacturing, TMAC

AERMOD Air Dispersion Modeling, Lakes Environmental

MEMBERSHIPS

Institute of Industrial Engineers (IIE)

American Wind Energy Association (AWEA)

Alpha Pi Mu honor society for Industrial and Systems Engineering

AWARDS

UTEP M.S.I.E. - Outstanding Student Award

LENGUAGES

Spanish– native language

English–high proficiency

RELATED WORK EXPERIENCE

SWCA Environmental Consultants (Aug 2013 – Present)
Air Quality and Modeling Specialist/Engineer
Provide permitting, modeling, engineering and compliance services to electric generation, industrial and oil & gas sectors.

El Paso Electric Company (Jan 2012 – August 2013)
Air Quality Engineer - Intern
Minimized regulatory compliance risk by analyzing, validating, and reporting CEMS emissions data. Maintained, developed, and improved environmental compliance tools, monitoring, sampling, and testing programs to demonstrate compliance with regulatory and permit limits.

EPA-UTEP Border Air Quality Internship Program (Jan 2012 – Dec 2012)
Intern
One year internship and education program to improve community air quality and public health and promote environmental justice.

The University of Texas at El Paso (May 2011 – Aug 2013)
Teaching Assistant
Collaborated on curriculum and exam development, met with students upon request, and graded all written work, including final exam papers.

The University of Texas at El Paso (Jan 2011 – May 2011)
Research Associate
Developed bio-inspired evolutionary algorithms for solving the renewable power integration problem.

The University of Texas at El Paso (Jun 2009 – Dec 2010)
Research Assistant
Conducted literature reviews, collection and analysis of data, preparation of materials for submission to granting agencies.

TEACHING EXPERIENCE

The University of Texas at El Paso (May 2011 – Aug 2013)
Teaching Assistant – to Professor Jose Espiritu
Production and Inventory Control
Reliability and Maintainability
Statistical Quality Control

ALTO
EXHIBIT 2

PUBLICATIONS

Ph.D. Dissertation

Ituarte-Villarreal, Carlos M, "Wind farm optimization using evolutionary algorithms" (2015). ETD Collection for University of Texas, El Paso. AAI10000762.

Selected Publications

Espiritu, Jose F. and Carlos M. Ituarte-Villarreal. "Wind Farm Layout Optimization Using a Viral Systems Algorithm." IJAEC vol.4, no.4 (2013), pp.27-40.

Lopez, Nicolas and Carlos M. Ituarte-Villarreal. "Evolutionary Agent Based Microstorage Management for a Hybrid Power System." Complex Adaptive Systems (2012), pp. 350-355

Ituarte-Villarreal, Carlos M et al. "A viral system optimization algorithm to solve the wind farm layout problem considering reliability." IIE Annual Conference. Proceedings, 2012.

Ituarte-Villarreal, Carlos M et al. "Using the Monkey Algorithm for hybrid power systems optimization". Procedia Computer Science 12 (2012), pp.344-349

Ituarte-Villarreal, Carlos M et al. "Optimization of wind turbine placement using a viral based optimization algorithm". Procedia Computer Science 6 (2011), pp. 469-474

Ituarte-Villarreal, Carlos M et al. "GALORA: A New Genetic Algorithm for the Level of Repair Analysis Problem" IIE Annual Conference. Proceedings, 1 (2011).

SELECTED PRESENTATIONS AND ABSTRACTS

Carlos M. Ituarte-Villarreal. Wind Farm Design Optimization: A Viral Approach. AWEA Wind Resource & Project Energy Assessment Seminar New Orleans, LA. September 16-17, 2015

Carlos M. Ituarte-Villarreal and Jose F. Espiritu. Considering Wind-Wake and Reliability as Multi-State System. Industrial Engineering Research Conference. San Juan, Puerto Rico. May 18-22, 2013

Carlos M. Ituarte-Villarreal, Nicolas Lopez, Heidi A. Taboada and Jose F. Espiritu. (2013). Wind Farm Layout Optimization Considering Multiple-Objectives. Industrial Engineering Research Conference. San Juan, Puerto Rico. May 18-22, 2013.

Nicolas Lopez, Carlos M. Ituarte-Villarreal and Jose F. Espiritu. Evolutionary Agent Based Microstorage Management for a Hybrid Power System. Complex Adaptive Systems Conference. Washington D.C. November 14-16, 2012

Carlos M. Ituarte-Villarreal, Nicolas Lopez and Jose F. Espiritu. (2012). Using the Monkey Algorithm for Hybrid Power Systems Optimization. Complex Adaptive Systems Conference. Washington D.C. November 14-16, 2012

Carlos M. Ituarte-Villarreal and Jose F. Espiritu. A Viral Systems Algorithm Implementation to Optimize the Layout of a Wind Farm Considering Reliability. In Proceedings of the Industrial Engineering Research Conference. Orlando, Florida. May 19-23, 2012

Carlos Ituarte-Villarreal, Nicolas Lopez and Jose F. Espiritu. Hybrid Power Systems Optimization using the Monkey Algorithm. Annual Industrial Engineering Research Conference and Expo. Orlando, Florida. May 19-23, 2012.

Carlos Ituarte-Villarreal, Claudia S. Valles and Jose F. Espiritu. Optimal Sitting of Wind Turbines Using Viral Systems Algorithm. In Proceedings of the 2nd Southwest Energy Science and Engineering Symposium. El Paso, TX. March 24, 2012.

Carlos M. Ituarte-Villarreal and Jose F. Espiritu. Optimization of wind turbine placement using a viral based optimization algorithm. In Proceedings of the Complex Adaptive Systems Conference. Chicago, Illinois. October 31- November 2, 2011

Carlos M. Ituarte-Villarreal and Jose F. Espiritu. A Decision Support System for the Level of Repair Analysis Problem. In Proceedings of the 41st International Conference on Computers & Industrial Engineering (CIE 41). Los Angeles, California. October 23-26, 2011

Carlos M. Ituarte-Villarreal and Jose F. Espiritu. Wind turbine placement in a wind farm using a viral based optimization algorithm. In Proceedings of the 41st International Conference on Computers & Industrial Engineering (CIE 41). Los Angeles, California. October 23-26, 2011

Carlos Ituarte-Villarreal and Jose F. Espiritu. A Solution Method for the Constrained Level of Repair Analysis Problem. Institute for Operations Research and Management Science Conference, Austin, Texas. November 2010

Carlos Ituarte-Villarreal, Jose F. Espiritu, Heidi A. Taboada & Oswaldo Aguirre. Level of Repair Analysis Modeling Using Genetic Algorithms. Institute for Operations Research and Management Science Conference, San Diego, California. October 2009.

RELATED PROJECT EXPERIENCE

Air Quality Services; El Paso, El Paso County, Texas. SWCA provided in-house Air Quality compliance services for four power generation facilities in El Paso County, Texas and Dona Ana County, New Mexico. *Role: Environmental Specialist. Provided specific services as they relate to the day-to-day monitoring, record keeping and reporting. Prepared State emissions inventories and GHG emissions inventories for CY2012, CY2013, CY2014 and CY2015. Provided additional support for permit compliance matters and the review and analysis of permit conditions.*

Mitchell County Power Facility Environmental Permitting; Mitchell County, Texas. SWCA conducted natural and cultural resource surveys of approximately 300 acres in Mitchell County, Texas, for compliance in preparation for a proposed power plant facility. *Role: Environmental Specialist. Assisted with screening level modeling and later with the preparation of an updated Air Quality Analysis to demonstrate compliance with all applicable ambient air quality standards.*

Air Quality Permitting; Cherokee County, Texas. SWCA provide air permitting services for a number of projects in Cherokee County, Texas including the preparation of a PSD permit application for a combined-cycle electric generating station. *Role: Air Quality and Modeling Specialist. Lead the preparation of an air dispersion modeling analysis and modeling result analysis in support of the PSD permit application to demonstrate compliance with applicable state and federal standards.*

Air Permitting Assistance; El Paso, El Paso County, Texas. SWCA prepared an application to obtain a Texas Commission of Environmental Quality Air Quality Standard Permit for pollution control projects in El Paso County, Texas. *Role: Air Quality Specialist. Responsible for writing the methodology section for the duct burner replacement application calculations. Performed a detailed emissions calculation for the existing and replacement duct burner system.*

Williamson County Power Project-Environmental Permitting; Williamson County, Texas. SWCA prepared a PSD permit for a new natural gas-fired power plant. *Role: Air Quality and Modeling Specialist. Assisted with the preparation of Emission calculations and report documentation. Provided modeling services for an initial screening simulation of a set of operating scenarios, and the subsequent refined model to consider terrain elevations and meteorological data.*

Environmental Planning and Compliance Service; Multiple Counties, CA. SWCA provided planning and permitting support for a dynamic reactive power support facility and associated 230-kilovolt (kV) transmission line near Alpine, CA. Services included routing and siting support; alternatives analysis; cultural, biological, and paleontological surveys; preparation of a Proponent's Environmental Assessment (PEA); and discretionary environmental permitting support. *Role: Environmental Specialist. Served as a noise and air quality analysist preparing the noise and air quality impact analysis sections using sophisticated sound and air dispersion modeling techniques along with software-based modeling programs.*

Sand Plant Expansion Air Permitting; Winkler County, Texas. SWCA prepared a TCEQ new source review permit amendment application to authorize a significant expansion to a sand washing, drying, sizing, and storage facility in Winkler County, Texas. The project included air dispersion modeling for five criteria pollutants and one toxic air pollutant. SWCA prepared a complete set of emission calculations that included over 100 emission points. *Role: Air Quality and Modeling Specialist. Assisted in the preparation of an air dispersion modeling analysis in support of the permit amendment application.*

Pipeline Expansion Project Environmental Services; Cochise County, Arizona. SWCA prepared an Air Quality and Noise Resource Report (Resource Report 9) addressing the air quality and noise resources associated with this proposed Expansion Project. *Role: Environmental Specialist. Responsible for the preparation of the baseline noise analysis and of the noise impact assessment modeling. Provided assistance in the preparation of an air dispersion impact analysis in order to demonstrate that this project will not cause an exceedance of the any National Ambient Air Quality Standards.*

13.2.1 Paved Roads

13.2.1.1 General

Particulate emissions occur whenever vehicles travel over a paved surface such as a road or parking lot. Particulate emissions from paved roads are due to direct emissions from vehicles in the form of exhaust, brake wear and tire wear emissions and resuspension of loose material on the road surface. In general terms, resuspended particulate emissions from paved roads originate from, and result in the depletion of, the loose material present on the surface (i.e., the surface loading). In turn, that surface loading is continuously replenished by other sources. At industrial sites, surface loading is replenished by spillage of material and trackout from unpaved roads and staging areas. Figure 13.2.1-1 illustrates several transfer processes occurring on public streets.

Various field studies have found that public streets and highways, as well as roadways at industrial facilities, can be major sources of the atmospheric particulate matter within an area.[1-9] Of particular interest in many parts of the United States are the increased levels of emissions from public paved roads when the equilibrium between deposition and removal processes is upset. This situation can occur for various reasons, including application of granular materials for snow and ice control, mud/dirt carryout from construction activities in the area, and deposition from wind and/or water erosion of surrounding unstabilized areas. In the absence of continuous addition of fresh material (through localized track out or application of antiskid material), paved road surface loading should reach an equilibrium value in which the amount of material resuspended matches the amount replenished. The equilibrium surface loading value depends upon numerous factors. It is believed that the most important factors are: mean speed of vehicles traveling the road; the average daily traffic (ADT); the number of lanes and ADT per lane; the fraction of heavy vehicles (buses and trucks); and the presence/absence of curbs, storm sewers and parking lanes.[10]

The particulate emission factors presented in a previous version of this section of AP-42, dated October 2002, implicitly included the emissions from vehicles in the form of exhaust, brake wear, and tire wear as well as resuspended road surface material. EPA included these sources in the emission factor equation for paved roads since the field testing data used to develop the equation included both the direct emissions from vehicles and emissions from resuspension of road dust.

This version of the paved road emission factor equation only estimates particulate emissions from resuspended road surface material[28]. The particulate emissions from vehicle exhaust, brake wear, and tire wear are now estimated separately using EPA's MOVES[29] model. This approach eliminates the possibility of double counting emissions. Double counting results when employing the previous version of the emission factor equation in this section and MOVES to estimate particulate emissions from vehicle traffic on paved roads. It also incorporates the decrease in exhaust emissions that has occurred since the paved road emission factor equation was developed. Earlier versions of the paved road emission factor equation includes estimates of emissions from exhaust, brake wear, and tire wear based on emission rates for vehicles in the 1980 calendar year fleet. The amount of PM released from vehicle exhaust has decreased since 1980 due to lower new vehicle emission standards and changes in fuel characteristics.

ALTO
EXHIBIT 3

Table 13.2.1-3 (Metric And English Units). TYPICAL SILT CONTENT AND LOADING VALUES FOR PAVED ROADS AT INDUSTRIAL FACILITIES [a]

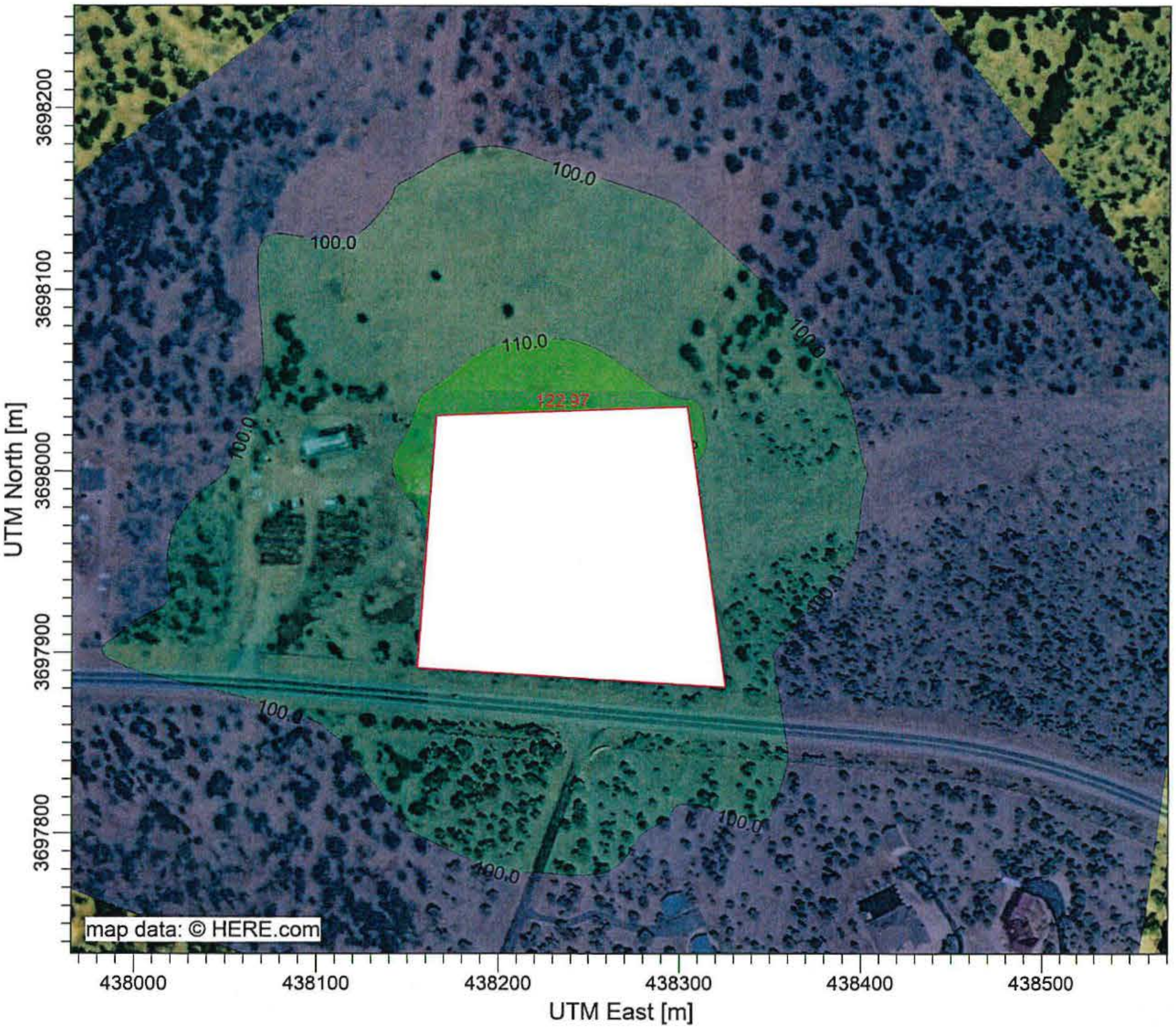
Industry	No. of Sites	No. Of Samples	Silt Content (%)		No. of Travel Lanes	Total Loading x 10^{-3}			Silt Loading (g/m^2)	
			Range	Mean		Range	Mean	Units[b]	Range	Mean
Copper smelting	1	3	15.4-21.7	19.0	2	12.9 - 19.5	15.9	kg/km	188-400	292
						45.8 - 69.2	55.4	lb/mi		
Iron and steel production	9	48	1.1-35.7	12.5	2	0.006 - 4.77	0.495	kg/km	0.09-79	9.7
						0.020 -16.9	1.75	lb/mi		
Asphalt batching	1	3	2.6 - 4.6	3.3	1	12.1 - 18.0	14.9	kg/km	76-193	120
						43.0 - 64.0	52.8	lb/mi		
Concrete batching	1	3	5.2 - 6.0	5.5	2	1.4 - 1.8	1.7	kg/km	11-12	12
						5.0 - 6.4	5.9	lb/mi		
Sand and gravel processing	1	3	6.4 - 7.9	7.1	1	2.8 - 5.5	3.8	kg/km	53-95	70
						9.9 - 19.4	13.3	lb/mi		
Municipal solid waste landfill	2	7		-	2	-			1.1-32.0	7.4
Quarry	1	6		-	2	-			2.4-14	8.2
Corn wet mills	3	15		-	2	-			0.05 – 2.9	1.1

[a] References 1-2,5-6,11-13. Values represent samples collected from *industrial* roads. Public road silt loading values are presented in Table-13.2.1-2. Dashes indicate information not available.[b] Multiply entries by 1000 to obtain stated units; kilograms per kilometer (kg/km) and pounds per mile (lb/mi).

Alto CEP 000019

PROJECT TITLE:

24-hr PM10
NAAQS - Revised Permit Application

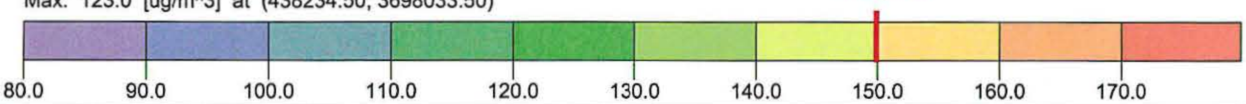


PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: CIA

Max: 123.0 [ug/m^3] at (438234.50, 3698033.50)

Value of Standard
150 ug/m^3

ug/m^3



COMMENTS:	SOURCES:	COMPANY NAME:	
	110	**Roper Construction**	
	RECEPTORS: **156**	MODELER: **Carlos Ituarte-Villarreal**	SWCA ENVIRONMENTAL CONSULTANTS
	OUTPUT TYPE: **Concentration**	SCALE: 1:3,802 0 — 0.1 km	
	MAX: **123.0 ug/m^3**	DATE: **9/21/2022**	PROJECT NO.:

AERMOD View - Lakes Environmental Software

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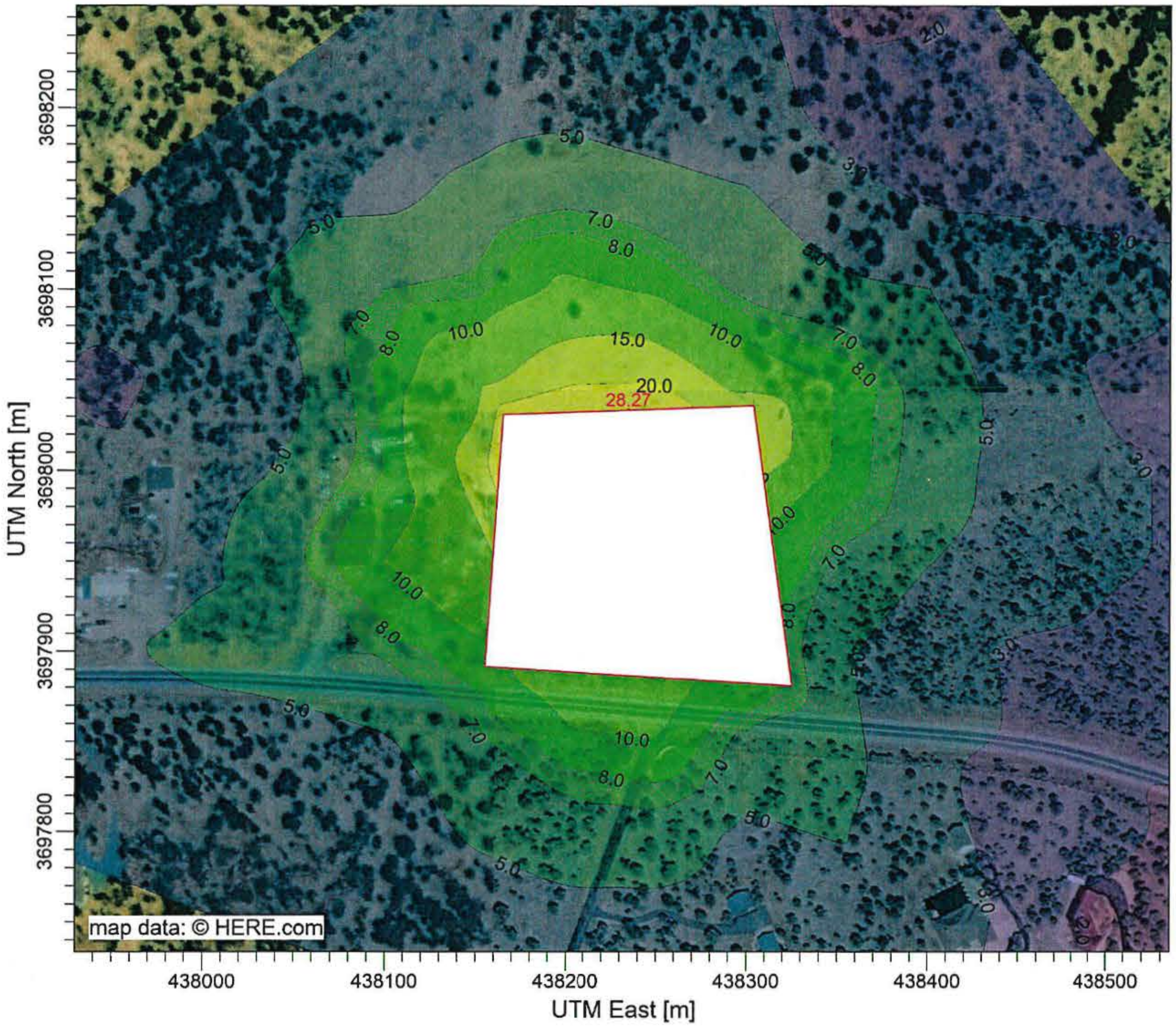
ALTO
EXHIBIT 4

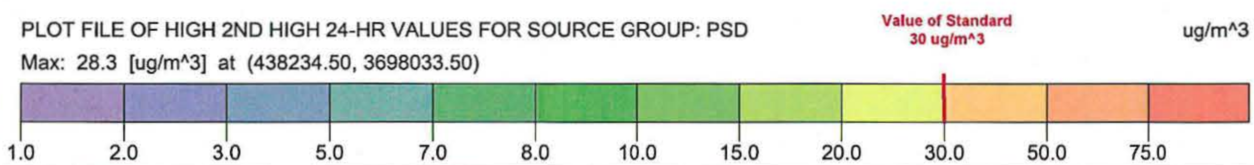
PROJECT TITLE:

24-hr PM10
Class II Increment - Revised Permit Application



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: PSD

Max: 28.3 [ug/m^3] at (438234.50, 3698033.50)



COMMENTS:	SOURCES:	COMPANY NAME:	
	110	Roper Construction	
	RECEPTORS: **156**	MODELER: **Carlos Ituarte-Villarreal**	SWCA ENVIRONMENTAL CONSULTANTS
	OUTPUT TYPE: **Concentration**	SCALE: 1:3,802 (0 — 0.1 km)	
	MAX: **28.3 ug/m^3**	DATE: **9/21/2022**	PROJECT NO.:

AERMOD View - Lakes Environmental Software

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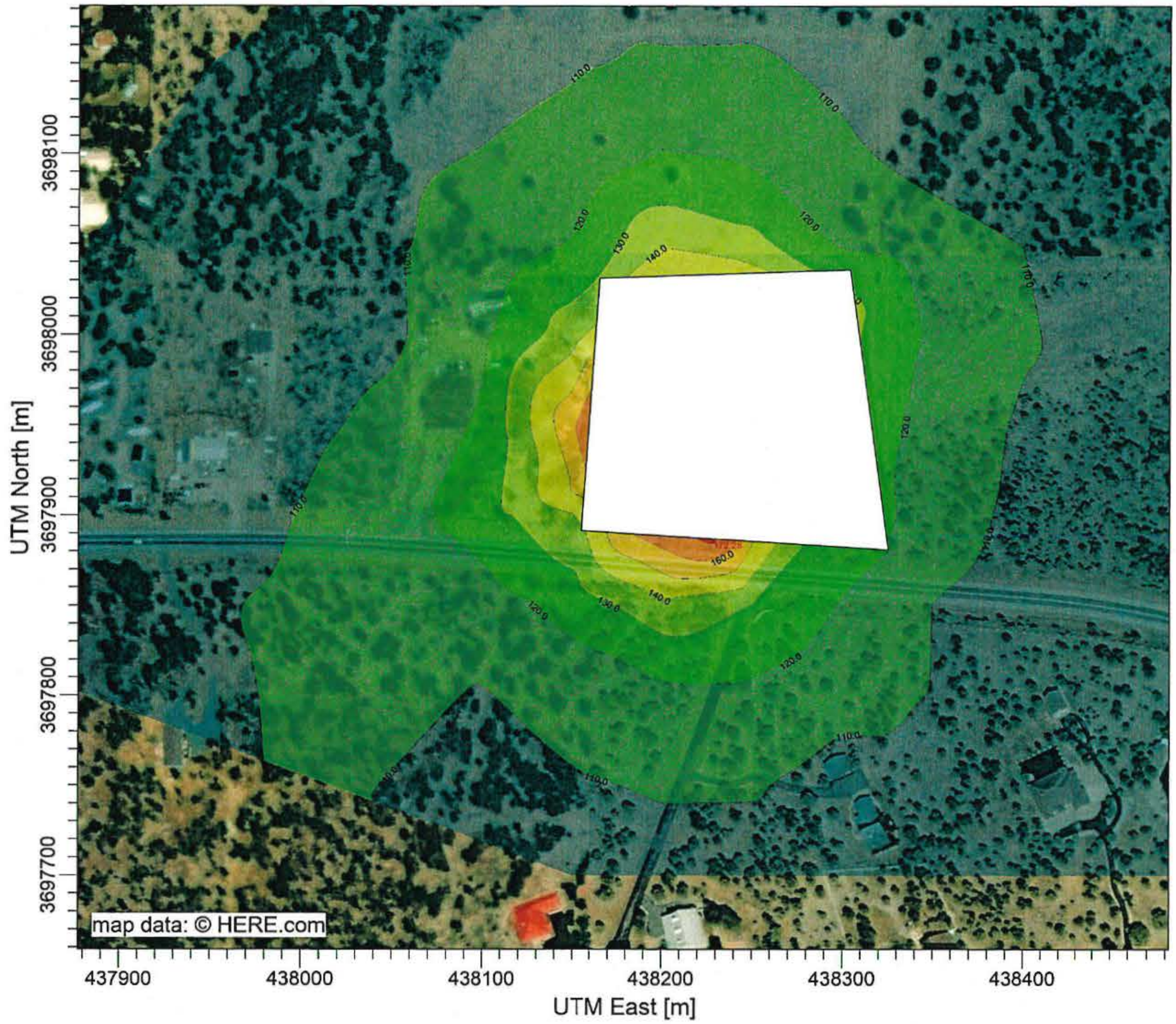
ALTO
EXHIBIT 5

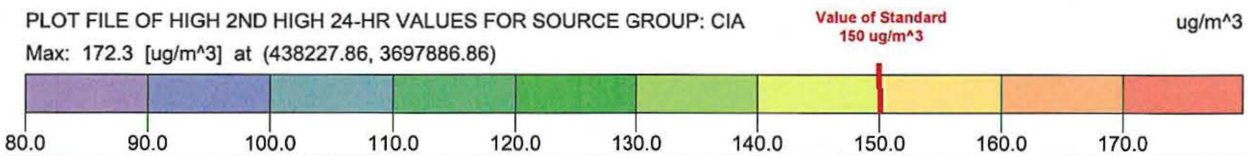
PROJECT TITLE:

24-hr PM10
NAAQS - Revised Silt Content



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: CIA

Max: 172.3 [ug/m^3] at (438227.86, 3697886.86)



COMMENTS:	SOURCES:	COMPANY NAME:	
	110	**Roper Construction**	
	RECEPTORS: **156**	MODELER: **Carlos Ituarte-Villarreal**	SWCA ENVIRONMENTAL CONSULTANTS
	OUTPUT TYPE: **Concentration**	SCALE: 1:3,802 0 — 0.1 km	
	MAX: **172.3 ug/m^3**	DATE: **9/21/2022**	PROJECT NO.:

AERMOD View - Lakes Environmental Software

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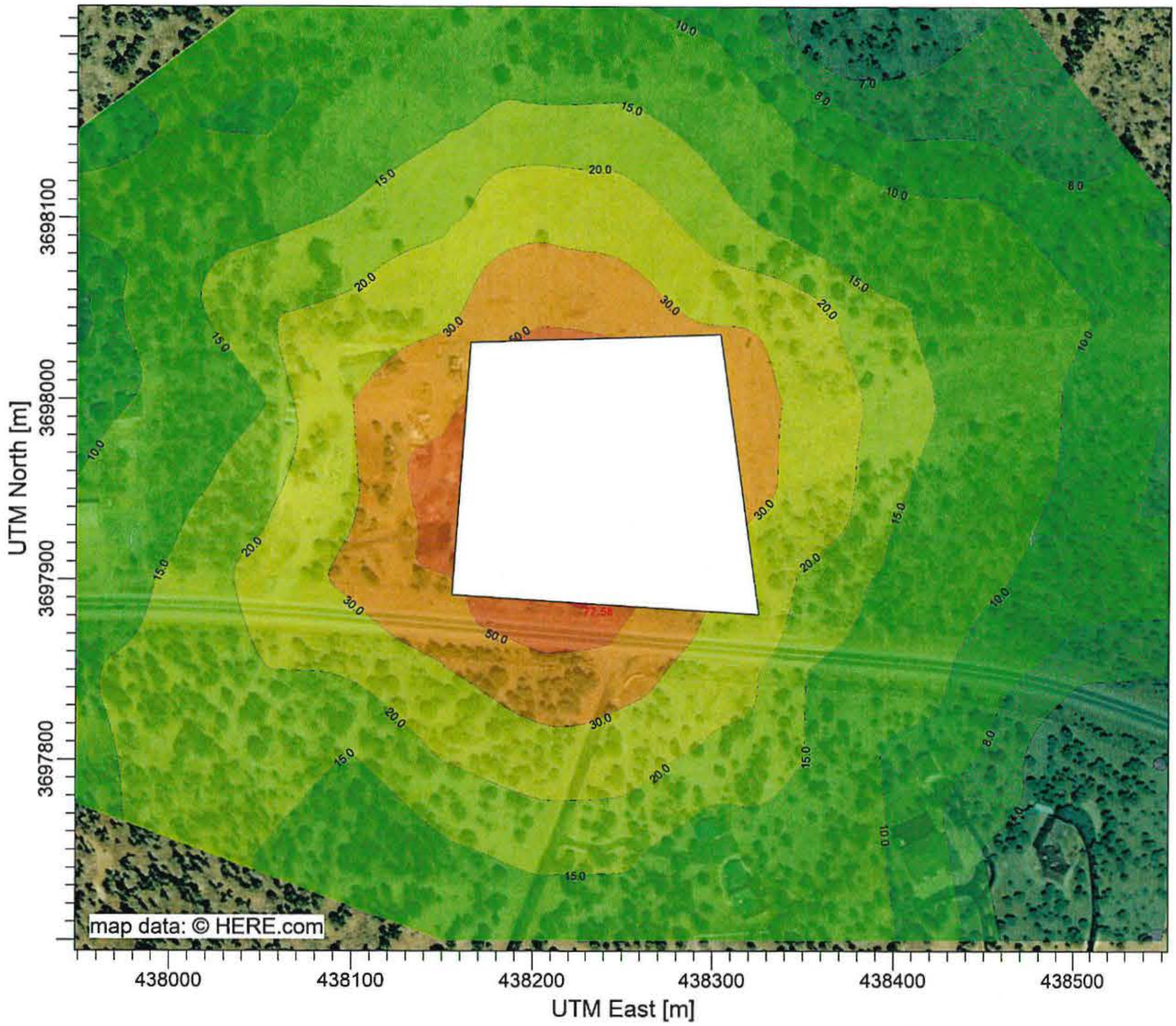
ALTO EXHIBIT 6

PROJECT TITLE:

24-hr PM10
Class II Increment - Revised Silt Content



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: PSD

Max: 77.6 [ug/m^3] at (438227.86, 3697886.86)

Value of Standard 30 ug/m^3

ug/m^3

1.0 2.0 3.0 5.0 7.0 8.0 10.0 15.0 20.0 30.0 50.0 75.0

COMMENTS:	SOURCES:	COMPANY NAME:	
	110	**Roper Construction**	
	RECEPTORS: **156**	MODELER: **Carlos Ituarte-Villarreal**	SWCA ENVIRONMENTAL CONSULTANTS
	OUTPUT TYPE: **Concentration**	SCALE: 1:3,802 (0 — 0.1 km)	
	MAX: **77.6 ug/m^3**	DATE: **9/21/2022**	PROJECT NO.:

AERMOD View - Lakes Environmental Software

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ALTO
EXHIBIT 7

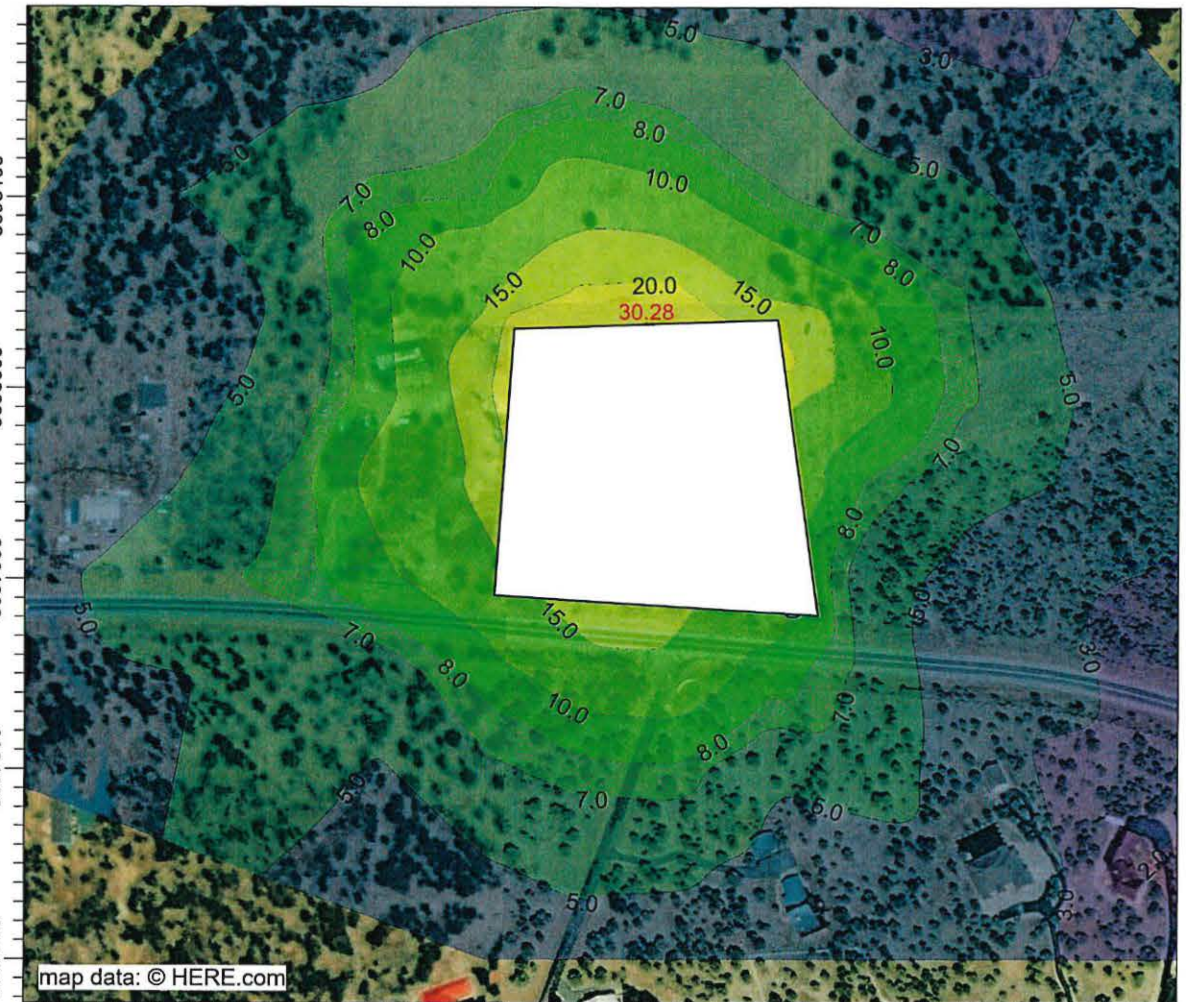
Pollutant, Time Period and Standard	Value of Standard (µg/m³)	Original Permit Application 6/14/2021		Revised Permit Application [a] 11/18/2021		Revised Silt Loading		NMED's Guidance (Controlled)	
		Cumulative Concentration (µg/m³)	Percent of Standard	Cumulative Concentration (µg/m³)	Percent of Standard	Cumulative Concentration (µg/m³)	Percent of Standard	Cumulative Concentration (µg/m³)	Percent of Standard
PM_{10} 24-hour NAAQS	150	124.6	83.1	123.0	82.0	172.3	114.9	125.0	83.3
PM_{10} 24-hour Class II PSD Increment	30	29.8	99.3	28.3	94.3	77.6	258.7	30.3	101.0

[a] Based on revised number of truck trips presented in the revised permit application posted 11/18/2021.

ALTO EXHIBIT 8

PROJECT TITLE:

24-hr PM10
Class II Increment - NMED Guidance



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: PSD

Max: 30.3 [ug/m^3] at (438234.50, 3698033.50)

Value of Standard 30 ug/m^3

ug/m^3

1.0 2.0 3.0 5.0 7.0 8.0 10.0 15.0 20.0 30.0 50.0 75.0

COMMENTS:	SOURCES: **110**	COMPANY NAME: **Roper Construction**	
	RECEPTORS: **156**	MODELER: **Carlos Ituarte-Villarreal**	SWCA ENVIRONMENTAL CONSULTANTS
	OUTPUT TYPE: **Concentration**	SCALE: 1:3,802 0 — 0.1 km	
	MAX: **30.3 ug/m^3**	DATE: **9/21/2022**	PROJECT NO.:

AERMOD View - Lakes Environmental Software

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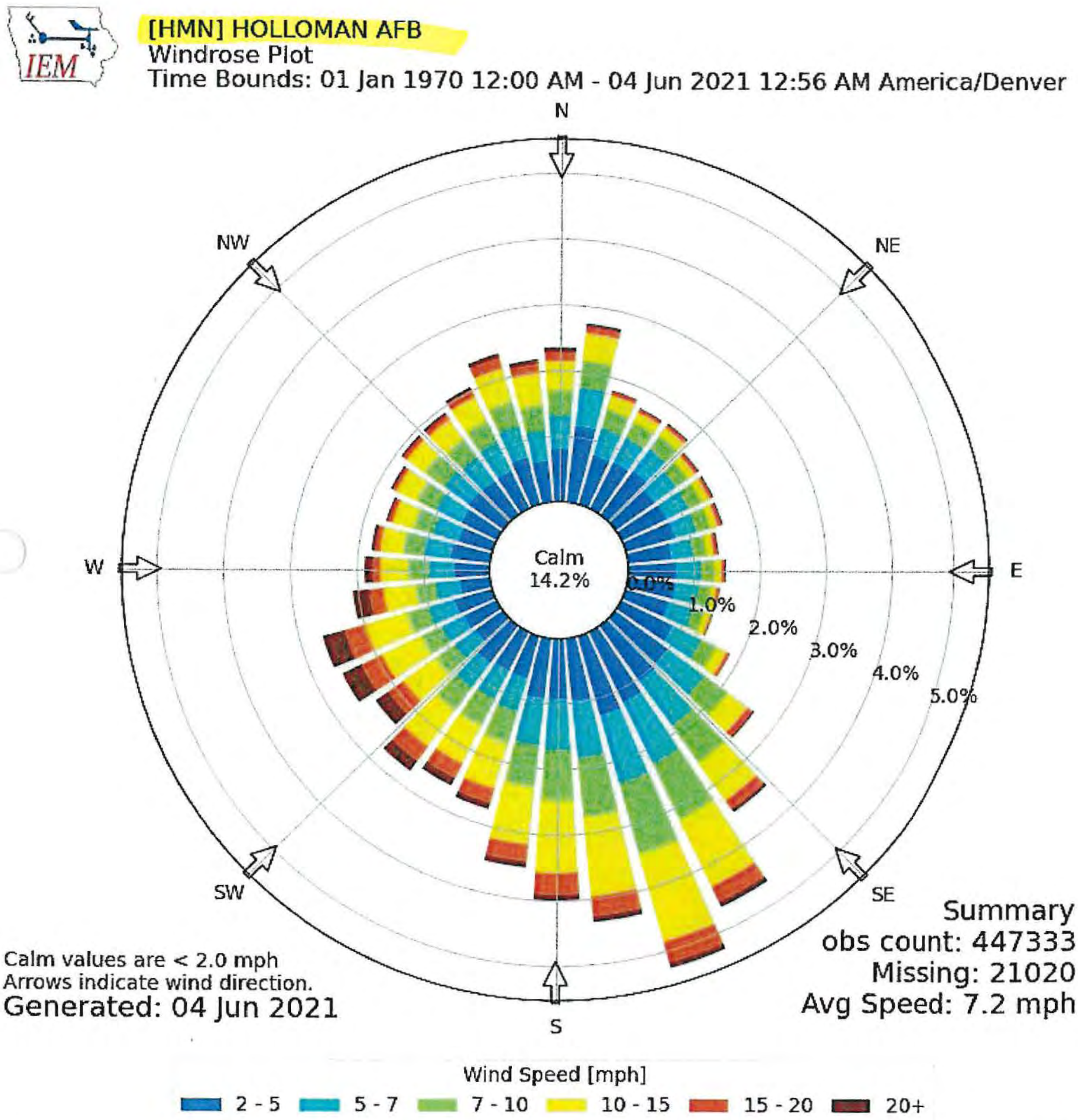
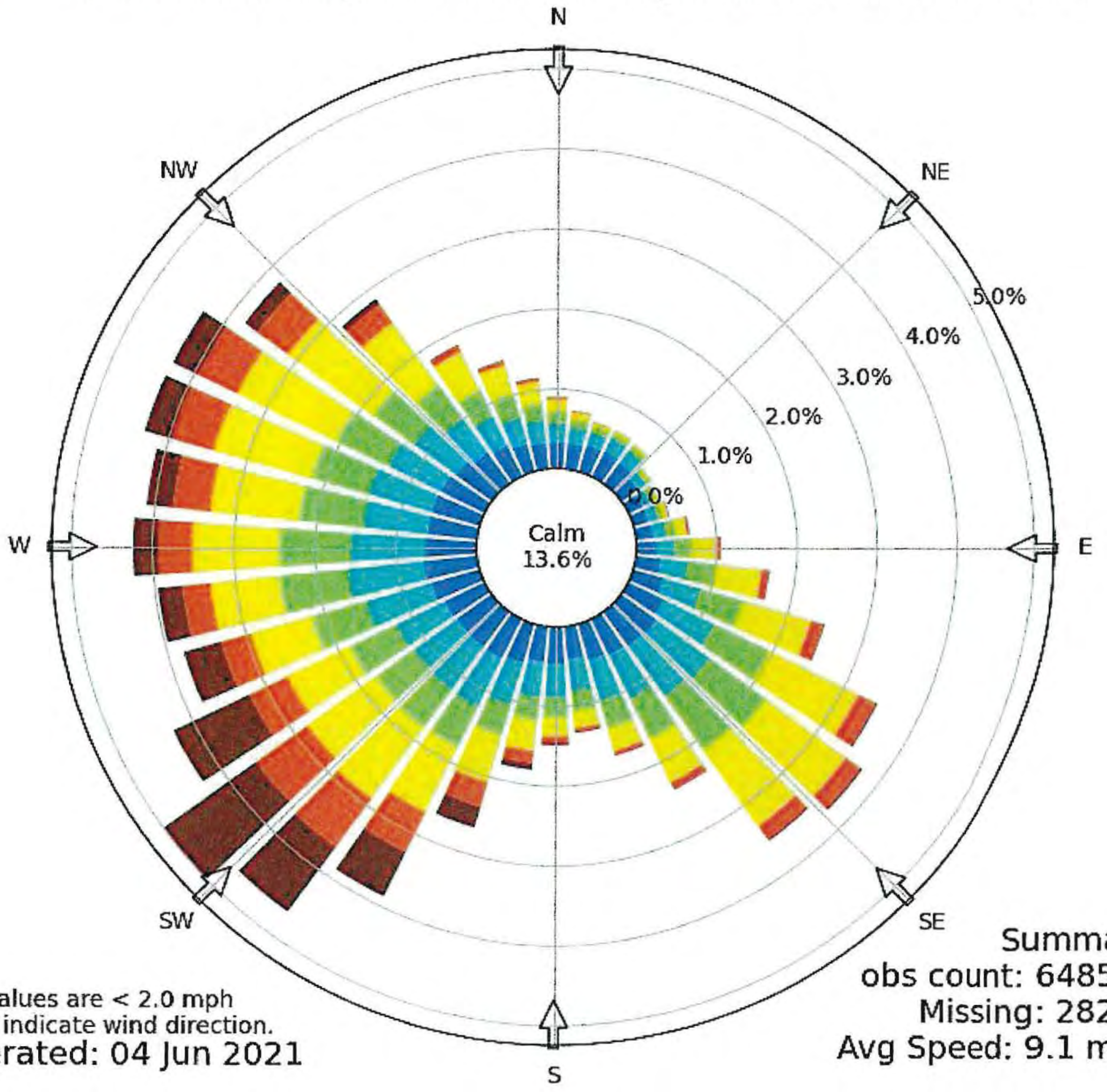
ALTO EXHIBIT 9



ALTO
EXHIBIT 10

[SRR] RUIDOSO REGIONAL
Windrose Plot
Time Bounds: 21 Apr 1988 09:00 AM - 04 Jun 2021 01:15 AM America/Denver



Summary
obs count: 648564
Missing: 28249
Avg Speed: 9.1 mph

Calm values are < 2.0 mph
Arrows indicate wind direction.
Generated: 04 Jun 2021

Wind Speed [mph]
2 - 5 | 5 - 7 | 7 - 10 | 10 - 15 | 15 - 20 | 20+

ALTO
EXHIBIT 11

comprehensively prescribe which sources should be included as nearby sources.

c. For cumulative impact analyses of short-term and annual ambient standards, the nearby sources as well as the project source(s) must be evaluated using an appropriate appendix A model or approved alternative model with the emission input data shown in Table 8–1 or 8–2.

i. When modeling a nearby source that does not have a permit and the emissions limits contained in the SIP for a particular source category is greater than the emissions possible given the source's maximum physical capacity to emit, the "maximum allowable emissions limit" for such a nearby source may be calculated as the emissions rate representative of the nearby source's maximum physical capacity to emit, considering its design specifications and allowable fuels and process materials. However, the burden is on the permit applicant to sufficiently document what the maximum physical capacity to emit is for such a nearby source.

ii. It is appropriate to model nearby sources only during those times when they, by their nature, operate at the same time as the primary source(s) or could have impact on the averaging period of concern. Accordingly, it is not necessary to model impacts of a nearby source that does not, by its nature, operate at the same time as the primary source or could have impact on the averaging period of concern, regardless of an identified significant concentration gradient from the nearby source. The burden is on the permit applicant to adequately justify the exclusion of nearby sources to the satisfaction of the appropriate reviewing authority (paragraph 3.0(b)). The following examples illustrate two cases in which a nearby source may be shown not to operate at the same time as the primary source(s) being modeled: (1) Seasonal sources (only used during certain seasons of the year). Such sources would not be modeled as nearby sources during times in which they do not operate; and (2) Emergency backup generators, to the extent that they do not operate simultaneously with the sources that they back up. Such emergency equipment would not be modeled as nearby sources.

d. *Other sources.* That portion of the background attributable to all other sources (*e.g.*, natural sources, minor and distant major sources) should be accounted for through use of ambient monitoring data and determined by the procedures found in section 8.3.2 in keeping with eliminating or reducing the source-oriented impacts from nearby sources to avoid potential double-counting of modeled and monitored contributions.

8.4 *Meteorological Input Data*

8.4.1 Discussion

a. This subsection covers meteorological input data for use in dispersion modeling for regulatory applications and is separate from recommendations made for photochemical grid modeling. Recommendations for meteorological data for photochemical grid modeling applications are outlined in the latest version of EPA's *Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze.*[60] In cases where Lagrangian models are applied for regulatory purposes, appropriate meteorological inputs should be determined in consultation with the appropriate reviewing authority (paragraph 3.0(b)).

b. The meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern. The representativeness of the measured data is dependent on numerous factors including, but not limited to: (1) The proximity of the meteorological monitoring site to the area under consideration; (2) the complexity of the terrain; (3) the exposure of the meteorological monitoring site; and (4) the period of time during which data are collected. The spatial representativeness of the data can be adversely affected by large distances between the source and receptors of interest and the complex topographic characteristics of the area. Temporal representativeness is a function of the year-to-year variations in weather conditions. Where appropriate, data representativeness should be viewed in terms of the appropriateness of the data for constructing realistic boundary layer profiles and, where applicable, three-dimensional meteorological fields, as described in paragraphs (c) and (d) of this subsection.

c. The meteorological data should be adequately representative and may be site-specific data, data from a nearby National Weather Service (NWS) or comparable station, or prognostic meteorological data. The implementation of NWS Automated Surface Observing Stations (ASOS) in the early 1990's should not preclude the use of NWS ASOS data if such a station is determined to be representative of the modeled area.[93]

d. Model input data are normally obtained either from the NWS or as part of a site-specific measurement program. State climatology offices, local universities, FAA, military stations, industry, and pollution control agencies may also be sources of such data. In specific cases, prognostic meteorological data may be appropriate for use and obtained from similar sources. Some recommendations and requirements for the use of each type of data are included in this subsection.

8.4.2 Recommendations and Requirements

a. AERMET[94] shall be used to preprocess all meteorological data, be it observed or prognostic, for use with AERMOD in regulatory applications. The AERMINUTE[95] processor, in most cases, should be used to process 1-minute ASOS wind data for input to AERMET when processing NWS ASOS sites in AERMET. When processing prognostic meteorological data for AERMOD, the Mesoscale Model Interface Program (MMIF)[103] should be used to process data for input to AERMET. Other methods of processing prognostic meteorological data for input to AERMET should be approved by the appropriate reviewing authority. Additionally, the following meteorological preprocessors are recommended by the EPA: PCRAMMET,[96] MPRM,[97] and METPRO.[98] PCRAMMET is the recommended meteorological data preprocessor for use in applications of OCD employing hourly NWS data. MPRM is the recommended meteorological data preprocessor for applications of OCD employing site-specific meteorological data. METPRO is the recommended meteorological data preprocessor for use with CTDMPLUS.[99]

b. Regulatory application of AERMOD necessitates careful consideration of the meteorological data for input to AERMET. Data representativeness, in the case of AERMOD, means utilizing data of an appropriate type for constructing realistic boundary layer profiles. Of particular importance is the requirement that all meteorological data used as input to AERMOD should be adequately representative of the transport and dispersion within the analysis domain. Where surface conditions vary significantly over the analysis domain, the emphasis in assessing representativeness should be given to adequate characterization of transport and dispersion between the source(s) of concern and areas where maximum design concentrations are anticipated to occur. The EPA recommends that the surface characteristics input to AERMET should be representative of the land cover in the vicinity of the meteorological data, *i.e.*, the location of the meteorological tower for measured data or the representative grid cell for prognostic data. Therefore, the model user should apply the latest version AERSURFACE,[100 101] where applicable, for determining surface characteristics when processing measured meteorological data through AERMET. In areas where it is not possible to use AERSURFACE output, surface characteristics can be determined using techniques that apply the same analysis as AERSURFACE. In the case of prognostic meteorological data, the surface characteristics associated with the prognostic meteorological model output for the representative grid cell should be used.[102 103] Furthermore, since the spatial scope of each variable could be different, representativeness should be judged for each variable separately. For example, for a variable such as wind direction, the data should ideally be collected near plume height to be adequately representative, especially for sources located in complex terrain. Whereas, for a variable such as temperature, data from a station several kilometers away from the source may be considered to be adequately representative. More information about meteorological data, representativeness, and surface characteristics can be found in the AERMOD Implementation Guide.[76]

c. Regulatory application of CTDMPLUS requires the input of multi-level measurements of wind speed, direction, temperature, and turbulence from an appropriately sited meteorological tower. The measurements should be obtained up to the representative plume height(s) of interest. Plume heights of interest can be determined by use of screening procedures such as CTSCREEN.

d. Regulatory application of OCD requires meteorological data over land and over water.

118. U.S. Environmental Protection Agency, 1984. Calms Processor (CALMPRO) User's Guide. Publication No. EPA–901/9–84–001. Office of Air Quality Planning and Standards, Region I, Boston, MA. (NTIS No. PB 84–229467).

Appendix A to Appendix W of Part 51—Summaries of Preferred Air Quality Models

Table of Contents

A.0 Introduction and Availability

(1) This appendix summarizes key features of refined air quality models preferred for specific regulatory applications. For each model, information is provided on availability, approximate cost (where applicable), regulatory use, data input, output format and options, simulation of atmospheric physics, and accuracy. These models may be used without a formal demonstration of applicability provided they satisfy the recommendations for regulatory use; not all options in the models are necessarily recommended for regulatory use.

(2) Many of these models have been subjected to a performance evaluation using comparisons with observed air quality data. Where possible, several of the models contained herein have been subjected to evaluation exercises, including: (1) Statistical performance tests recommended by the American Meteorological Society, and (2) peer scientific reviews. The models in this appendix have been selected on the basis of the results of the model evaluations, experience with previous use, familiarity of the model to various air quality programs, and the costs and resource requirements for use.

(3) Codes and documentation for all models listed in this appendix are available from the EPA's Support Center for Regulatory Air Models (SCRAM) Web site at *https://www.epa.gov/scram*. Codes and documentation may also available from the National Technical Information Service (NTIS), *http://www.ntis.gov*, and, when available, are referenced with the appropriate NTIS accession number.

A.1 AERMOD (AMS/EPA Regulatory Model)

References

U.S. Environmental Protection Agency, 2016. AERMOD Model Formulation. Publication No. EPA–454/B–16–014. Office of Air Quality Planning and Standards, Research Triangle Park, NC.

Cimorelli, A., *et al.*, 2005. AERMOD: A Dispersion Model for Industrial Source Applications. Part I: General Model Formulation and Boundary Layer Characterization. *Journal of Applied Meteorology*, 44(5): 682–693.

Perry, S. *et al.*, 2005. AERMOD: A Dispersion Model for Industrial Source Applications. Part II: Model Performance against 17 Field Study Databases. *Journal of Applied Meteorology*, 44(5): 694–708.

U.S. Environmental Protection Agency, 2016. User's Guide for the AMS/EPA Regulatory Model (AERMOD). Publication No. EPA–454/B–16–011. Office of Air Quality Planning and Standards, Research Triangle Park, NC.

U.S. Environmental Protection Agency, 2016. User's Guide for the AERMOD Meteorological Preprocessor (AERMET). Publication No. EPA–454/B–16–010. Office of Air Quality Planning and Standards, Research Triangle Park, NC.

U.S. Environmental Protection Agency, 2016. User's Guide for the AERMOD Terrain Preprocessor (AERMAP). Publication No. EPA–454/B–16–012. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC.

Schulman, L. L., D.G. Strimaitis and J.S. Scire, 2000. Development and evaluation of the PRIME plume rise and building downwash model. *Journal of the Air and Waste Management Association*, 50: 378–390.

Schulman, L. L., and Joseph S. Scire, 1980. Buoyant Line and Point Source (BLP) Dispersion Model User's Guide. Document P–7304B. Environmental Research and Technology, Inc., Concord, MA. (NTIS No. PB 81–164642).

Availability

The model codes and associated documentation are available on EPA's SCRAM Web site (paragraph A.0(3)).

Abstract

AERMOD is a steady-state plume dispersion model for assessment of pollutant concentrations from a variety of sources. AERMOD simulates transport and dispersion from multiple point, area, or volume sources based on an up-to-date characterization of the atmospheric boundary layer. Sources may be located in rural or urban areas, and receptors may be located in simple or complex terrain. AERMOD accounts for building wake effects (*i.e.*, plume downwash) based on the PRIME building downwash algorithms. The model employs hourly sequential preprocessed meteorological data to estimate concentrations for averaging times from 1-hour to 1-year (also multiple years). AERMOD can be used to estimate the concentrations of nonreactive pollutants from highway traffic. AERMOD also handles unique modeling problems associated with aluminum reduction plants, and other industrial sources where plume rise and downwash effects from stationary buoyant line sources are important. AERMOD is designed to operate in concert with two pre-processor codes: AERMET processes meteorological data for input to AERMOD, and AERMAP processes terrain elevation data and generates receptor and hill height information for input to AERMOD.

a. Regulatory Use

(1) AERMOD is appropriate for the following applications:

- Point, volume, and area sources;
- Buoyant, elevated line sources (*e.g.*, aluminum reduction plants);
- Mobile sources;
- Surface, near-surface, and elevated releases;
- Rural or urban areas;
- Simple and complex terrain;
- Transport distances over which steady-state assumptions are appropriate, up to 50km;
- 1-hour to annual averaging times; and
- Continuous toxic air emissions.

(2) For regulatory applications of AERMOD, the regulatory default option should be set, *i.e.*, the parameter DFAULT should be employed in the MODELOPT record in the COntrol Pathway. The DFAULT option requires the use of meteorological data processed with the regulatory options in AERMET, the use of terrain elevation data processed through the AERMAP terrain processor, stack-tip downwash, sequential date checking, and does not permit the use of the model in the SCREEN mode. In the regulatory default mode, pollutant half-life or decay options are not employed, except in the case of an urban source of sulfur dioxide where a 4-hour half-life is applied. Terrain elevation data from the U.S. Geological Survey (USGS) 7.5-Minute Digital Elevation Model (DEM), or equivalent (approx. 30-meter resolution), (processed through AERMAP) should be used in all applications. Starting in 2011, data from the National Elevation Dataset (NED, *https://nationalmap.gov/elevation.html*) can also be used in AERMOD, which includes a range of resolutions, from 1-m to 2 arc seconds and such high resolution would always be preferred. In some cases, exceptions from the terrain data requirement may be made in consultation with the appropriate reviewing authority (paragraph 3.0(b)).

b. Input Requirements

(1) Source data: Required inputs include source type, location, emission rate, stack height, stack inside diameter, stack gas exit velocity, stack gas exit temperature, area and volume source dimensions, and source base elevation. For point sources subject to the influence of building downwash, direction-specific building dimensions (processed through the BPIPPRM building processor) should be input. Variable emission rates are optional. Buoyant line sources require coordinates of the end points of the line, release height, emission rate, average line source width, average building width, average spacing between buildings, and average line source buoyancy parameter. For mobile sources, traffic volume; emission factor, source height, and mixing zone width are needed to determine appropriate model inputs.

(2) Meteorological data: The AERMET meteorological preprocessor requires input of surface characteristics, including surface roughness (zo), Bowen ratio, and albedo, as well as, hourly observations of wind speed between 7zo and 100 m (reference wind speed measurement from which a vertical profile can be developed), wind direction, cloud cover, and temperature between zo and 100 m (reference temperature measurement from which a vertical profile can be developed). Meteorological data can be in the

form of observed data or prognostic modeled data as discussed in paragraph 8.4.1(d). Surface characteristics may be varied by wind sector and by season or month. When using observed meteorological data, a morning sounding (in National Weather Service format) from a representative upper air station is required. Latitude, longitude, and time zone of the surface, site-specific (if applicable) and upper air meteorological stations are required. The wind speed starting threshold is also required in AERMET for applications involving site-specific data. When using prognostic data, modeled profiles of temperature and winds are input to AERMET. These can be hourly or a time that represents a morning sounding. Additionally, measured profiles of wind, temperature, vertical and lateral turbulence may be required in certain applications (*e.g.*, in complex terrain) to adequately represent the meteorology affecting plume transport and dispersion. Optionally, measurements of solar and/or net radiation may be input to AERMET. Two files are produced by the AERMET meteorological preprocessor for input to the AERMOD dispersion model. When using observed data, the surface file contains observed and calculated surface variables, one record per hour. For applications with multi-level site-specific meteorological data, the profile contains the observations made at each level of the meteorological tower (or remote sensor). When using prognostic data, the surface file contains surface variables calculated by the prognostic model and AERMET. The profile file contains the observations made at each level of a meteorological tower (or remote sensor), the one-level observations taken from other representative data (*e.g.*, National Weather Service surface observations), one record per level per hour, or in the case of prognostic data, the prognostic modeled values of temperature and winds at user-specified levels.

(i) Data used as input to AERMET should possess an adequate degree of representativeness to ensure that the wind, temperature and turbulence profiles derived by AERMOD are both laterally and vertically representative of the source impact area. The adequacy of input data should be judged independently for each variable. The values for surface roughness, Bowen ratio, and albedo should reflect the surface characteristics in the vicinity of the meteorological tower or representative grid cell when using prognostic data, and should be adequately representative of the modeling domain. Finally, the primary atmospheric input variables, including wind speed and direction, ambient temperature, cloud cover, and a morning upper air sounding, should also be adequately representative of the source area when using observed data.

(ii) For applications involving the use of site-specific meteorological data that includes turbulences parameters (*i.e.*, sigma-theta and/or sigma-w), the application of the ADJ_U* option in AERMET would require approval as an alternative model application under section 3.2.

(iii) For recommendations regarding the length of meteorological record needed to perform a regulatory analysis with AERMOD, *see* section 8.4.2.

(3) Receptor data: Receptor coordinates, elevations, height above ground, and hill height scales are produced by the AERMAP terrain preprocessor for input to AERMOD. Discrete receptors and/or multiple receptor grids, Cartesian and/or polar, may be employed in AERMOD. AERMAP requires input of DEM or NED terrain data produced by the USGS, or other equivalent data. AERMAP can be used optionally to estimate source elevations.

c. Output

Printed output options include input information, high concentration summary tables by receptor for user-specified averaging periods, maximum concentration summary tables, and concurrent values summarized by receptor for each day processed. Optional output files can be generated for: A listing of occurrences of exceedances of user-specified threshold value; a listing of concurrent (raw) results at each receptor for each hour modeled, suitable for post-processing; a listing of design values that can be imported into graphics software for plotting contours; a listing of results suitable for NAAQS analyses including NAAQS exceedances and culpability analyses; an unformatted listing of raw results above a threshold value with a special structure for use with the TOXX model component of TOXST; a listing of concentrations by rank (*e.g.*, for use in quantile-quantile plots); and a listing of concentrations, including arc-maximum normalized concentrations, suitable for model evaluation studies.

d. Type of Model

AERMOD is a steady-state plume model, using Gaussian distributions in the vertical and horizontal for stable conditions, and in the horizontal for convective conditions. The vertical concentration distribution for convective conditions results from an assumed bi-Gaussian probability density function of the vertical velocity.

e. Pollutant Types

AERMOD is applicable to primary pollutants and continuous releases of toxic and hazardous waste pollutants. Chemical transformation is treated by simple exponential decay.

f. Source-Receptor Relationships

AERMOD applies user-specified locations for sources and receptors. Actual separation between each source-receptor pair is used. Source and receptor elevations are user input or are determined by AERMAP using USGS DEM or NED terrain data. Receptors may be located at user-specified heights above ground level.

g. Plume Behavior

(1) In the convective boundary layer (CBL), the transport and dispersion of a plume is characterized as the superposition of three modeled plumes: (1) The direct plume (from the stack); (2) the indirect plume; and (3) the penetrated plume, where the indirect plume accounts for the lofting of a buoyant plume near the top of the boundary layer, and the penetrated plume accounts for the portion of a plume that, due to its buoyancy, penetrates above the mixed layer, but can disperse downward and re-enter the mixed layer. In the CBL, plume rise is superposed on the displacements by random convective velocities (Weil *et al.*, 1997).

(2) In the stable boundary layer, plume rise is estimated using an iterative approach to account for height-dependent lapse rates, similar to that in the CTDMPLUS model (*see* A.2 in this appendix).

(3) Stack-tip downwash and buoyancy induced dispersion effects are modeled. Building wake effects are simulated for stacks subject to building downwash using the methods contained in the PRIME downwash algorithms (Schulman, *et al.*, 2000). For plume rise affected by the presence of a building, the PRIME downwash algorithm uses a numerical solution of the mass, energy and momentum conservation laws (Zhang and Ghoniem, 1993). Streamline deflection and the position of the stack relative to the building affect plume trajectory and dispersion. Enhanced dispersion is based on the approach of Weil (1996). Plume mass captured by the cavity is well-mixed within the cavity. The captured plume mass is re-emitted to the far wake as a volume source.

(4) For elevated terrain, AERMOD incorporates the concept of the critical dividing streamline height, in which flow below this height remains horizontal, and flow above this height tends to rise up and over terrain (Snyder *et al.*, 1985). Plume concentration estimates are the weighted sum of these two limiting plume states. However, consistent with the steady-state assumption of uniform horizontal wind direction over the modeling domain, straight-line plume trajectories are assumed, with adjustment in the plume/receptor geometry used to account for the terrain effects.

h. Horizontal Winds

Vertical profiles of wind are calculated for each hour based on measurements and surface-layer similarity (scaling) relationships. At a given height above ground, for a given hour, winds are assumed constant over the modeling domain. The effect of the vertical variation in horizontal wind speed on dispersion is accounted for through simple averaging over the plume depth.

i. Vertical Wind Speed

In convective conditions, the effects of random vertical updraft and downdraft velocities are simulated with a bi-Gaussian probability density function. In both convective and stable conditions, the mean vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Gaussian horizontal dispersion coefficients are estimated as continuous functions of the parameterized (or measured) ambient lateral turbulence and also account for buoyancy-induced and building wake-induced turbulence. Vertical profiles of lateral turbulence are developed from measurements and similarity (scaling) relationships. Effective turbulence values are determined from the portion of the vertical profile of lateral turbulence between the plume height and the receptor height. The effective lateral turbulence is then used to estimate horizontal dispersion.

Q. PLEASE STATE YOUR NAME FOR THE RECORD?

A. My name is Brad Sohm.

Q. WHERE ARE YOU CURRENTLY EMPLOYED?

A. I am a Principal Air Quality Team Lead employed by SWCA Environmental Consultants ("SWCA"). Our business address is 20 E. Thomas Road, Suite 1700, Phoenix, Arizona.

Q. WOULD YOU SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I have a Bachelor of Science degree from the University of Arizona and I am a Professional Engineer licensed in Arizona, New Mexico, and Texas. My curriculum vitae is attached as Exhibit 15.

Q. WHAT ARE YOUR JOB DUTIES WITH SWCA?

A. I provide air quality and noise planning and permitting support for a wide range of projects. I specialize in noise impact analysis, air quality compliance and permitting, health and safety, environmental site investigations, environmental remediation, and National Environmental Policy Act (NEPA) impact assessments.

Q. WOULD YOU PLEASE EXPLAIN YOUR EXPERIENCE IN AIR QUALITY PERMITTING AND AIR DISPERSION MODELING?

A. I have extensive experience with federal, state, and county air quality permitting programs and compliance, including preparing non-Title V, Title V, and Prevention of Significant Deterioration (PSD) permits; completing technical review and data assessment of permitting air pollution control technologies to identify current best available control technology (BACT); and assisting with facility air permit audits to identify potential permit revisions/modifications. I have prepared and managed a wide range of air quality and noise

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impact analyses for ethanol plants, refineries, various manufacturing facilities, slag recovery facilities, oil and gas projects, recycling facilities, and electric utilities for industrial, military, and utility clients throughout the country. I am familiar with the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee Dispersion Model (AERMOD) and routinely review and analyze AERMOD modeling for various projects.

Q. DID YOU TESTIFY AT THE PUBLIC HEARING HELD ON FEBRUARY 9, 2022 IN THE PROCEEDING BEFORE THE NEW MEXICO ENVIRONMENT DEPARTMENT?

A. No, I did not.

Q. ARE YOU FAMILIAR WITH THE APPLICATION TO CONSTRUCT AND OPERATE A CONCRETE BATCH PLANT FILED BY ROPER CONSTRUCTION, INC.?

A. Yes, I have reviewed and analyzed the Application and the modeling performed by the Applicant.

Q. HAVE YOU PROVIDED TESTIMONY REGARDING ROPER'S PROPOSED CONCRETE BATCH PLANT IN ANOTHER LEGAL PROCEEDING?

A. Yes, I have. I provided expert testimony regarding the proposed plant during a preliminary injunction hearing before Judge John Sugg in the Twelfth Judicial District Court in May and June earlier this year in an action to enforce deed restrictions placed on certain lots, including Roper's lot, which prevent any use that would cause a nuisance to adjoining landowners by virtue of, among other things, noise.

Q. WHAT WAS THE SUBJECT OF YOUR TESTIMONY?

A. I provided testimony regarding the noise impacts of the concrete batch plant on behalf of the owners of the tracts adjacent to the lots where Roper intends to construct and operate the plant.

Q. WERE YOU PRESENT DURING THE TESTIMONY PROVIDED BY ROPER'S NOISE EXPERT DURING THE PRELIMINARY INJUNCTION HEARING?

A. Yes, I was.

Q. WERE YOU PRESENT DURING THE TESTIMONY PROVIDED BY RYAN ROPER DURING THE PRELIMINARY INJUNCTION HEARING?

A. Yes, I was present for that testimony as well.

Q. DID THE TESTIMONY PROVIDED BY RYAN ROPER AND ROPER'S NOISE EXPERT AT THE PRELIMINARY INJUNCTION HEARING REGARDING THE CONCRETE BATCH PLANT OPERATIONS DIFFER FROM THE OPERATIONS REPRESENTED IN THE APPLICATION?

A. Yes. In an effort to reduce the noise impacts from the operation of the CBP at the adjoining lots, Roper and the noise expert claimed that CBP plant would only operate from 7 am until 3 pm. However, the Application demonstrates that Roper's proposed CBP plant hours of operation are 3 am until 9 pm for May through August, 4 am until 9 pm for April and September, 5 am until 7 pm for March and October, and 7 am until 6 pm for January, February, November and December. This information is found in Table 3-1 in Section 3 and in Section 16-K of the Application. In addition, Roper and the noise expert claimed that there would only be approximately 2 trucks per hour, not the 20 trucks per hour represented in Table 2-A of the Application.

Q. IN YOUR EXPERIENCE, DO APPLICANTS CHANGE OPERATIONS IN THE MANNER SUGGESTED BY ROPER AND THE NOISE EXPERT WHILE AN APPLICATION IS STILL PENDING?

A. No. Under all statutory and regulatory schemes governing air quality permits, an applicant must provide accurate information, including duration of operations and number of trucks traveling on the haul roads. Modeling is then conducted to determine the maximum hourly emissions at the maximum capacity requested by the applicant to ensure compliance with applicable air quality standards. The information utilized to analyze and model a proposed facility comes from the application, which is why the information in an application must be accurate.

Q. IS THERE A REQUIREMENT THAT AN APPLICANT PROVIDE ACCURATE INFORMATION IN AN APPLICATION FOR AN AIR QUALITY CONSTRUCTION PERMIT?

A. Yes. Section 22 of the Application is a Certification, sworn before a notary public, that "the information and data submitted in this Application are true and as accurate as possible…". Ryan Roper signed this Certification for this Application, swearing that the information and data was accurate.

Q. WHAT IS THE EFFECT OF THE APPLICATION'S PROPOSED HOURS OF OPERATIONS AND PROPOSED TRUCK TRIPS?

A. The NMED has in fact authorized Roper to operate for 18 hours a day for four (4) months of the year, as requested in the Application. This is demonstrated in the Draft Permit, Condition A108(A). The NMED has also authorized 20.3 truck trips per hour as demonstrated in Condition A112(A). If the NMED Draft Permit is issued to Roper, Roper will be able to operate during the hours authorized and will be able to process 20 trucks per hour at the CPB plant.

Q. IN YOUR OPINION, IS IT APPROPRIATE TO MAKE SIGNIFICANT CHANGES TO AN APPLICATION AFTER THE MODELING FOR THE PROJECT HAS BEEN SUBMITTED TO A FEDERAL OR STATE AGENCY FOR APPROVAL?

A. No, it is not. As I mentioned before, the Applicant must attest that the Application contains information and data that is accurate. If the Applicant makes changes to the operations described in the Application, the Applicant has a duty to amend the Application and submit revised supporting information regarding those changes.

SWCA | Resume

BRAD SOHM, P.E., SENIOR NOISE SPECIALIST

Mr. Sohm is a Chemical Engineer and specializes in noise impact analysis, air quality compliance and permitting, health and safety, environmental site investigations, environmental remediation, and National Environmental Policy Act (NEPA) impact assessments.

He has extensive experience with performing noise surveys and the quantification of noise impacts for California Environmental Quality Act (CEQA), Federal Energy Regulatory Commission (FERC), and Federal Highway Administration, NEPA impact assessments, as well as for compliance with state and local noise requirements. He also has extensive experience with state and county air quality permitting programs and compliance, including CEQA regulations, preparing non-Title V, Title V, and Prevention of Significant Deterioration (PSD) permits; completing technical review and data assessment of permitting air pollution control technologies to identify current best available control technology (BACT) and lowest achievable emissions rate (LAER) requirements for fuel-fired emission units; assisting with facility air permit audits to identify potential permit revisions/modifications; and other non-compliance issues. He has prepared and managed a wide range of air quality permitting and noise impact analyses for ethanol plants, refineries, various manufacturing facilities, slag recovery facilities, oil and gas projects, recycling facilities, and electric utilities, for a wide range of industrial, military, and utility clients throughout the country.

YEARS OF EXPERIENCE

18

EXPERTISE

Noise impact analysis

Air quality permitting and compliance

Health and safety

Environmental site investigations

Environmental remediation

Soil, groundwater, and asbestos sampling

Subcontractor oversight

Phase I Sight ESA

SPCC site inspection

EDUCATION

B.S., Chemical Engineering, option Environmental Engineering; University of Arizona, Tucson, Arizona; 2002

REGISTRATIONS / CERTIFICATIONS

Professional Engineer, Arizona No. 58554; 2014; Texas No. 119997; 2015; Professional Engineer, New Mexico No. 23408; 2016

TRAINING

EPA Method 9 Visible Emissions Training "Smoke School", Arizona Department of Environmental Quality/Arizona State University; 2013

AHERA Building Inspector Refresher, Environmental Protection Agency/The Asbestos Institute; 2008

40-hour Hazardous Materials Worker Training (HAZWOPER), OSHA; 2003; 8-hour refresher; 2010

SELECTED PROJECT EXPERIENCE

Estrella Substation Project and Paso Robles Area Reinforcement Project; San Luis Obispo County, California; Pacific Gas and Electric Company (PG&E). SWCA is providing planning and permitting support for a new 230 kV substation and greenfield 70 kV power line in the Paso Robles area. Services include siting and alternatives analysis support for the substation; cultural, biological, and paleontological surveys for both project components; preparation of a PEA; and discretionary environmental permitting support. *Role: Air Quality and Noise Specialist.*

Suncrest Dynamic Reactive Power Support Project; San Diego County, California; Confidential Client. SWCA is providing planning and permitting support for a dynamic reactive power support facility and associated 230 kV transmission line near Alpine, CA. Services include routing and siting support; alternatives analysis; cultural, biological, and paleontological surveys; preparation of a Proponent's Environmental Assessment (PEA); and discretionary environmental permitting support. The application for Certificate of Public Convenience and Necessary was filed in summer 2015 and the PEA was deemed complete in December 2015 (Application No. A.15-08-027) *Role: Air Quality and Noise Specialist.*

TUUSSO Energy Kittitas County Solar, Kittitas County, WA; TUUSSO Energy, LLC. SWCA was selected by TUUSSO Energy LLC (TUUSSO) to initially prepare seven Critical Issues Analyses (CIAs) for potential commercial solar project developments in Kittitas County, Washington. Each solar project would generate up to 5 megawatts (MW) and would be located on 39- to 50-acre parcels of agricultural lands. SWCA is continuing to provide additional services, including conducting fast turn-around natural resources fieldwork and evaluations, wetland delineations, archaeological fieldwork and assessments, Phase 1 ESAs, visual simulations, air quality and noise calculations, and preparation of permit applications. *Role: Task Manager and Noise Specialist. Served as technical lead preparing the noise impact analysis for the different solar projects evaluated.*

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Northern Arizona Proposed Withdrawal Environmental Impact Statement; Coconino and Mohave Counties, Arizona; U.S. Bureau of Land Management. SWCA was the primary contractor to the BLM and four federal cooperating agencies (U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, and U.S. Geological Survey) to determine the potential impact of a 20-year withdrawal of approximately 1 million acres of federal lands from new mineral exploration and mining near Grand Canyon National Park. As a land withdrawal, a key component of the project is the potential land use in the absence of the withdrawal. The EIS process attracted widespread national and international interest, with nearly 400,000 individual comment submittals received during the scoping and public comment periods. *Role: Air Quality Specialist. Responsible for the preparation of the Air Quality, Climate Change, and Noise sections of the EIS.*

Willcox Loop Pipeline Environmental Services; Cochise County, Arizona; El Paso Natural Gas Company LLC. SWCA prepared an Air Quality and Noise Resource Report (Resource Report 9) addressing the air quality and noise resources associated with this proposed Willcox Lateral Expansion Project. *Role: Air Quality Specialist. Responsible for the preparation and review of Resource Report No. 9 Air Quality and Noise, which involved analysis of the existing conditions, regulatory analyses, assessment of potential construction and operational activity impacts, and mitigation measures.*

Northern Colorado Regional Airport Project; Dibble Engineering; Larimer County, Colorado. SWCA provided air quality and noise impact analysis in support of preparation of a Categorical Exclusion (CatEx) Determination for planned improvement projects at the Northern Colorado Regional Airport located in Larimer County, Colorado. The impact assessment was performed in accordance with the requirements of Federal Aviation Administration (FAA) Environmental Orders 1050.1F and 5050.4B and the Desk Reference for Airports Actions. Role: Air Quality and Noise Specialist Task Manager. Responsible for the review of the air quality assessment and noise analysis.

LaSalle Pipeline Project; DCP Operating Company, LP; Weld County, Colorado. SWCA provided wetland delineations, conducted threatened and endangered wildlife and plant habitat assessments, and ensured permitting compliance with ESA, CWA, and FERC for a regulated 10-mile pipeline. SWCA also prepared an Air Quality and Noise Resource Report addressing the air quality and noise resources associated with LaSalle Pipeline Project. *Role: Air Quality Specialist. Responsible for the preparation and review of Resource Report No. 9 Air Quality and Noise.*

Rail Tie Wind Third-Party EIS; ConnectGen Operating LLC; Albany County, Wyoming. SWCA is serving as the third-party NEPA consultant for an EIS associated with a 500-megawatt wind farm encompassing approximately 30,000 acres in Wyoming. *Role: Air Quality Specialist. Responsible for the preparation of the Air Quality, Climate Change and Noise section of the EIS.*

Confidential Wind Generation Project; Confidential Client; Arizona (April 2019–Current). SWCA is assisting with permitting and the coastal use permit application materials associated with wind development in Arizona. *Role: Air Quality Specialist. Responsible for the technical review of the air quality and noise impact reports.*

Confidential Transmission Project; Confidential Clients; California. SWCA is providing permitting and licensing support, including a preparation of a PEA, for a new 230/70 kV substation, 7 miles of new aboveground 70 kV power line, 3 miles of reconductored 70 kV line, and a 230 kV interconnection in Paso Robles. Services include cultural, biological, and paleontological surveys; PEA preparation; PTC application filing support and noticing; and post-filing CEQA and permitting support. *Role: Air Quality and Noise Specialist. Responsible for technical support and review of the Air Quality and Noise sections of the PEA.*

EPNG Willcox Lateral Expansion; El Paso Corporation; Sulphur Springs Valley, Cochise County, Arizona. SWCA provided environmental studies, including preparation of the FERC Environmental Report, in support of EPNG's Section 7c filing to add compression and increase the maximum allowable operational pressure (MAOP) of the Willcox Lateral Line Nos. 2163 and 2164. This project involved field studies at five locations. *Role: Air Quality Specialist. Responsible for the preparation and review of Resource Report No. 9: Air Quality and Noise, which involved analysis of the existing conditions, regulatory analyses, assessment of potential construction and operational activity impacts, and mitigation measures.*

Camino Solar Environmental Support; Aurora Solar, LLC; Kern County, California. SWCA was retained to support NEPA and California Environmental Quality Act (CEQA) compliance for a 44-megawatt (MW) solar photovoltaic project located on a mix of private and Bureau of Land Management lands. SWCA services include planning, comprehensive environmental technical studies, and permitting support. The EIR/Environmental Assessment (EA) was approved in May 2020. SWCA is currently completing preconstruction permitting and reporting requirements, including translocation of Joshua trees, development of a project-specific Habitat Restoration and Revegetation Plan, and a Bird and Bat Conservation Strategy. *Role: Air Quality and Noise Specialist. Responsible for technical support and review of the Air Quality and Noise sections of the EIR.*

High Speed Rail CP4 NEPA/CEQA Re-Examination; Confidential Client; Multiple Counties, California. Construction Package 4 (CP 4) is the third design-build construction contract for the high-speed rail program. The California High-Speed Rail Authority proposes to construct, operate, and maintain an electric-powered high-speed rail system in California. When completed, the nearly 800-mile high-speed train system will provide new passenger rail service to California's major metropolitan areas and through the counties that are home to more than 90% of the state's population. The CP4 construction area is a 22-mile stretch within the counties of Tulare and Kern and the cities of Wasco and Shafter. CP 4 work will include construction of at-grade, retained fill and aerial sections of the high-speed rail alignment, relocation of four miles of existing Burlington Northern Santa Fe (BNSF) tracks, construction of waterway and wildlife crossings and roadway reconstructions, relocations, and closures. This phase of construction received state and federal environmental clearances in 2014 and is estimated to cost $400-500 million. *Role: Air Quality and Noise Specialist. Responsible for technical support and review of the Air Quality and Noise sections of the EIR.*

Pier 70 Mixed Use District Project EIR; FC Pier 70, LLC; San Francisco, San Francisco City and County, California. SWCA directed the EIR on the Pier 70 Mixed-Use District Project, a major land development proposal for 35 acres of historic shipyard property along the City and County of San Francisco's Central Waterfront. The project site is generally under the jurisdiction of the Port of San Francisco and encompasses roughly half of the 69-acre Pier 70 area. Most of Pier 70 is listed on the NRHP as the Union Iron Works Historic District in recognition of its industrial architecture and decades-long role in the development of steel shipbuilding in the United States.

Pier 70 has been the subject of planning efforts that seek to preserve the area's valued past, continue Pier 70's active ship repair operations, and foster future development to reinvigorate the area. The Port selected Forest City Development California, Inc. to act as master developer to initiate rezoning and development of design standards and controls for a multi-phased, mixed-use development on the 35-acre project site

SWCA Project Manager Ms. Barlow managed a team of specialists to prepare the EIR for this high-profile, complex project. SWCA's analyses included the full complement of EIR topics and considered two development scenarios and four sustainability variants. Key considerations included impacts to historical resources, land use and zoning, sea level rise, and utilities. *Role: Air Quality and Noise Specialist. Responsible for technical support and review of the Air Quality and Noise sections of the EIR.*

SCE Fort Irwin Reliability Project Environmental Assessment; Southern California Edison Company; San Bernardino County, California. *SWCA is providing support for this transmission line improvement project located on lands administered by the BLM and Department of Defense as well as private land owners. Services include the development of the BLM Plan of Development (POD), preparation of the Environmental Assessment (EA), and biological, jurisdictional waters, cultural, and paleontological technical studies, and reports to support the EA, POD, and environmental permits. Role: Air Quality and Noise Specialist. Responsible for technical support and review of the Air Quality and Noise sections of the PEA.*

Cardinal-Hickory Creek Transmission Line Project Environmental Impact Statement; Confidential Client; La Crosse, Multiple Counties, Multiple States. SWCA is served as a 3rd party contractor for a USDA Rural Utilities Service (RUS) EIS for a proposed 345-kV transmission line that was approximately 125 miles long and span portions of Iowa and Wisconsin. SWCA was responsible for assisting RUS and its Cooperating Agencies with all aspects of NEPA compliance and was also supporting RUS with aspects of tribal consultation, compliance with NHPA Section 106, and ESA Section 7 interagency consultation. Both the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers are Cooperating Agencies for the project. The proposed project crossed the Upper Mississippi River National Fish and Wildlife Refuge, which triggered additional site-specific analysis required for USFWS and USACE permit reviews. *Role: Air Quality and Noise Specialist. Responsible for technical support and review of the Air Quality and Noise sections of the EIS.*

Hidden Hills Transmission Line Environmental Impact Statement; Valley Electric Association, Inc.; Clark and Nye Counties, Nevada. As a third-party contractor, SWCA assisted the BLM in writing a NEPA-compliant EIS for proposed transmission facilities and a 32-mile-long natural gas pipeline connected to the 500-MW solar energy generation station on approximately 3,200 acres of private land. The project is currently on hold. *Role: Air Quality and Noise Specialist. Responsible for technical support and review of the Air Quality and Noise sections of the EIS.*

Q. PLEASE STATE YOUR NAME FOR THE RECORD?

A. My name is Breanna Bernal.

Q. WHERE ARE YOU CURRENTLY EMPLOYED?

A. I am employed by SWCA Environmental Consultants ("SWCA"). Our business address is 20 E. Thomas Road, Suite 1700, Phoenix, Arizona.

Q. WOULD YOU SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I have a Bachelor of Science degree in Environmental Geoscience from the Texas A & M University. I am an Air Quality Specialist with SWCA. Prior to SWCA, I was employed as an Environmental Specialist at Westward Environmental, Inc., where I provided permitting and compliance services for a wide range of facilities including aggregate and agricultural operations, asphalt plants, concrete batch plants, frac sand facilities, and more. My curriculum vitae is attached as Exhibit 17.

Q. WOULD YOU PLEASE EXPLAIN YOUR EXPERIENCE IN AIR QUALITY PERMITTING AND AIR DISPERSION MODELING?

A. I have experience in New Source Review (NSR), Prevention of Significant Deterioration (PSD), Title V, Federal Energy Regulatory Commission (FERC), and National Environmental Protection Act (NEPA) permitting, analyses, and projects. I have worked on numerous projects as an Air Quality Specialist for construction permits, standard permits, and permits by rule (PBRs). I am knowledgeable in NSR permitting mechanisms. For many years, I served as one of the primary air quality consultants for multiple concrete batch plant projects.

Q. WHAT ARE YOUR JOB DUTIES WITH SWCA?

ALTO
EXHIBIT 16

A. As an Air Quality Specialist, I conduct air quality permitting, compliance, and reporting driven by state, federal, and local air quality rules and regulations. I also evaluate project impacts with respect NSR, PSD, Title V, FERC, and NEPA projects. I review and evaluate air quality analyses including air quality impact assessments and emission inventory methodologies for these projects.

Q. DID YOU TESTIFY AT THE PUBLIC HEARING HELD ON FEBRUARY 9, 2022 IN THE PROCEEDING BEFORE THE NEW MEXICO ENVIRONMENT DEPARTMENT?

A. Yes, I did.

Q. CAN YOU PLEASE SUMMARIZE YOUR TESTIMONY AT THAT HEARING?

A. I testified regarding the pre-controlled material handling particulate emissions at Process Unit 3, the Feed Hopper Conveyor, Unit 4, the 4-Bin Aggregate Bin, and Units 5 and 6, the Aggregate Weigh Batcher and Conveyor and the controlled material handling particulate emission rates. The pre-controlled emissions for Units 3-6 are set forth in Table 6-1 of the Application. The controlled emissions for Units 3-6 are set forth in Table 6-2 of the Application. The sole emission control method proposed by Roper at each of these units is the addition of moisture content – i.e., water sprays. There are no other proposed emission control methods or technology to control emissions at these sources. If there is not an adequate and reliable source of water to implement the sole emission control at these units, the uncontrolled emission rate of particulate matter for each of these units is 2.46 tons per year, which would total approximately 7.38 tons per year of particulate matter emissions for those units without water sprays to control emissions at these units, not the .159 tons per year as represented in the Application for these units. The amount of particulate matter emissions from these process units would be higher than the Applicant claims without adequate water controls.

I also testified regarding the Applicant's choice to decline to employ emission control methods or technology to control emissions on the haul roads as demonstrated in Section 6, p. 8 of the Application. In the NMED Draft Permit, however, Condition A112, Section B, requires Roper to maintain the haul roads to minimize silt buildup to control emissions by applying water to the haul roads or by sweeping the haul roads. Without an available and reliable source of water to apply to the haul roads, sweeping the haul roads would be the only alternative to comply with the NMED-imposed condition to minimize silt buildup on the haul roads. The Applicant did not supply any evidence regarding either applying water to the haul roads or sweeping the haul roads. Accordingly, there is no evidence that the Applicant will, or can, comply with this Draft Permit Condition.

Q. DO YOU KNOW HOW ROPER REDUCED THE EMISSIONS FROM UNITS 3 THROUGH 6 FROM 7.38 TONS PER YEAR TO .159 TONS PER YEAR AS SHOWN IN TABLES 6-1 AND 6-2?

A. In the Application, Roper states that "water sprays" will be used on units #3-#6 to achieve an emissions control efficiency of 95.82%.

Q. DO YOU KNOW WHAT KIND OF "WATER SPRAYS" ROPER WILL UTILIZE TO ACHIEVE THE CONROL EFFICIENCY CLAIMED IN THE APPLICATION?

A. No. The Application has not specified the method and type of water sprays that Roper will use. The Draft Permit requires a "Wet Dust Suppression System" but Roper has not provided any information regarding such a system. Again, there is no evidence that the

Applicant will, or can, comply with the Draft Permit condition requiring a wet dust suppression system.

Q. ARE YOU FAMILIAR WITH WHAT A WET DUST SUPRESSION SYSTEM ENTAILS?

A. Yes. Wet dust suppression systems utilize water spray technology for dust prevention by increasing the moisture content in the material to prevent dust from becoming airborne and for dust suppression by adding moisture to the air to capture dust particles that become airborne. I have attached an example of an industry-accepted wet dust suppression system as Exhibit 18 to my testimony. Roper has provided no testimony or evidence, in the Application or otherwise, that it intends to install and operate a system comparable to the system described in this exhibit. Without using water suppression technology, Roper will not achieve the 95.82% control efficiency claimed in the Application.

Q. HAVE YOU PERFORMED ANY CALCULATIONS REGARDING THE WATER USAGE AT PROCESS UNITS 3 THROUGH 6?

A. Yes. Based on the AP-42 guidance, specifically AP-42 11.19.2.2, a 1.5% moisture content for the materials is required to achieve the 95.82% efficiency control that Roper claims at these units. According to my calculations, 9.33 acre feet per year of water will be needed for process Units 3 through 6 when the plant is operating at maximum capacity as represented in the Application. My calculations are set forth below:

Process units water usage

2.81	water tph, based on 1.5% moisture content of process unit throughput		
5,625.00	water lb/hr		
674.46	water gal/hr	12,140.29	water gal/day
3,041,142.09	water gal/year	1,622.92	water ft^3/day
406,541.56	water ft^3/year	0.04	water acre ft/day for process units 3-6 based on 18-hrs per day when operating at max capacity, as represented in application
9.33	water acre ft/year for process units 3-6 based on 4,509 hour per year when operating at max capacity, as represented in application		

A copy of the AP-42 guidance, Section 11.19.2.2 Emission and Controls is attached hereto as Exhibit 19.

Q. HAVE YOU PERFORMED ANY CALCULATIONS REGARDING THE AMOUNT OF WATER NECESSARY TO PRODUCE THE AMOUNT OF CONCRETE REPRESENTED IN THE APPLICATION?

A. Yes. Using the information provided by the Applicant on p. 2 of Section 6 of the Application, 54.09 acre feet per year of water is needed when the plant is operating a maximum capacity as represented in the Application. My calculations are set forth below:

Concrete design mix water usage

16.30	water tph		
32,600.00	water lb/hr		
3,908.87	water gal/hr	70,359.71	water gal/day
17,625,107.91	water gal/year	9,405.73	water ft^3/day
2,356,134.22	water ft^3/year	0.22	water acre ft/day for raw material throughput based on 18-hrs per day when operating at max capacity, as represented in
54.09	water acre ft/year for raw material throughput based on concrete design mix. Based on 4,509 hr/yr when operating at max capacity, as represented in application		

Q. BASED ON YOUR CALCULATIONS, HOW MANY WATER TRUCKS PER DAY WILL ROPER NEED TO PRODUCE CONCRETE AND ACHIEVE THE CLAIMED 95.82% EMISSION CONTROL EFFICIENCY?

A. Roper did not provide any information regarding the type of water trucks that will deliver water to the plant, but assuming a 10,000 gallon water tanker truck is used, Roper will need 8 water trucks to deliver water to the plant if the plant is operating at maximum capacity as represented in the Application and authorized under the NMED Draft Permit. My calculations are set forth below:

Assuming ≤10k gal water tanker truck being used on-site

82,500.00	water gal/day for process units #3-#6 and concrete mix when operating at max capacity
8.25	water trucks/day if operating at max capacity

Q. WERE THESE WATER TRUCKS ACCOUNTED FOR IN ROPER'S APPLICATION?

A. No. The Application failed to include water trucks in calculating emissions. The amount of water trucks necessary for the proposed plant's water usage needs will add fugitive dust emissions due to increased vehicle traffic and Roper has not accounted for this increase in truck traffic on the haul roads.

BREANNA BERNAL, B.S., AIR QUALITY SPECIALIST

As an Air Quality Specialist, Ms. Bernal is highly experienced in conducting the air quality permitting, compliance, and reporting driven by state, federal, and local air quality rules and regulations. Ms. Bernal has a demonstrated ability to evaluate project impacts with respect to PSD, Title V, FERC and NEPA projects. She is familiar with technical aspects of air quality analysis including air quality impact assessment and emission inventory methodologies.

YEARS OF EXPERIENCE

3.5

EXPERTISE

Air quality analysis and permitting

Due diligence

Emissions inventory

Clean Air Act (CAA) compliance

CAA PSD/NNSR permitting

Noise Survey Following ASTM Standards

Regulatory agency coordination

EDUCATION

B.S., Environmental Geoscience; Texas A&M University, College Station, Texas; 2017

A.A., Liberal Arts; San Antonio College, San Antonio, Texas; 2014

RELATED WORK EXPERIENCE

SWCA Environmental Consultants (July 2021 – Present)
Air Quality Specialist
Provide permitting and compliance services to electric generation, industrial and oil & gas sectors.

Westward Environmental, Inc. (April 2018 – July 2021)
Environmental Specialist
Provided permitting and compliance services for a wide range of facilities including aggregate and agricultural operations, asphalt plants, concrete batch plants, frac sand facilities, and more. Assisted in staff safety training and public notice for air quality permitting.

SELECTED PROJECT EXPERIENCE (* denotes project experience prior to SWCA)

PSD/NSR Permitting; Dallas/Fort Worth, Texas – Assisted with PSD Permitting analyses and NSR permitting throughout career. Worked in many industries including general manufacturing, oil and gas, power generation and aggregate. Knowledgeable in the many Texas NSR permitting mechanisms, including construction permits, standard permits, and permits by rule (PBRs). *Role: Air Quality Specialist*

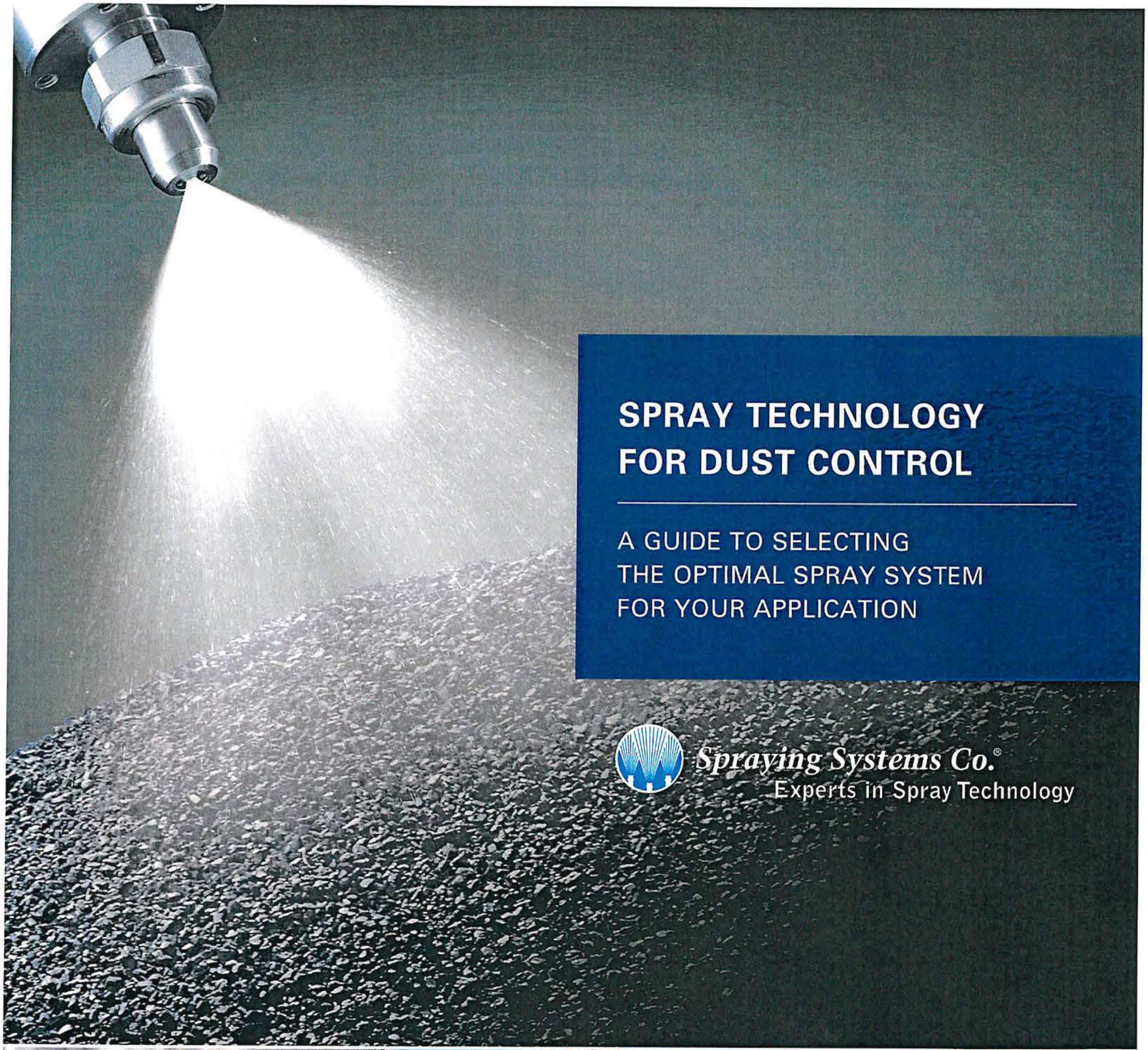
Title V Permitting; Dallas/Fort Worth, Texas – Assisted with Title V permitting projects throughout career. Worked with aspects of the TCEQ Title V operating permits program including SOPs, minor and significant revisions, and off-permit changes. *Role: Air Quality Specialist*

Painted Desert Power, LLC; Air Quality and Noise Threshold Determination; Coconino County, Nevada – SWCA prepared threshold determination reports for a solar field. Evaluated baseline conditions for air quality and noise levels at the project site, as well as the relevant regulatory programs. Performed air quality emission and noise calculations for the proposed project. Prepared an impacts evaluation to demonstrate compliance with all state and federal standards. *Role: Air Quality Specialist*

The Bureau of Land Management (BLM) and Gold Standard Ventures; Air Quality Environmental Report, Elko County, Nevada: SWCA prepared an environmental impact statement meeting the requirements of NEPA and the policies and standards of the Council on Environmental Quality CEQ and the BLM for mining operations. Evaluated baseline conditions for air quality at the project site, as well as the relevant regulatory programs. Analyzed potential environmental consequences and impacts to the local and regional quality as a result of the project by evaluating the results from air dispersion modeling and emission calculations. *Role: Air Quality Specialist*

***Potter Ready Mix, LLC; Air Quality Permitting, Multiple Counties, Texas –** Served as one of the primary air quality consultants for multiple concrete batch plant projects across Texas for three years. Assisted with preparing documentation and calculations for standard permits, alterations, and relocations for concrete batch plants. *Role: Environmental Specialist*

ALTO
EXHIBIT 17

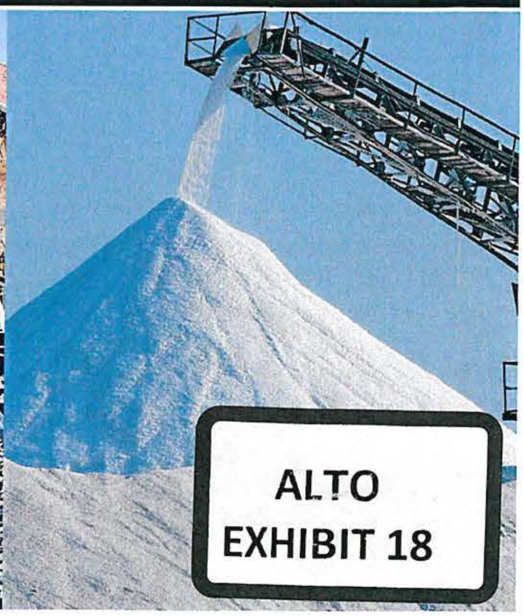


SPRAY TECHNOLOGY FOR DUST CONTROL

A GUIDE TO SELECTING THE OPTIMAL SPRAY SYSTEM FOR YOUR APPLICATION

Spraying Systems Co.®
Experts in Spray Technology

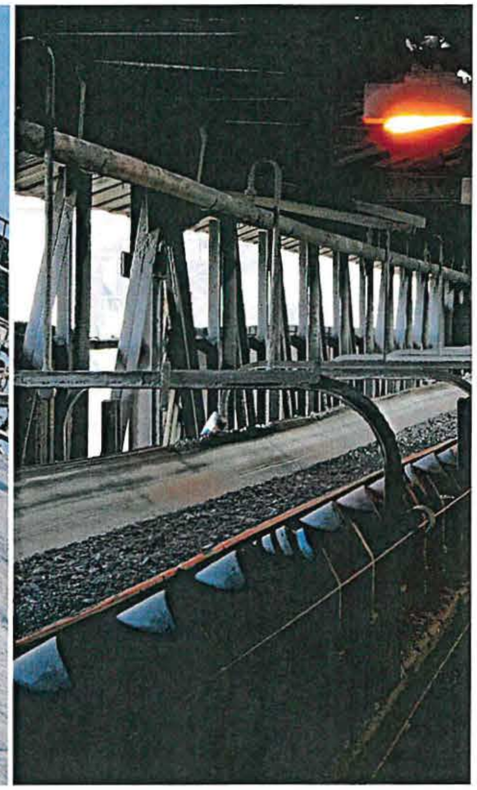




ALTO EXHIBIT 18

Alto CEP 000046

EFFECTIVE WET SYSTEMS TO CONTROL DUST



Based on the elements of your operation, there are many factors to take into consideration when considering spray technology as your dust control solution. A few of these factors include: the process and material producing the dust; where in your operation the dust is being generated; and the utilities and resources (electricity, compressed air, water, labor, etc.) available.

Wet systems using spray technology are used for dust prevention (humidity/moisture content in the material is increased to prevent dust from becoming airborne) and dust suppression/capture (humidity/moisture is added to the air to capture dust particles that are already airborne).

These systems use spray nozzles to apply water and/or chemicals such as wetting, foaming and binding agents to dust particles. However, the system configuration varies depending on the goal – dust prevention or airborne dust suppression. Most operations require both prevention and suppression to effectively control dust. It is important to understand the differences between these two systems to ensure proper spray nozzle specification and operation. **See Figures 1 and 2.**

No matter the application, wet systems are a popular choice as they are highly effective and implementation is typically fast and straightforward. Wet systems provide a long-term solution that can provide years of trouble-free performance with regular maintenance.

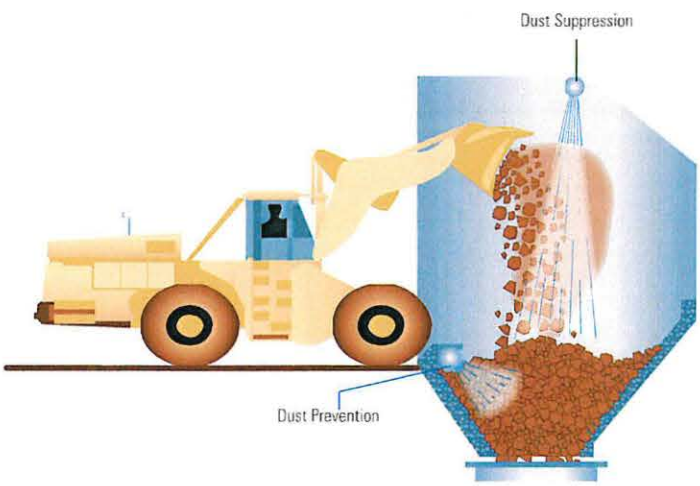


FIGURE 1: Moisture is added directly to the material to prevent dust from becoming airborne. Airborne dust particles are also captured by sprays during material unloading.

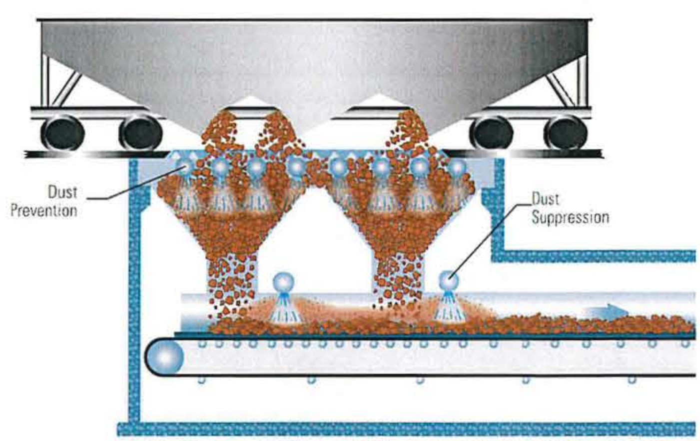


FIGURE 2: Moisture is added to the material to prevent dust as it is transferred from the hopper car to the hopper bin. Sprays are also used to capture airborne dust as the material moves down the conveyor line.

TABLE OF CONTENTS

WORKING WITH A SINGLE SUPPLIER WHO IS AN EXPERT IN ALL FACETS OF SPRAY TECHNOLOGY IS THE BEST WAY TO ENSURE OPTIMAL DUST CONTROL.

Spraying Systems Co. is uniquely qualified to be that supplier. We have:

- A complete range of product solutions:
  - Spray nozzles
  - Accessories
  - Spray bars/headers
- Automated spray controllers and systems
- Decades of experience with dust control in a wide range of industries
- A global sales organization dedicated exclusively to spray technology
- A strong commitment to improving the environment

See pages 10 and 11 for detailed information on our spray technology solutions for dust control.

TYPICAL OPERATIONS

Operations requiring dust prevention:

- Dumping
- Transport
- Transfer points
- Stockpiling/reclaiming

In these operations, moisture can be applied to the material when it is stationary, moving or both.

Operations requiring airborne dust suppression:

- Conveying
- Shearing
- Continuous mining
- Crushing and screening
- Dryers
- Transfer points
- Packaging/filling

Nozzles produce drops to collide with dust particles that are already airborne. The moisture weighs the particles down so they are returned to the material source or ground.

As previously discussed, both dust prevention and dust suppression may be required.

This bulletin is designed to increase your understanding of how to use spray technology for dust control and provide specific information you can use when specifying, operating and maintaining your spray system. **Should you need additional assistance, do not hesitate to contact us. Our local technical experts are always available for consultation.**

KEY CONSIDERATIONS FOR SELECTING A SPRAY SYSTEM

Fundamentally, wet dust control systems are the same – all use water sprays. However, that's where the similarities end. There are many variables to consider when specifying a spray system:

- Dust particle size
- Spray drop size
- Spray pattern
- Spray angle
- Operating pressure
- Surface wetting
- Nozzle placement
- Water quality and availability
- Control options

System configuration starts by answering a few critical questions.

IF YOU NEED TO PREVENT DUST:

What material are you adding moisture to?

Materials will respond to moisture differently. It is important to understand exactly how much moisture to add. Too little moisture means you'll still have a dust problem. Too much moisture, and the integrity of the material may be compromised and quality issues will result. For example, when applying moisture to ore, adding one gallon per ton provides adequate wetting and does not cause process and production problems. Too much moisture also means sludge, mud and frustrating, costly and potentially dangerous maintenance problems.

The material also will determine whether chemicals should be added to the water to improve suppression and/or lower overall application costs. Coal, for example, repels water and usually requires the use of chemical additives to increase absorption.

Also, consider the processing stage. Most dust particles created during breakage are not released into the air. The dust stays attached to the surface of the broken material. Adequate wetting is critical to ensure dust stays attached. Keep in mind that partially processed minerals and coal may be more sensitive to moisture than unprocessed material.

Is the material moving or stationary?

Drop size and spray angle can affect surface coverage when spraying stationary material, while drop size and drop velocity affect coverage when spraying moving material. These factors must be considered when selecting and positioning spray nozzles.

IF YOU NEED TO CAPTURE AIRBORNE DUST:

What is the particle size of the dust?

Dust capture is most effective when dust particles collide with water drops of an equivalent size. (See page 6 for drop size information.) Drops that are too large won't collide with the smaller dust particles, and drops that are too small evaporate too quickly and release the captured dust particles. Understanding the particle size of the dust is critical in effective system design. **See Figure 4.**

You can use these general guidelines regarding dust particle size. However, further research may be necessary depending on the material and stage of the material in processing.

PARTICLE DIAMETER IN MICRONS:
Ground limestone: 10 to 1000 µm
Fly ash: 10 to 200 µm
Coal dust: 1 to 100 µm
Carbon black: 0.01 to 0.3 µm
Pulverized coal: 3 to 500 µm

Where is the dust?

Capturing airborne dust with water sprays is most effective in areas with little air turbulence. Depending on the environment, enclosures may be required.

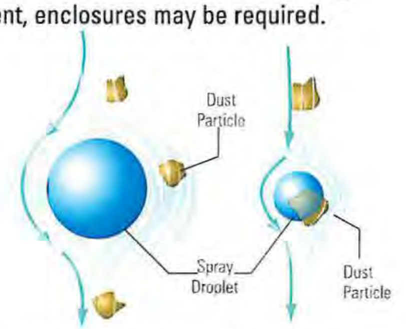


FIGURE 4: If the drop diameter is larger than the dust particle diameter, the dust particle will follow the air stream around the drop. (Shown left.) If the diameters of the drop and the dust particle are comparable, the dust particle will follow the air stream and collide with the drop. (Shown right.)

GENERAL CONSIDERATIONS

Will the dust be returned to the product stream?

If so, the degree of wetting is especially important to avoid quality problems.

Is rollback dust a problem?

Rollback dust usually comes from under the dumping mechanism on front-end loaders, crushers, grinders, cutting heads and entrances to scrubbers. Rollback dust can be a significant problem and may require a separate system for suppression.

What is the quality of the water?

Poor quality water can be problematic in many dust control applications. Strainers may be required – even when using a clean water supply – because contaminants can be introduced to the water from eroding pipes. Poor water quality will also require more frequent nozzle maintenance, increase the nozzle wear rate and shorten service life.

Where will the system be installed?

If freezing temperatures are possible, heaters and floor drains should be considered. Spray equipment may need to be winterized. If wind is a factor, nozzles that produce larger drops are better able to resist drift and should be used.

How important is water conservation?

Water conservation is no longer optional in most areas. It is important to specify nozzles that minimize overspray and water waste.

Controls should be used to ensure the system is active only when needed. Many options are available, ranging from simple solenoid valves for on/off control to sophisticated spray controllers that monitor a wide range of operating conditions and make automatic adjustments.

Is compressed air available?

Air atomizing nozzles mix fluid and compressed air to produce small drops. Small drops evaporate quickly and are desirable for use in operations where wetting is needed but excess moisture cannot be tolerated. Small drops also are required when capture of small airborne dust particles is needed.

What is the spray solution?

- Plain water systems are typically the least expensive and easiest to design and implement
- Adding surfactants to water will lower the surface tension and allows better interaction between water and certain types of dust that resist water absorption
- Foam systems use less water but usually require compressed air
- Binders agglomerate particles together after the moisture evaporates. However, binders can cause clogging and build-up on nozzles, conveyors and other equipment. Water-soluble binders can cause environmental problems should run-off occur. **See Figure 5.**

FIGURE 5: Advantages and Disadvantages of Various Solutions

	PROS	CONS
PLAIN WATER	• Least expensive • Simple to design and operate • Limited carryover effect is possible • When good mixture of water and material is possible, quite effective • Enclosure tightness isn't critical	• Can't use with products that can't tolerate excess moisture • Some materials repel water • Can't use if freezing temperatures are possible • Requires large volumes of water and overwetting is common • Water evaporates – reapplication is necessary
SURFACTANTS	• Dust control efficiency can be higher than plain water • Equivalent efficiency may be possible using less water	• Not all materials tolerate surfactants • Material is contaminated with surfactants • Higher capital, operating and maintenance costs
FOAM	• Best efficiency when effective mixing of foam and material can be achieved • Moisture addition is low	• Material is contaminated with foam • Compressed air is usually required • Higher capital, operating and maintenance costs
BINDERS	• Eliminates the need for re-application • Best efficiency in multiple transfer points	• May cause production problems and nozzle/equipment damage • Higher capital, operating and maintenance costs

SPRAY NOZZLE SPECIFICATION DEPENDS ON MANY FACTORS

While the following general guidelines will help you get started, it is recommended that you contact a firm specializing in spray technology to ensure you get the performance you need for your specific environment and operating conditions.

UNDERSTAND THE ROLE OF DROP SIZE

Drop size refers to the size of the individual drops that comprise a nozzle's spray pattern. Each spray pattern provides a range of drop sizes, which comprises the drop size distribution. **See Figure 6.**

Many factors can affect drop size, including liquid properties, nozzle capacity, spray pressure and spray angle.

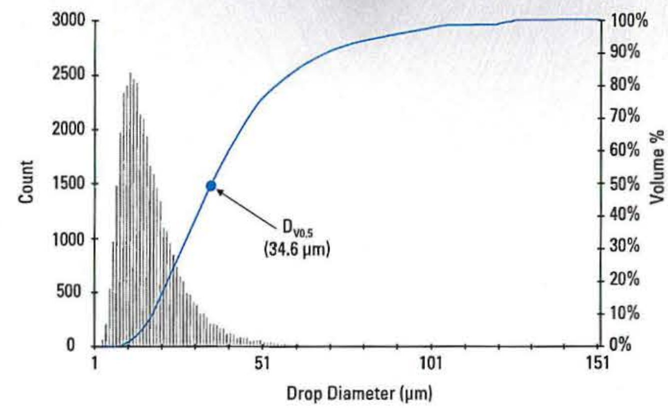
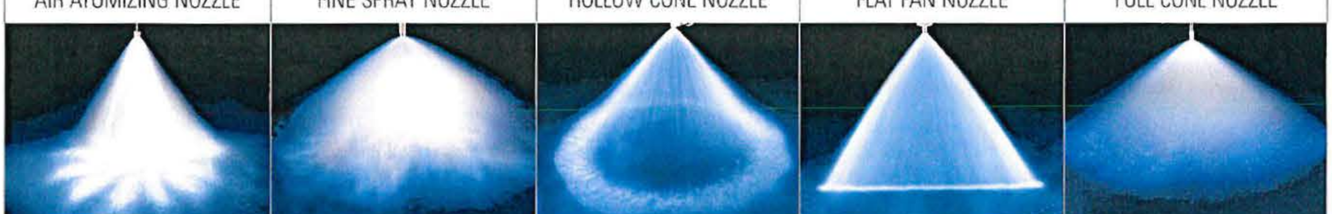


FIGURE 6: $D_{V0.5}$ is the Volume Median Diameter, which is also known as VMD or MVD. $D_{V0.5}$ is a value where 50% of the total volume of liquid sprayed is made up of drops with diameters larger than the median value and 50% smaller than the median value.

LEARN THE BASICS OF DROP SIZE

- Air atomizing nozzles produce the smallest drop sizes, followed by fine spray, hollow cone, flat fan and full cone nozzles (see graphic below)
- Higher pressures yield smaller drops, and lower pressures yield larger drops
- Lower-flow nozzles produce the smallest drops, and higher-flow nozzles produce the largest drops
- Increases in surface tension increase drop size
- Drop velocity is dependent upon drop size. Small drops may have a higher initial velocity, but velocity diminishes quickly. Larger drops retain velocity longer and travel further

AIR ATOMIZING NOZZLE	FINE SPRAY NOZZLE	HOLLOW CONE NOZZLE	FLAT FAN NOZZLE	FULL CONE NOZZLE



SMALLEST DROP SIZE → **LARGEST DROP SIZE**

NOZZLE TYPES: HYDRAULIC ATOMIZING VS. AIR ATOMIZING

In most operations, drops less than 200 microns are better at suppressing airborne dust particles, which are small as well. Atomization shears the water into small particles, reducing surface tension and increasing the number of drops in a given area.

Atomization is achieved by pumping water through nozzles at high pressure or by using a combination of compressed air and water pumped at lower pressure to produce small drops or fog. Using air atomizing nozzles is usually preferable since they produce smaller drops. However, the cost of installing and operating compressed air may be prohibitive in some operations. Hydraulic fine spray nozzles are widely used and yield acceptable performance in many operations. **See Figure 7 for comparison matrix.**

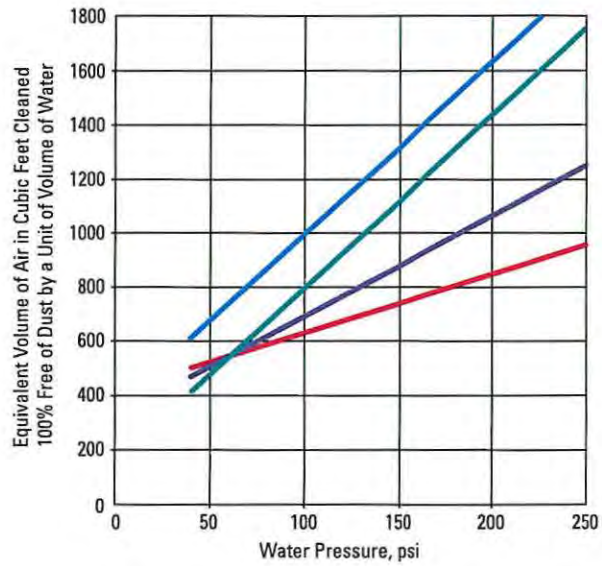
FIGURE 7 : HYDRAULIC FINE SPRAY VS. AIR ATOMIZING NOZZLE COMPARISON

NOZZLE TYPE	PROS	CONS
HYDRAULIC FINE SPRAY  (Wall-Mount)	• Simple installation • Lower operating costs – no compressed air required	• Operating at high pressures increases electrical consumption and increases pump wear • Water quality is critical. Small orifices are prone to clogging by small contaminants • Best used in enclosed areas with little turbulence
AIR ATOMIZING 	• Smaller drop size • Larger flow passages and less clogging	• Expense of compressed air • Possibility of injecting additional air into the area – increased velocity could stimulate additional dust movement • Best used in enclosed areas with little turbulence

For dust prevention, standard hydraulic nozzles that produce drops between 200 and 1200 μm are generally used. For suppression of airborne dust, air atomizing nozzles or hydraulic fine spray nozzles that produce drops between 20 and 200 μm are used. Figure 8 illustrates the effectiveness of airborne dust suppression by nozzle type.

FIGURE 8:

- ATOMIZING NOZZLE
- HOLLOW CONE NOZZLE
- FULL CONE NOZZLE
- FLAT SPRAY NOZZLE



Bureau of Mines Technology News 150, July 1982, "Dust Knockdown Performance of Water Spray Nozzles"

SPRAY PATTERN SELECTION

Operating conditions will determine which nozzle style and spray pattern will offer the best performance. Figure 9 provides an overview that can help you narrow the options, but be sure to consult performance tables and drop size data to refine your selection.

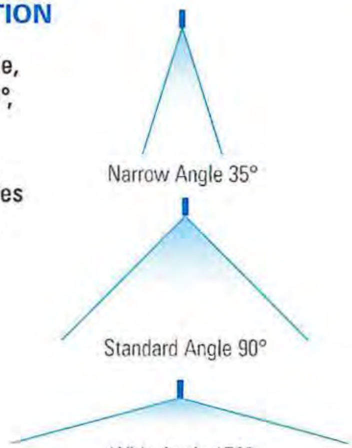
For details on the full selection of Spraying Systems spray nozzles, see page 10.

FIGURE 9: SPRAY NOZZLE TYPES

SPRAY NOZZLE TYPE	SOLUTION	APPLICATIONS	FEATURES	SPRAY PATTERN	APPLICABLE SPRAYING SYSTEMS NOZZLES
HOLLOW CONE	Dust Prevention/ Airborne Dust Suppression	• Transfer Points • Transport Areas/Roads • Jaw Crushers	• Large nozzle orifices that reduce clogging • Small drop size – generally smaller than other nozzle types • Typically used in locations where dust is widely dispersed		• WhirlJet® In-line BD and Right-Angle Series Hollow Cone Hydraulic Nozzles • SpiralJet® Series Hydraulic Nozzles
FLAT SPRAY	Dust Prevention	• Stockpiles	• Small- to medium-size drops • Typically used in narrow or rectangular enclosed spaces		• VeeJet® Series Flat Spray Hydraulic Nozzles
FULL CONE	Dust Prevention	• Stackers, Reclaimers • Transfer Points	• High velocity over a distance • Medium- to large-size drops • Commonly used when nozzles must be located a good distance away from the area where dust suppression is needed or to clear mechanical obstructions		• FullJet® Series Full Cone Hydraulic Nozzles • SpiralJet® Series Hydraulic Nozzles
AIR ATOMIZING	Airborne Dust Suppression	• Jaw Crushers • Loading Terminals • Primary Dump Hopper • Transfer Points	• Small drops • Commonly used to capture small dust particles in enclosed areas to minimize drift		• J Series Air Atomizing and Automatic Nozzles
HYDRAULIC FINE SPRAY	Dust Prevention/ Airborne Dust Suppression	• Stackers, Reclaimers • Stockpiles • Transfer Points • Jaw Crushers • Loading Terminals • Primary Dump Hopper	• Small drops • Commonly used to capture small dust particles in enclosed areas to minimize drift		• Fine Spray Hollow Cone Hydraulic Atomizing Nozzles • FogJet® Series Multiple Orifice Hydraulic Fine Nozzles

SPRAY ANGLE SELECTION

The spray angle of the nozzle, which ranges from 0° to 175°, is dependent upon the application, including spray pattern, the number of nozzles used and nozzle placement.



OPERATING PRESSURE

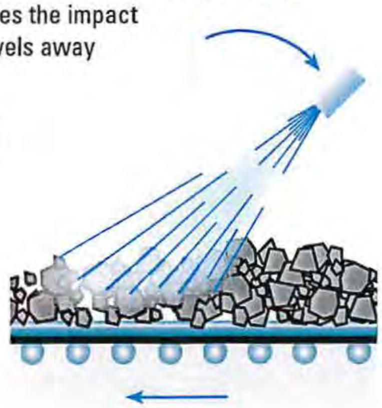
The ideal operating pressure is dependent upon many application-specific variables. However, these basic principles should help you decide:

- Increasing pressure decreases drop size
- High-pressure sprays are better suited for enclosed areas
- Nozzles operating at higher pressures should be placed close to the dust source to minimize the amount of air set in motion along the spray path

SURFACE WETTING

To increase surface wetting, use nozzles that produce a large number of small drops and decrease the contact angle of the spray on the material.

Impact, which is influenced by operating pressure, also can increase surface wetting. Keep in mind that drops normally travel through turbulent air before they hit the material. Friction drag of air reduces the impact velocity as the water travels away from the nozzle orifice.

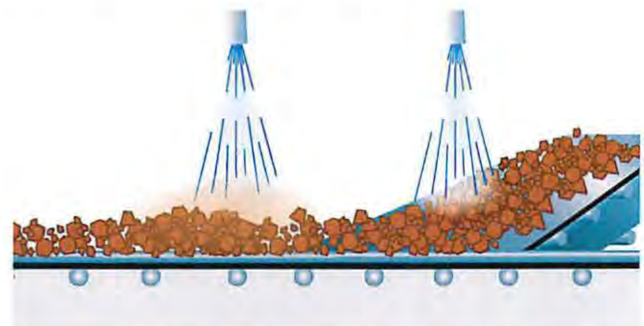


Decrease the contact angle of the spray on the material as shown here to increase surface wetting.

NOZZLE PLACEMENT AT TRANSFER POINTS

Nozzles being used for dust prevention should be placed as close to the beginning of the transfer point as possible. The force of the moving material helps the water penetrate the material as it moves through the transfer point.

Nozzles in airborne dust suppression systems treat the air around the material rather than the material. These nozzles are generally placed at the end of transfer points so the material load can settle and positioned so they are spraying above the material and not on it.



Position nozzles at the beginning of the transfer point for dust prevention. Position nozzles to spray the air above the material at the end of the transfer points to suppress airborne dust.

ADDITIONAL CONSIDERATIONS:

- Keep nozzles out of the range of equipment or falling debris that could cause damage
- Be sure nozzles are accessible for maintenance
- The precise placement of nozzles will depend on many factors. Consult with your nozzle supplier for recommendations

WATER QUALITY

Water hardness increases its surface tension and may increase the amount of water needed for adequate wetting.

Contaminants in the water source may influence the nozzle selection process. If water contains debris, consider using maximum, free passage nozzles and/or filtering water to less than 50% of the maximum free passage size of the nozzle to minimize clogging and excessive nozzle wear.

AIR ATOMIZING AND AUTOMATIC NOZZLES
J SERIES NOZZLES

- Extra small drop size – ideal for use in airborne dust suppression
- Provides greater wetting per volume of liquid and reduces water usage
- Suitable for use with surfactants for greater wetting and decreased water consumption

FINE SPRAY HOLLOW CONE HYDRAULIC ATOMIZING NOZZLES
LN NOZZLES

- Extra small drop size – ideal for use in airborne dust suppression
- Standard and wide-angle spray patterns available
- Suitable for use with poor-quality water – versions with integral strainers available
- UniJet® nozzles feature replaceable spray tips; bodies are re-used

MULTIPLE ORIFICE HYDRAULIC FINE SPRAY NOZZLES
FOGJET® NOZZLES

- Small drop size – ideal for use in airborne dust suppression and some dust prevention operations
- Produces a fine mist or fog over a large area
- Suitable for use with poor-quality water when a TW line strainer is placed upstream of the nozzle

HOLLOW CONE HYDRAULIC NOZZLES
WHIRLJET® IN-LINE BD AND RIGHT-ANGLE NOZZLES

- Small to medium drop size
- Uniform distribution over a wide range of flow rates
- Lower-profile projection for installation in a tee or pipe header

HYDRAULIC SPRAY NOZZLES
SPIRALJET® NOZZLES

- Medium to large drop size
- Provides maximum liquid throughput for any given pipe size
- Full or hollow cone spray pattern
- Extra-large, free passage versions available

FULL CONE HYDRAULIC NOZZLES
FULLJET® NOZZLES

- Medium to large drop size
- More impact than other nozzles
- Removable caps and vanes for easy inspection and cleaning on many models
- Maximum free passage (MFP) models for clog-free performance available

Alto CEP 000055

FLAT SPRAY HYDRAULIC NOZZLES
VEEJET® NOZZLES

- Small to medium drop size
- Narrow to wide spray angles
- Unobstructed flow passages to minimize clogging

T-STYLE STRAINERS

- Large open screen area for efficient liquid straining
- Designed for minimal maintenance
- Cleaning options: Removable bottom cap or plug for complete withdrawal of entire screen assembly; bottom pipe plug can be replaced with a drain cock for quick-flush cleaning; removable guide bowls and more

36275 ADJUSTABLE BALL FITTINGS

- Use to minimize overspray and ensure precise spray placement
- Simplifies nozzle positioning without disturbing pipe connections
- Smooth, finished surfaces eliminate leaking

SPLIT-EYELET CONNECTORS

- Use to install nozzles, gauges and hoses in piping systems quickly and easily
- Eliminates body rotation within the flange when installing/removing nozzles
- Eliminates need for taping holes and provides superior thread engagement to eliminate stripped threads
- Reduces sediment and clogging – inlet extends into the pipe

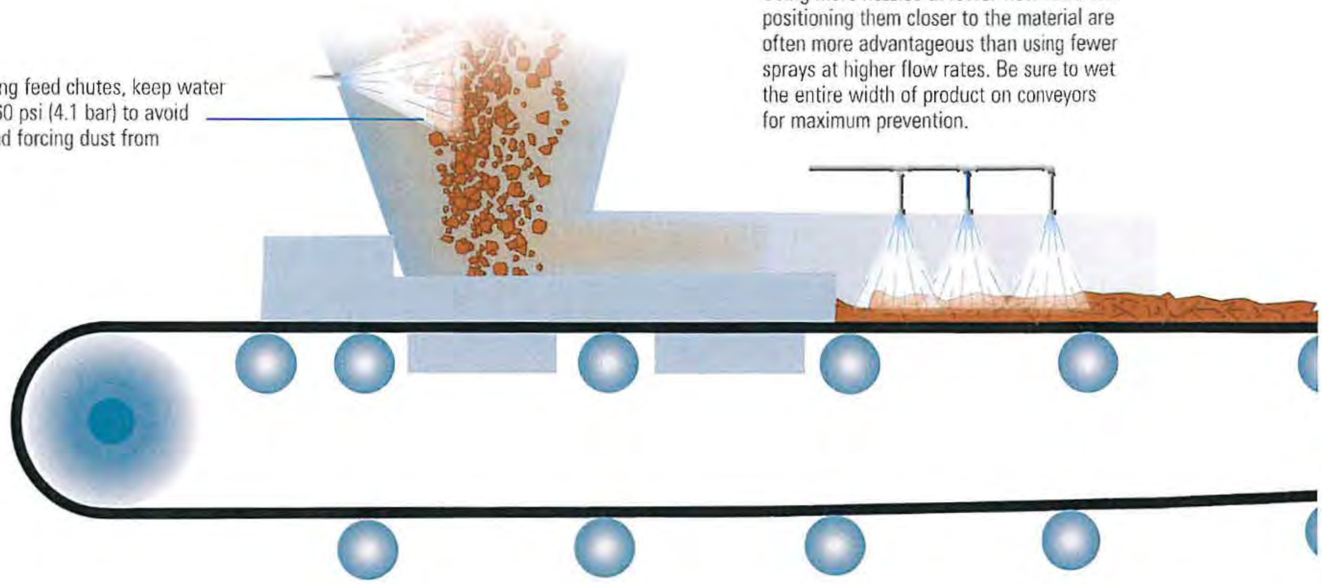
AUTOJET® DUST CONTROL SYSTEMS

Systems vary by region

- Pre-packaged, pre-assembled and pre-tested system ready for use immediately upon delivery
- Can operate one or many nozzles, manifolds or headers
- Automated injection of chemical additives minimizes waste and ensures consistent application
- Choice of spray nozzles – wide range

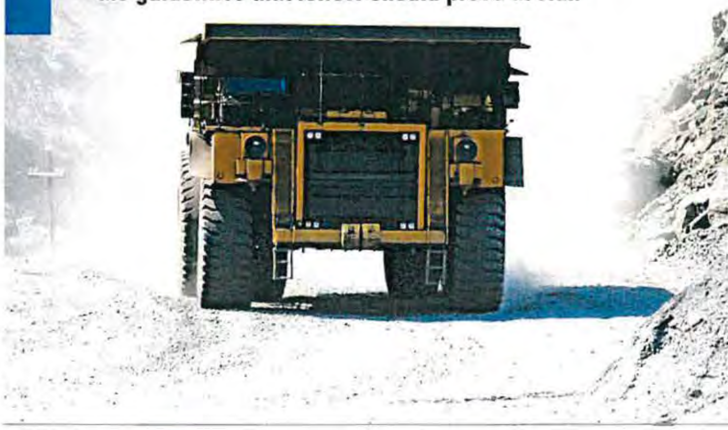
Alto CEP 000056

SPRAY OPTIMIZATION TIPS FOR DUST CONTROL



SOLVING COMMON PROBLEMS

It is easy to detect problems in wet dust control systems. Dust is still prevalent or the material is too wet and new problems occur such as quality issues and excessive maintenance. Unfortunately, the solutions to these problems aren't always straightforward and depend on the specifics of the operation. However, the guidelines that follow should prove useful.



PROBLEMS:

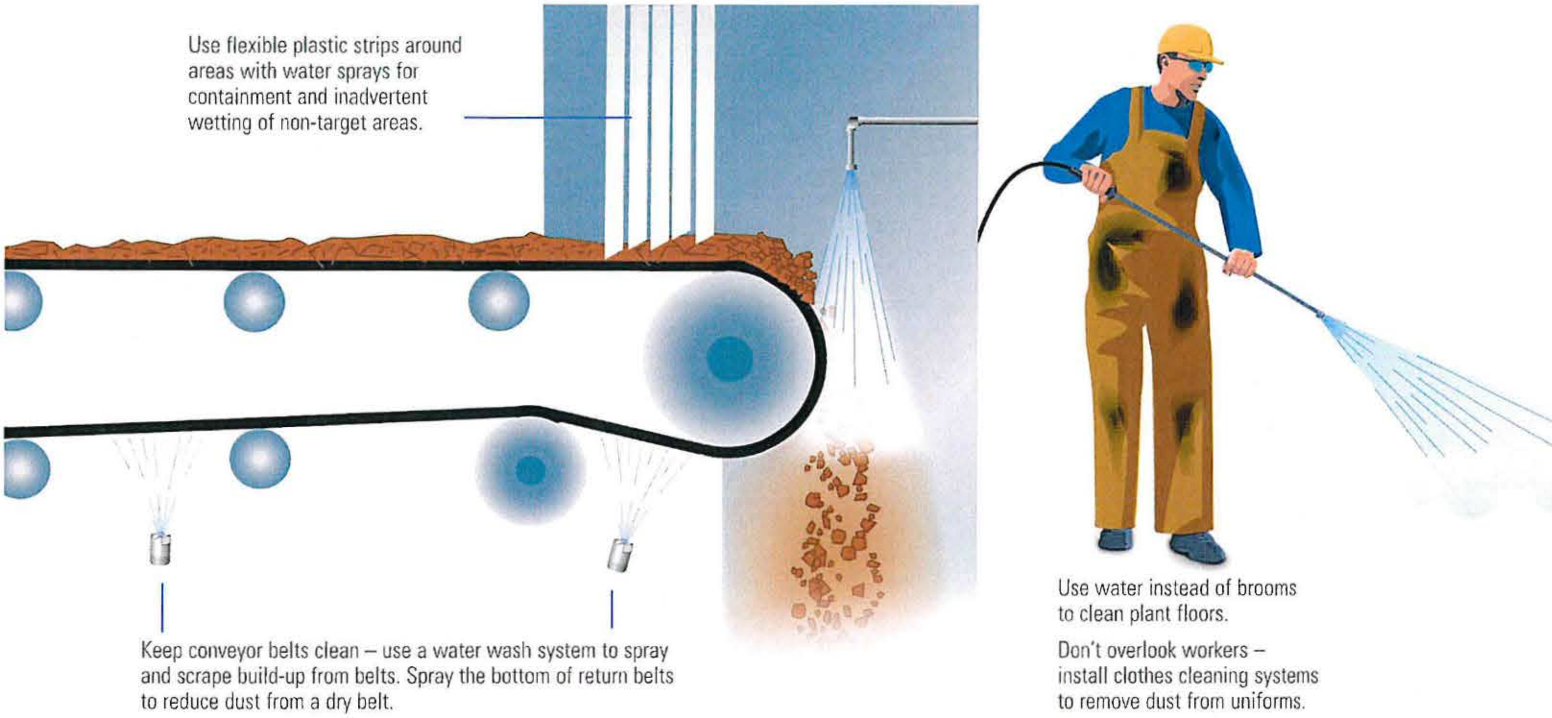
- Material is sticking to screen cloth/conveyors
- Sludge accumulation in chutes and areas around transfer points
- Belt slippage

SOLUTIONS:

To reduce the amount of water being applied:

- ☐ Reduce flow rate
- ☐ Use fewer nozzles
- ☐ Check nozzles for wear – capacity will increase as nozzle orifices wear
- ☐ Consider spray control to ensure nozzles are spraying only when required

Alto CEP 000057



PROBLEM:

Too much dust

SOLUTIONS:

- ☐ Increase flow rate
- ☐ Increase the number of nozzles used
- ☐ Adjust nozzle placement to assure sprays are reaching the target area
- ☐ Consider enclosures to protect nozzles from air/wind or use nozzles with larger drops if sprays are drifting off target
- ☐ For airborne dust suppression, determine dust particle size and ensure nozzle drop size is comparable
- ☐ Inspect nozzles for clogging

PROBLEM:

Handling material is difficult

SOLUTIONS:

- ☐ Inspect material. Uneven application of water will result in material inconsistency. Reposition nozzles for more uniform coverage
- ☐ Consider a change in nozzle type or spray angle to ensure consistent coverage

ACHIEVING RESULTS WITH SPRAY OPTIMIZATION

EQUIPMENT MANUFACTURER KEEPS WORKERS AND ENVIRONMENT SAFE WITH DUST CONTROL SYSTEM

Problem: A leading manufacturer of bulk handling equipment in Brazil needed a system to control iron ore dust. When the rail cars are used by customers, they are inverted for unloading so the iron falls from the cars into chutes. The manufacturer's customers could be jeopardizing the health of its employees and facing significant environmental fines without effective dust control.

Solution: The Spraying Systems Co. solution was a fluid delivery system including pumps, filtration and three spray manifolds.

The dust control system uses more than three hundred hydraulic nozzles and eliminates the need for the costly compressed air often required in other systems. Centrifugal pumps supply water to the spray manifolds and liquid line strainers are used to prevent nozzle clogging and reduce on-going maintenance.

RESULTS

- **Effectively suppressed dust**
- **A safe work environment**
- **Avoiding several hundred thousand dollars per year in fines**

COAL PRODUCER IMPROVES SAFETY AND OPENS NEW MINING AREAS WITH ADVANCED WATER SPRAY TECHNOLOGY

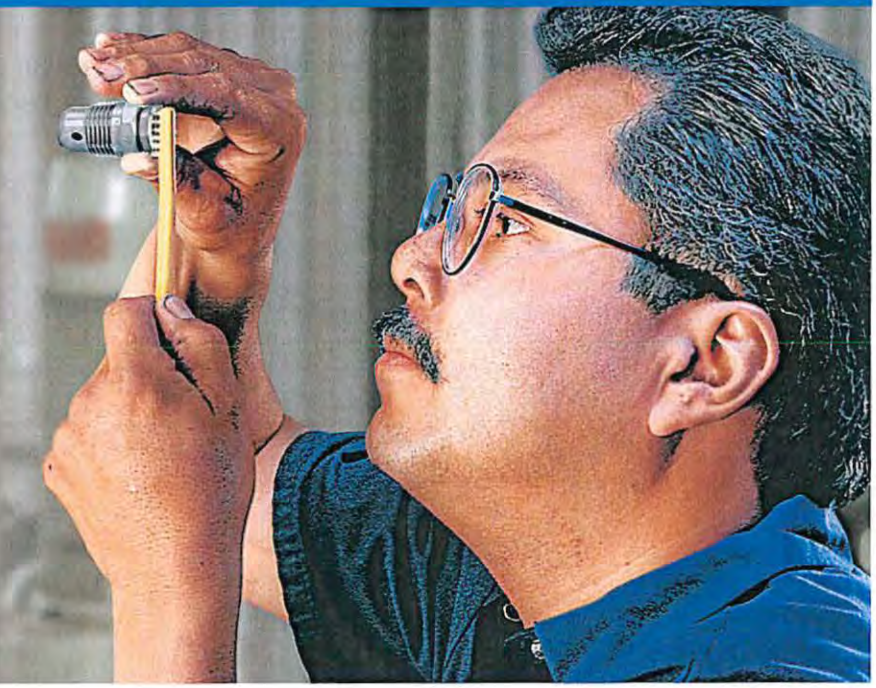
Problem: A leading coal producer in the USA needed to dissipate methane gas in an underground mine to eliminate the possibility of ignition. Certain areas of the mine near methane well sites were considered unsafe because of the higher concentration of methane gas. Saturating the air to a specific humidity prevents the methane from igniting. The hydraulic nozzles used on the continuous miners were unable to produce the small droplets required to humidify the air.

Solution: Spraying Systems Co.'s FloMax® air atomizing nozzles provided the ideal solution. FloMax nozzles produce very small droplets, between 40 and 60 microns, at low flow rates for effective dust control and humidification. The nozzles are mounted on the continuous miner in seven banks of five nozzles each. During operation, these nozzles create a curtain of fine mist that suppresses dust, dissipates the methane gas and prevents the possibility of ignition.

RESULTS

- **Improved safety**
- **Mine previously untapped areas**
- **System payback: two weeks**

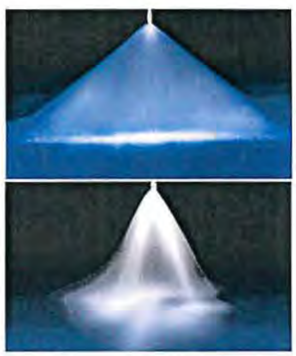
MAINTENANCE IS CRITICAL TO NOZZLE LIFE



PREVENTIVE MAINTENANCE

Spray nozzles are designed for long-lasting, trouble-free performance. However, like all precision components, spray nozzles do wear over time. Spray performance can suffer and costs can rise. How quickly wear occurs is dependent upon a variety of application-specific factors. Other factors that can negatively impact spray nozzle performance are plugging, corrosion, scale build-up and caking. Establishing and implementing a nozzle maintenance program is the most effective way to prevent and minimize costly spray nozzle problems.

PLUGGING/CLOGGING



- Use proper water clarification devices
- Use strainers
- Be sure to specify nozzles with adequate free passage
- Conduct maintenance on a regular basis

CORROSION

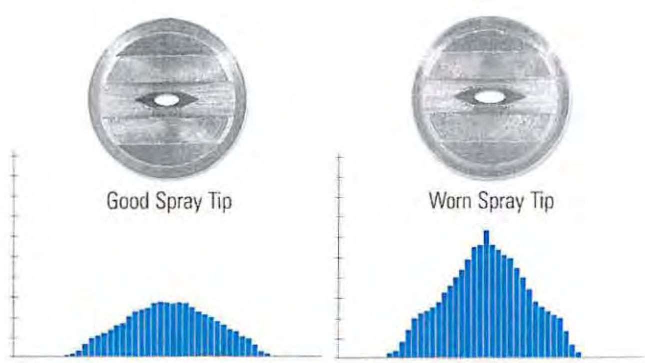
- Specify nozzles in the appropriate materials for the solutions being sprayed
- Scale build-up
- Control hardness level of the water
- Use chemical additives as needed
- Conduct maintenance on a regular basis

CAKING

- Conduct maintenance on a regular basis to remove build-up inside the nozzle or on the exterior

MAINTENANCE TIPS

- Determine the optimal maintenance schedule based on the specifics of your operations
- Examine spray patterns and watch for changes in spray angles, distribution and heavy edges
- Wear may be hard to detect so go beyond visually inspecting nozzles. Check flow rate and spray pressure at a system level
- The nozzle orifice is precision engineered, so be careful to avoid damage, or replacement will be necessary
- Cleaning tools should be significantly softer than the construction material of the nozzles. Use a toothbrush or toothpick – never clean the orifice with metal objects
- Soak in mild solvent to loosen debris for easier removal with proper equipment



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Bulletin No. 652A

11.19.2.2 Emissions and Controls [10, 11, 12, 13, 14, and 26]

Crushed Stone Processing

Emissions of PM, PM-10, and PM-2.5 occur from a number of operations in stone quarrying and processing. A substantial portion of these emissions consists of heavy particles that may settle out within the plant. As in other operations, crushed stone emission sources may be categorized as either process sources or fugitive dust sources. Process sources include those for which emissions are amenable to capture and subsequent control. Fugitive dust sources generally involve the reentrainment of settled dust by wind or machine movement. Emissions from process sources should be considered fugitive unless the sources are vented to a baghouse or are contained in an enclosure with a forced-air vent or stack. Factors affecting emissions from either source category include the stone size distribution and the surface moisture content of the stone processed, the process throughput rate, the type of equipment and operating practices used, and topographical and climatic factors.

Of graphical and seasonal factors, the primary variables affecting uncontrolled PM emissions are wind and material moisture content. Wind parameters vary with geographical location, season, and weather. It can be expected that the level of emissions from unenclosed sources (principally fugitive dust sources) will be greater during periods of high winds. The material moisture content also varies with geographical location, season, and weather. Therefore, the levels of uncontrolled emissions from both process emission sources and fugitive dust sources generally will be greater in arid regions of the country than in temperate ones and greater during the summer months because of a higher evaporation rate.

The moisture content of the material processed can have a substantial effect on emissions. This effect is evident throughout the processing operations. Surface wetness causes fine particles to agglomerate on or to adhere to the faces of larger stones, with a resulting dust suppression effect. However, as new fine particles are created by crushing and attrition and as the moisture content is reduced by evaporation, this suppressive effect diminishes and may disappear. Plants that use wet suppression systems (spray nozzles) to maintain relatively high material moisture contents can effectively control PM emissions throughout the process. Depending on the geographical and climatic conditions, the moisture content of mined rock can range from nearly zero to several percent. Because moisture content is usually expressed on a basis of overall weight percent, the actual moisture amount per unit area will vary with the size of the rock being handled. On a constant mass-fraction basis, the per-unit area moisture content varies inversely with the diameter of the rock. The suppressive effect of the moisture depends on both the absolute mass water content and the size of the rock product. Typically, wet material contains >1.5 percent water.

A variety of material, equipment, and operating factors can influence emissions from crushing. These factors include (1) stone type, (2) feed size and distribution, (3) moisture content, (4) throughput rate, (5) crusher type, (6) size reduction ratio, and (7) fines content. Insufficient data are available to present a matrix of rock crushing emission factors detailing the above classifications and variables. Available data indicate that PM-10 and PM-2.5 emissions from limestone and granite processing operations are similar. Therefore, the emission factors developed from the emissions data gathered at limestone and granite processing facilities are considered to be representative of typical crushed stone processing operations. Emission factors for filterable PM, PM-10, and PM-2.5 emissions from crushed stone processing operations are presented in Tables 11.19.2-1 (Metric units) and 11.19.2-2 (English units.)

ALTO EXHIBIT 19

Alto CEP 000062

Q. COULD YOU PLEASE STATE YOUR NAME FOR THE RECORD?

A. My name is Eluid L. Martinez.

Q. WHERE ARE YOU CURRENTLY EMPLOYED?

A. I am presently the owner of Water Resources Management Consultants, LLC, located at 1795 Paseo de Vista, Santa Fe, NM, 87501, which provides consulting services regarding water rights administration, water resources management and water use issues in the State of New Mexico.

Q. WHAT ARE YOUR QUALIFICATIONS?

A. I am an expert qualified by knowledge, skill, experience, training and education to provide opinions regarding water use issues and the administration and regulation of water rights in New Mexico.

Q. COULD YOU BRIEFLY DESCRIBE YOUR BACKGROUND, EXPERIENCE AND TRAINING?

A. I hold a B.S. in civil engineering from New Mexico State University (1968). I am a registered Professional Engineer and Surveyor (No. 5124) in the State of New Mexico and was employed by the Office of the New Mexico State Engineer in various capacities from 1971 through 1994. In December 1990, I was appointed New Mexico State Engineer by the Governor of New Mexico and was subsequently confirmed by the New Mexico State Senate. I served in that position through 1994. During the summer of 1995, I was nominated by President Clinton to be Commissioner of the United States Bureau of Reclamation of the U.S. Department of the Interior and was confirmed as Commissioner by the United States Senate in December of 1995. As Commissioner, I oversaw the water resource management issues related to U.S. Bureau of Reclamation projects across the

ALTO
EXHIBIT 20

American west. I served in that capacity until 2001. A copy of my resume is attached hereto as Exhibit 21.

Q. DID YOU TESTIFY AT THE PUBLIC HEARING HELD ON FEBRUARY 9, 2022 IN THE PROCEEDING BEFORE THE NEW MEXICO ENVIRONMENT DEPARTMENT?

A. Yes, I did.

Q. COULD YOU PLEASE DESCRIBE THAT TESTIMONY?

A. Yes. I testified regarding the necessity of water to control emissions as represented in the Application. The majority of the "Emissions Control Equipment" identified on Table 2-C of the Application is "Additional Moisture Content." However, Table 2-C does not identify the amount of water that comprises the "Additional Moisture Content" emission control equipment to control fugitive dust emissions from Unit 3, the Feed Hopper Conveyor, Unit 4, the Aggregate Bins, Unit 5, the Aggregate Weight Batcher, and Unit 6, the Aggregate Delivery Conveyor. Without a known supply and source of water, the ability of the Applicant to control emissions at Units 3, 4, 5 and 6 renders the conclusions for emission controls unreliable and ineffective.

Q. HAVE YOU ANALYZED THE POTENTIAL SOURCES OF WATER THAT IS NECESSARY TO ACHIEVE THE EMISSION CONTROLS REPRESENTED IN THE APPLICATION?

A. Based on my review of the Application and my experience with water rights administration, the only potential sources of water that could be provided to the proposed concrete batch plant are: (1) an existing source on the property; (2) the delivery of water via pipeline; and (3) trucking water to the facility from an off-site location. The Applicant applied for and received a permit on May 7, 2021 to drill a livestock watering well and to divert up to 3.0 ac-ft/yr. However, the permitted use of water for this well does not extend to diverting water from this source for the operation of a concrete batch plant, the water necessary for effective emissions control. An application seeking a permit for new appropriation of groundwater for the industrial uses at the facility would be subject to the rigorous and time consuming process in front of the Office of the State Engineer. Similarly, the Applicant could file an application to transfer water rights, but such a process is costly and takes a considerable amount of time before a final determination is made regarding whether the application will be granted or denied. A pipeline is impractical given the easement issues concomitant with constructing a pipeline crossing private and public lands. Accordingly, trucking water is the only viable option to provide water to the facility in the near future.

Q. DO YOU KNOW HOW OFTEN WATER MUST BE DELIVERED VIA TRUCK TO THE FACILITY SITE?

A. The Applicant has not identified the existence of water storage tanks at the facility. Accordingly, the water necessary for the operation of the facility and for emissions control must be delivered on a daily basis.

Q. IS THE IDENTIFICATION OF A SOURCE AND AMOUNT OF WATER NECESSARY TO ESTABLISH THE EMISSION CONTROLS IDENTIFIED IN THE APPLICATION?

A. Yes. Without an identification of the amount of water that will be consumed to effectuate the emission controls for these four (4) units, there is no way to determine if the Applicant can actually achieve the emission controls identified in the Application.

Q. HAVE YOU MADE ANY CALCULATIONS WITH RESEPCT TO THE AMOUNT OF WATER NECESSARY TO ACHIEVE THE EMISSION CONTROLS REPRESENTED IN THE APPLICATION?

A. Yes. The estimated the amount of water necessary to achieve the required 2.65% of moisture volume within the aggregate and sand piles required for those piles under Draft Permit Condition A502A was 14 acre-feet per year above and beyond the water necessary for the production of concrete and to achieve the emission controls at Units 3 through 6.

Q. DO YOU HAVE ANY OTHER OBSERVATIONS ABOUT THIS PROCEEDING?

A. It is my understanding that in this appeal NMED legal and technical staff are recommending approval of the permit Application as originally filed, notwithstanding the Hearing Officer and NMED Secretary, through his designee, denying the permit Application. In my 50+ years of involvement and experience in state and federal government agencies, including my 10 years as head of a state agency, I do not recall an instance where agency staff sought to have the decision of an agency director reversed.

ELUID L. MARTINEZ
P.O. Box 31066
Santa Fe, NM 87594-1066
Telephone: (505) 984-9817
E-mail: eluid@excite.com

EXPERIENCE:

2001 – Present	Water Resources Management Consultants, LLC Mailing Address: P.O. Box 31066, Santa Fe, NM 87594-1066 Physical Address: 505 Don Gaspar Ave, Santa Fe, NM 87505 *President, Water Resources Management Consultants, LLC*
12/1995 – 01/2001	Commissioner of Reclamation, United States Bureau of Reclamation, Department of the Interior, United States Presidential Appointment, confirmed by the United States Senate.
12/1990 – 12/1994	New Mexico State Engineer and Secretary of the New Mexico Interstate Stream Commission, appointed by the governor and confirmed by the State Senate. Served as the New Mexico Compact Commissioner/Representative to the following: Rio Grande Compact Colorado River Compact La Plata River Compact Costilla Creek Compact Member of the New Mexico Water Quality Control Commission, New Mexico Coal Surface Mining Commission and the New Mexico Hardrock Mining Commission.
04/1984 – 11/1990	Chief of Technical Division, New Mexico State Engineer's Office. Also served as a State Engineer's Water Rights Hearing Examiner/Officer.
09/1971 – 04/1984	Office of the New Mexico State Engineer, Chief of the Hydrographic Survey Section; Acting Chief, Water Use and Reports Section; Acting Chief, Administrative Services Section

PROFESSIONAL PUBLICATIONS:

E.g., Colorado River Basin Water Management: Evaluating and Adjusting for Hydroclimatic Variability (Co-author) (National Research Council of the National Academics).

PROFESSIONAL ACTIVITIES:

2002 – Present

Principal, Water Resources Management Consultant, LLC. I am a registered Professional Engineer and Land Surveyor and consult in water rights, water rights administration and water management issues.
I have testified several times as an expert in contested water right application hearings before State Engineer appointed Hearing Examiners.
I have testified in court and/or prepared expert reports or affidavits as follows:

I prepared an expert witness report and testified for the City of Alamogordo in the matter of the City of Alamogordo and David and Julia Christopher and Tularosa Community Ditch Corporation, Dan C. Abercrombie, Else I. Baily, Laymon Hightower, David Rankin and Allen (Bill) Trammell vs. New Mexico State Engineer, John R. D'Antonio, Jr. and HFR

ALTO
EXHIBIT 21

Corporation and Three Rivers Cattle Ltd Co. in the Twelfth Judicial District Court, County of Otero, State of New Mexico.

I prepared an expert Affidavit for the Defendant in the Matter of Henry G. Coors and South Hills Water Company, Plaintiff v. Albuquerque Bernalillo County Water Utility Authority, Defendant, in Cause No. CV-2010-04258, Second Judicial District Court, County of Bernalillo, State of New Mexico.

I prepared an expert Affidavit for the Defendant in the matter of Harper Cattle L.L.C. Plaintiff vs. The Mora Trust and Harold Daniels, Individually, Defendants, Fourth Judicial District Court, County of Mora, State of New Mexico.

I prepared expert Affidavits for the Albuquerque-Bernalillo County Water Utility Authority in the case of Albuquerque-Bernalillo County Water Utility Authority vs. New Mexico State Engineer John D'Antonio and Herk Rodriguez D.B.A. New Mexico Land and Water Conservancy, LLC.

I prepared expert witness reports for Tri-State Electric Generation and Transmission Association, Inc. with respect to Past and Present Use Water Rights of Pueblos Acoma and Laguna.

I prepared an expert Affidavit and a Statement of Opinions for the City of Las Cruces in the Lower Rio Grande Stream System and Underground Water Basin Adjudication, Stream System related to the claims of the United States with respect to the Rio Grande Project.

HONORS:

Member:
Sigma Tau-National Engineering Honor Society
Chi Epsilon-National Civil Engineering Honor Society
Sigma Chi Rho-NMSU Civil Engineering Honor Society

MEMBERSHIPS:

Present Member, Board of Directors, National Water Resources Association

Past Member, New Mexico Supreme Court Appointee to the Judicial Performance Evaluation Commission

Past Member, Western States Water Council

Past Member, National Drought Policy Commission

Past Member, National Research Council, National Academy, Committee on the Scientific Basis of Colorado River Basin Water Management

Past Member, City of Santa Fe Board of Education
City of Santa Fe Redevelopment Commission
City of Santa Fe Urban Policy Board
City of Santa Fe Historical Styles Committee
City of Santa Fe Planning Commission
City/County of Santa Fe Planning and Zoning Commission
City/County of Santa Fe Extra Territorial Zoning Commission

EDUCATION:

Bachelor of Science-Civil Engineering
New Mexico State University 1968

Q. PLEASE STATE YOUR NAME FOR THE RECORD?

A. My name is Brad Sohm.

Q. HAVE YOU REVIEWED THE PRE-FILED DIRECT TECHNICAL TESTIMONY SUBMITTED BY PETITIONER ROPER CONSTRUCTION, INC. ("ROPER") AND THE NEW MEXICO ENVIRONMENT DEPARTMENT IN THIS PROCEEDING ("NMED")?

A. Yes, I have reviewed the pre-filed testimony submitted by Roper and the pre-filed testimony submitted by NMED.

Q. IN YOUR DIRECT TESTIMONY, YOU TESTIFIED THAT YOU PROVIDED EXPERT TESTIMONY REGARDING ROPER'S PROPOSED PLANT DURING A PRELIMINARY INJUNCTION HEARING BEFORE JUDGE SUGG. WERE YOU PRESENT DURING THE TESTIMONY PROVIDED BY ROPER'S NOISE EXPERT DURING THE PRELIMINARY INJUNCTION HEARING?

A. Yes, I was.

Q. DID ANY OF THE TESTIMONY PROVIDED BY ROPER'S NOISE EXPERT IN THE STATE DISTRICT COURT PROCEEDING HAVE AN IMPACT ON ROPER'S APPLICATION FOR AN AIR QUALITY CONSTRUCTION PERMIT?

A. Yes. Based upon the testimony at the preliminary injunction hearing, to minimize noise impacts at the lots adjacent to the proposed plant, the location, configuration, and layout of the proposed concrete batch plant were changed from what was represented in the Application and what was used in the air dispersion modeling presented to the NMED.

Q. STARTING WITH THE LOCATION OF THE PLANT, WHAT WAS THE LOCATION AS REPRESENTED IN THE APPLICATION?

ALTO EXHIBIT 22

A. Under 20.2.72.203(A)(7) of the New Mexico Administrative Code provision governing the NMED's requirements for Construction Permit Applications, Roper was compelled to provide an accurate site diagram for "all components and locations" of emission sources at the proposed facility. The Universal Application form, which is mandated by the NMED, further required Roper to submit a Plot Plan Drawn to Scale, including the "emissions points, roads, structures, tanks and fences on the property". The Plot Plan Drawn To Scale that Roper submitted is shown in Section 5 of the Application. Roper identified the location of the structures, fences, and emission points using the Universal Transverse Mercator (UTM) coordinate system which assigns coordinates to locations on the surface of the earth. The Universal Application form also required Roper to identify the UTM north and UTM east coordinates of the proposed plant. This information is set forth in Section 1-D of the Application.

Q. TURNING YOUR ATTENTION TO EXIBIT 23, WHAT DOES THIS EXHIBIT DEPICT?

A. This is the location and configuration of the plant as represented in the original Application that was submitted to the NMED and used during the underlying NMED hearing.

Q. WHAT WAS THE LOCATION OF THE PLANT AS REPRSENTED BY ROPER'S NOISE EXPERT DURING THE PRELIMINARY INJUNCTION HEARING?

A. Roper introduced an exhibit titled "Respondent Exhibit FFF" at the hearing that depicts the location of the plant that is different from Section 5 of the Application. That exhibit is Alto Exhibit 24. Alto Exhibit 25 depicts the location and configuration of the plant as proposed at the Preliminary Injunction hearing.

Q. WAS THE LOCATION AND CONFIGURATION OF THE PLANT AS PROPOSED AT THE PRELIMINARY INJUNCTION HEARING DIFFERENT FROM THE ORIGINAL APPLICATION?

A. Yes. Comparing the topography of satellite imagery in Section 5 with Respondent Exhibit FFF, reveals that the new location of the proposed plant is situated significantly further north and west of the location as represented in the Application. Alto Exhibit 26 demonstrates the differences between the location and configuration of the plant as originally proposed and as proposed at the Preliminary Injunction hearing.

Q. DID YOU PERFORM CALCULATIONS QUANTIFYING THE CHANGE FROM THE LOCATION IN THE APPLICATION AND THE LOCATION DEPICTED IN RESPONDENT EXHIBIT FFF?

A. Yes. The northern boundary of the CBP plant as depicted in Respondent Exhibit FFF is approximately 125 feet from the northern boundary of the CBP plant as depicted in the Application and 25 feet to the west.

Q. DO THE UTM COORDINATES SET FORTH IN SECTION 1-D OF THE APPLICATION CORRECTLY CORRESPOND TO THE LOCATION OF THE PLANT AS DEPICTED IN RESPONDENT EXHIBIT FFF?

A. No, the UTM coordinates of the plant location as depicted in Respondent Exhibit FFF are different from the coordinates in Section 1-D.

Q. DOES THE CHANGED LOCATION DEPICTED IN RESPONDENT'S EXHIBIT FFF AFFECT THE MODELING?

A. Yes. Higher modeled concentrations would result from a decrease in the distance between emission sources and ambient air. Moving the emissions sources closer to the site of highest model concentrations – i.e., north of the facility boundary – would increase the emissions at those sites.

Q. WERE THERE ANY OTHER CHANGES TO THE PLANT CONFIGUATION AND LOCATION PRESENTED AT THE PRELIMINARY INJUNCTION HEARING?

A. Yes. Roper also introduced an exhibit titled "Respondent Exhibit AAAA" which purported to lower the height of certain emission sources so that the noise impacts from those sources would be attenuated. This exhibit submitted by Roper at the Preliminary Injunction hearing is Alto Exhibit 27.

Q. WHAT ARE THE CHANGES TO THE CONFIGURATION AND LAYOUT OF THE PLANT AS REPRESENTED IN THE APPLICATION FROM THE PLAN DEPICTED ON RESPONDENT'S EXHIBIT FFF AND RESPONDENT'S EXHIBIT AAAA?

A. There are several. First, at the preliminary injunction hearing, Roper's noise expert testified that the height of the Feed Hopper, the emission source identified as Unit 2 in the Application, will be recessed into the ground, decreasing the height of the Feed Hopper from 9 feet 5 inches to 3 feet 4 inches. This change was depicted at the preliminary injunction hearing on Respondent's Exhibit AAAA. However, it is important to note the Feed Hopper was modeled with a discharge height of 19 feet 8 inches.

Q. DOES THIS CHANGE AFFECT THE MODELING?

A. Yes. Lower discharge heights would result in higher modeled concentrations.

Q. ARE THERE OTHER CHANGES TO THE CONFIGURATION AND LAYOUT OF THE PLANT THAT WERE REVEALED AT THE PRELIMINARY INJUNCTION HEARING?

A. Yes. The location of the buildings and structures in the plant site plan submitted at the preliminary injunction hearing is markedly different from the plan submitted to the NMED and used for the modeling. The Office building and Silo are situated in entirely different locations than the locations of those structures as represented in the NMED Application.

Q. WHY IS THAT IMPORTANT?

A. Revising the location of buildings and structures would influence downwash and therefore affect the modeling results.

Q. WHAT IS "DOWNWASH"?

A. Buildings and other similar structures in the path of airflow create a turbulent wake region on the leeward (downwind) side of the building or structure, and an emissions plume caught in this pathway may be drawn into the wake and temporarily trapped in a recirculating cavity.

Q. HOW DOES DOWNWASH AFFECT THE MODELING RESULTS?

A. This "downwash" effect leads to higher ground-level pollutant concentrations near the building than if the building were not present.

Q. ARE THERE ANY OTHER DIFFERENCES IN THE PLANT LAYOUT THAT WERE REVEALED AT THE PRELIMINARY INJUNCTION HEARING?

A. Yes, according to Respondent Exhibit FFF, the haul roads are now placed in closer proximity to the northern property boundary. Higher modeled concentrations would result from a lesser distance from the haul roads to the property boundary.

Q. WAS THERE OTHER INFORMATION PRESENTED AT THE PRELIMINARY INJUNCTION HEARING THAT WOULD IMPACT THE MODELING RESULTS?

A. Yes. In an attempt to reduce the noise impacts from the proposed plant, Roper's noise expert testified that Roper will construct a 10-foot-tall concrete barrier on at least the northern and western boundaries of the facility that will form the back of the aggregate bins identified in the Application. These solid structures should be considered as a downwash sources.

Q. DO YOU KNOW IF THESE 10-FOOT-TALL CONCRETE STRUCTURES WERE CONSIDERED AS DOWNWASH SOURCES IN THE MODELING CONDUCTED BY ROPER?

A. No, they were not. There is no reference to these 10-foot-tall concrete structures in any section of the Application. Further, in Section 16-H, Roper indicates that only the office and silo were considered as downwash sources in the modeling.

Q. DID YOU COMPILE A LIST OF DIFFERENCES BETWEEN THE PLANT AS REPRESENTED IN THE APPLICATION/MODELING AND THE NEW CONFIGURATION OF THE PLANT AS REPRESENTED BY ROPER IN SWORN TESTIMONY BEFORE JUDGE SUGG?

A. Yes, the matrix below summarizes the changes Roper made to the Plant layout and configuration in an attempt to reduce noise impacts at the lots adjoining the Plant and the concomitant impact to the modeling:

Summary of Plant Layout Changes and Potential Modeling Impact (Comparing Original to Site Plan V2)

No.	Plant Layout Changes	Potential Modeling Impact
1	CBP is located approximately 125 feet to the north and 25 feet to the west when compared to the original layout.	Emission sources located closer to ambient air boundary would result in higher modeled concentrations.
2	Office location was moved approximately 130 feet to the north and 25 feet to the west.	Office was included as a downwash structure in the original modeling and change in location may change the modeled results for those sources within the area of influence.
3	Onsite haul roads have been reconfigured and road is now closer to the western and northern boundaries.	Emission sources located closer to ambient air boundary would result in higher modeled concentrations. Changes to the configuration of the haul route would impact modeled results.
4	Feed Hopper modeled at 19 feet 5 inches but Exhibit AAAA indicated it would be 3 to 4 feet above grade.	Lower air pollutant release heights result in higher modeled concentrations.
5	Changes to the configuration of the Aggregate Bins.	Aggregate bins were not included the modeling as a potential downwash structure. Downwash often leads to elevated concentrations downwind of affected stacks.
6	Water tanks were mentioned in the testimony but not included in the application, shown on site plan or included in the original modeling as a potential downwash structure.	The water tanks were not included the modeling as a potential downwash structure Building downwash often leads to elevated concentrations downwind of affected stacks.

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Summary of Plant Layout Changes and Potential Modeling Impact (Comparing Site Plan V2 to Site Plan V3)

No.	Plant Layout Changes	Potential Modeling Impact
1	[redacted]	[redacted]
2	[redacted]	[redacted]
3	[redacted]	[redacted]
4	[redacted]	[redacted]
5	[redacted]	[redacted]
6	[redacted]	[redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

[redacted]

No.	Plant Layout Changes	Potential Modeling Impact
1	[redacted]	[redacted]
2	[redacted]	[redacted]

3	[redacted]	Emission sources located closer to ambient [redacted]
4	[redacted]	[redacted]
5	[redacted]	[redacted]
6	[redacted]	[redacted]
7	[redacted]	[redacted]

Q. [redacted]

A. [redacted] the original layout used 785 meters for the aggregate truck trips and 429 meters for concrete, cement, and fly ash trucks, [redacted] Reduced haul road trip lengths would reduce emissions and modeled concentrations.

Q. **DO YOU KNOW WHY THE TRIP LENGTHS DIFFER BETWEEN AGGREGATE TRUCK TRIPS AND TRUCK TRIPS FOR CONCRETE, CEMENT, AND FLY ASH TRUCKS?**

A. No. Under standard industry practice, the truck trips should be the same for all trucks.

Q. **WHY IS THAT SO?**

A. First, the haul road is configured to go around the plant operations. As a matter of safety, all traffic should follow the one-way nature of a roundabout haul road. But most importantly for analyzing air emission impacts, there is no practicable way to enforce Roper's artificial attempt to reduce haul road truck trip lengths. The reduction appears to assume that the trucks would back-out of the facility instead of using the entire roundabout to exit. In my experience, such an artificial shortening of the truck trip lengths would not be an enforceable condition of a permit.

Q. [redacted]

A. [redacted].

Q. [redacted]

A. [redacted]

Q. YOU TESTIFIED EARLIER ABOUT DOWNWASH SOURCES, DO YOU KNOW WHAT DOWNWASH SOURCES ROPER INCLUDED IN HIS [redacted] MODELING?

A. Yes, [redacted] the modeling that was submitted for the NMED proceeding, Roper included only two downwash structures: the office and the silo. [redacted]

Q. ARE THERE DOWNWASH STRUCTURES THAT ROPER FAILED TO INCLUDE IN THE MODELING THAT SHOULD HAVE BEEN INCLUDED?

A. As I previously testified, Roper represented at the Preliminary Injunction hearing that the Aggregate Bins constitute a 10-foot high concrete barrier. Additionally, and also for the first time, Roper has represented that there will be two 11,000 gallon water tanks located at the plant. Those water tanks are typically approximately 14 feet tall and 12 feet in diameter. [redacted] both of these structures should have been included as downwash structures.

Q. WHY SHOULD THESE STRUCTURES HAVE BEEN INCLUDED AS DOWNWASH STRUCTURES?

A. NMED's latest modeling guidance states on page 60 that: "*All buildings and structures should be identified and analyzed for potential downwash effects.*" The latest NMED guidance is online and may be found at: https://www.env.nm.gov/air-quality/wp-content/uploads/sites/2/2022/07/NM_AirDispersionModelingGuidelines_21July2022.pdf.

Failure to include the water tanks and the 10-foot concrete barriers as downwash structures does not comport with the NMED modeling guidance or standard industry practice when performing air quality impact modeling using AERMOD.

Q. ARE THERE ANY OTHER ASPECTS OF THE [redacted] MODELING PERFORMED BY ROPER FOR THIS PROCEEDING THAT YOU ANALYZED?

A. I also noticed that Roper's [redacted] modeling did not include the emission sources located on the western portion of the new site layout.

Q. [redacted]

A. [redacted].

Q. [redacted]

A. [redacted], stock piles were not included along the western edge of the plant in Roper's modeling.

Q. WHAT IS THE AFFECT OF NOT INCLUDING THE AIR EMISSION SOURCES ON THE WESTERN PORTION OF THE NEW PLANT LAYOUT?

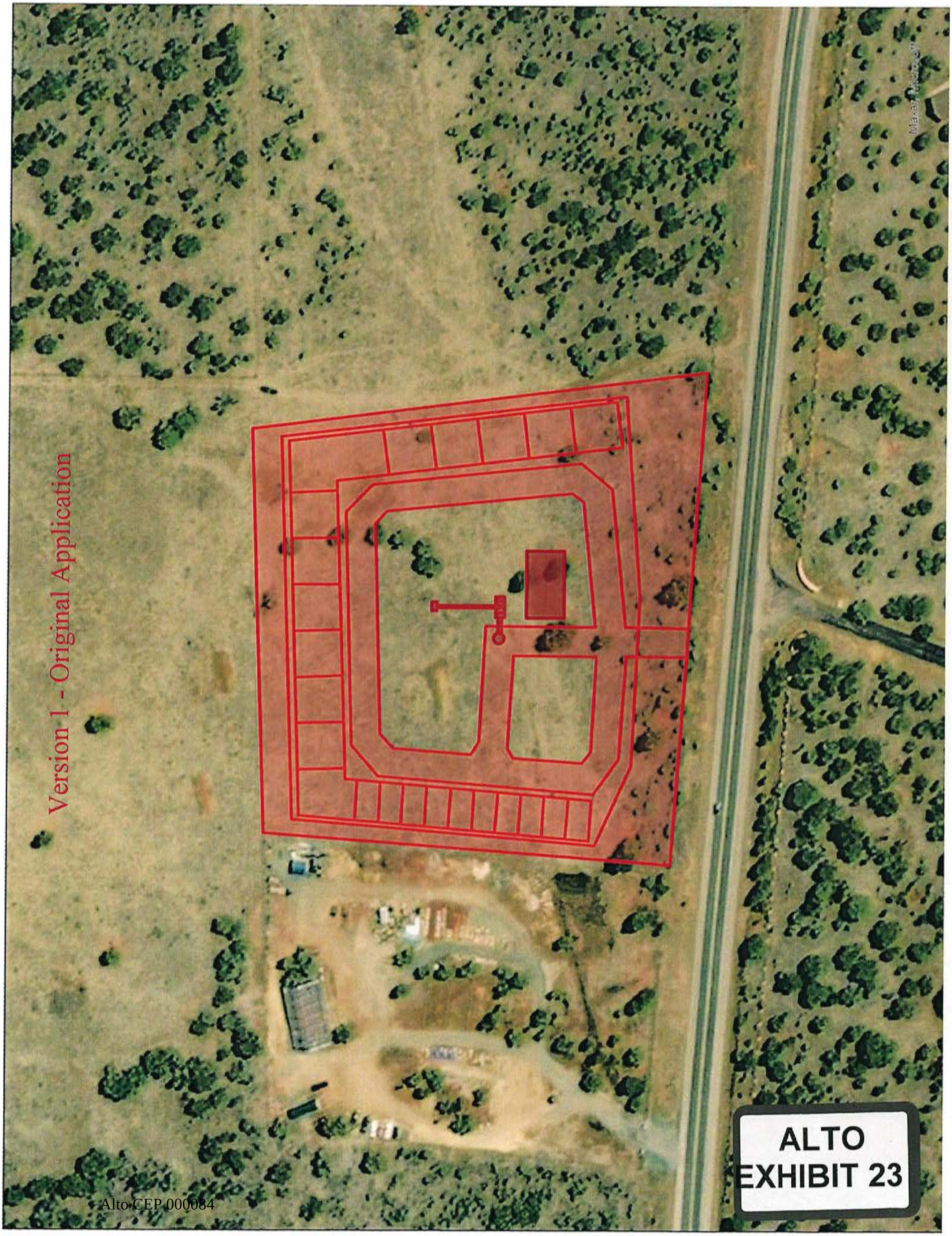
A. The modeled results are lower than the results from a model run that included these emissions sources.

Q. CAN YOU PLEASE SUMMARIZE THE DEFICIENCIES OF THE [redacted] MODELING SUBMITTED BY ROPER IN THIS PROCEEDING?

A. Yes. First, [redacted], the Feed Hopper release height was modeled at 6 meters. Based on Exhibit AAAA, introduced by Roper at the Preliminary Injunction hearing, the release height of the Feed Hopper was reduced to 3-4 feet above the ground surface. Higher modeled concentrations would result from lower discharge heights. Second, the 10-foot high concrete barriers that form the Aggregate Bins and the two 11,000 gallon water tanks were not included as downwash structures as required by the NMED modeling guidance and standard industry practice. Finally, emission sources were not included in the modeling, resulting in lower modeled concentrations than a model run that accurately reflected the facility as represented by Roper. Based on these conclusions, the modeling fails to establish that the facility will meet applicable air quality standards.

Q. [redacted]

A. [redacted]



ALTO
EXHIBIT 23

Alto CEP 000084

ROPER CONSTRUCTION

CONCRETE PLANT
SITE VISUALIZATION
ALTO, NM 88312

PHOTOGRAPH 1
FEBRUARY 1, 2022
RYAN ROPER

33°25′6.29″N
105°39′53.73″W

ROPER02151

Alto CEP 000085

RESPONDENT
EXHIBIT
FFF

ALTO
EXHIBIT 24

ROPER CONSTRUCTION

CONCRETE PLANT
SITE VISUALIZATION
ALTO, NM 88312

PHOTOGRAPH 3
FEBRUARY 1, 2022
RYAN ROPER

33°25'5.83"N
105°39'47.4"W

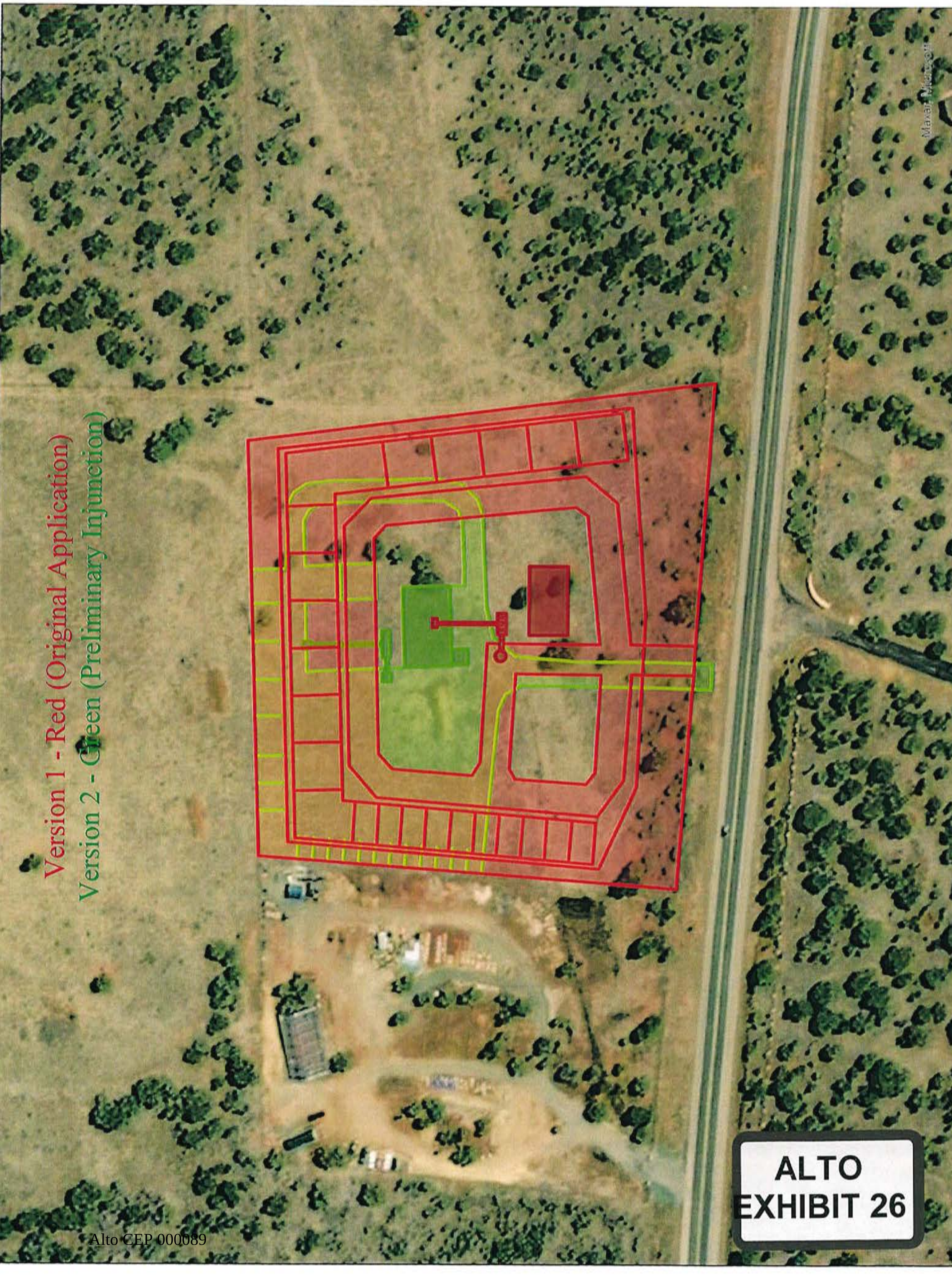
ROPER CONSTRUCTION

CONCRETE PLANT
SITE VISUALIZATION
ALTO, NM 88312

PHOTOGRAPH 2
FEBRUARY 1, 2022
RYAN ROPER

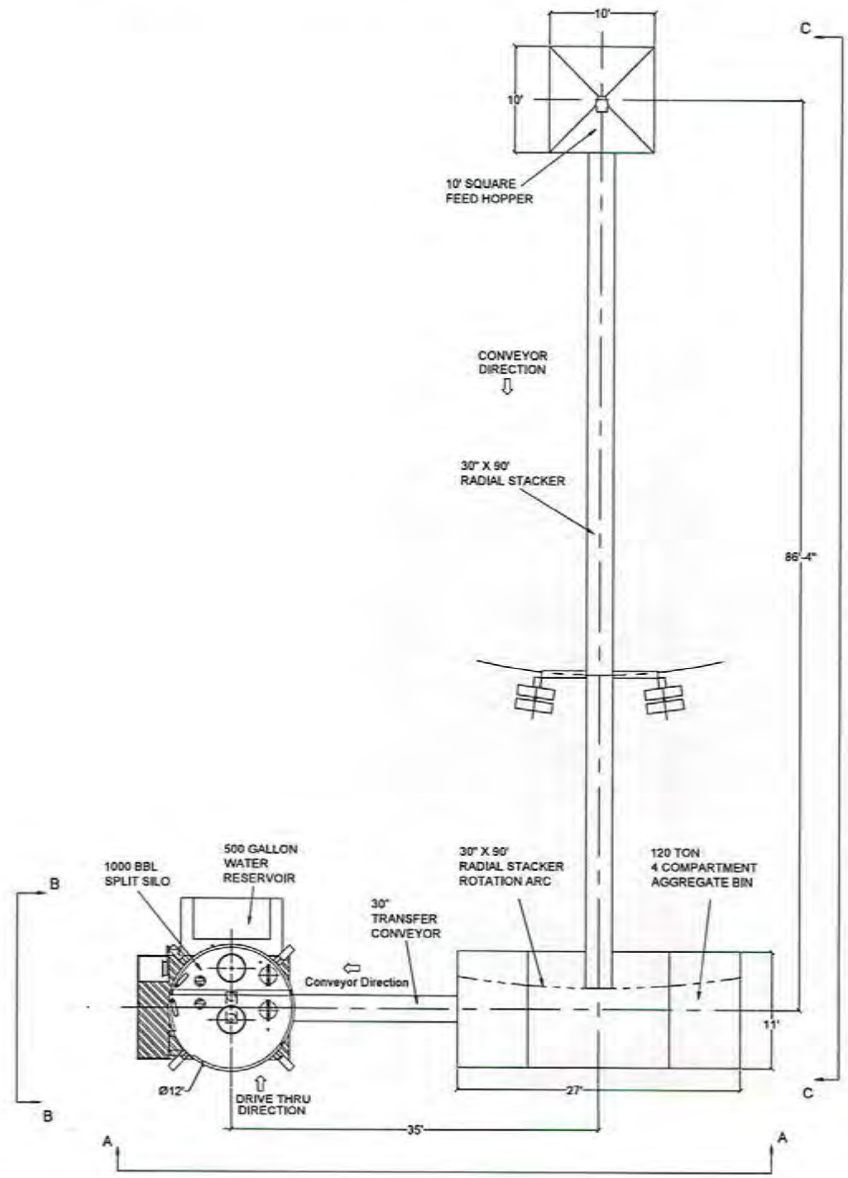
33°25'5.97"N
105°39'50.3"W

ALTO
EXHIBIT 25



ALTO
EXHIBIT 26

Alto CEP 000090



RESPONDENT EXHIBIT AAAA

ALTO EXHIBIT 27

ZONE	REV	DESCRIPTION	DATE	BY

REVISION TABLE

05/04/2021

3/16"=1'-0"

TOTAL WEIGHT:

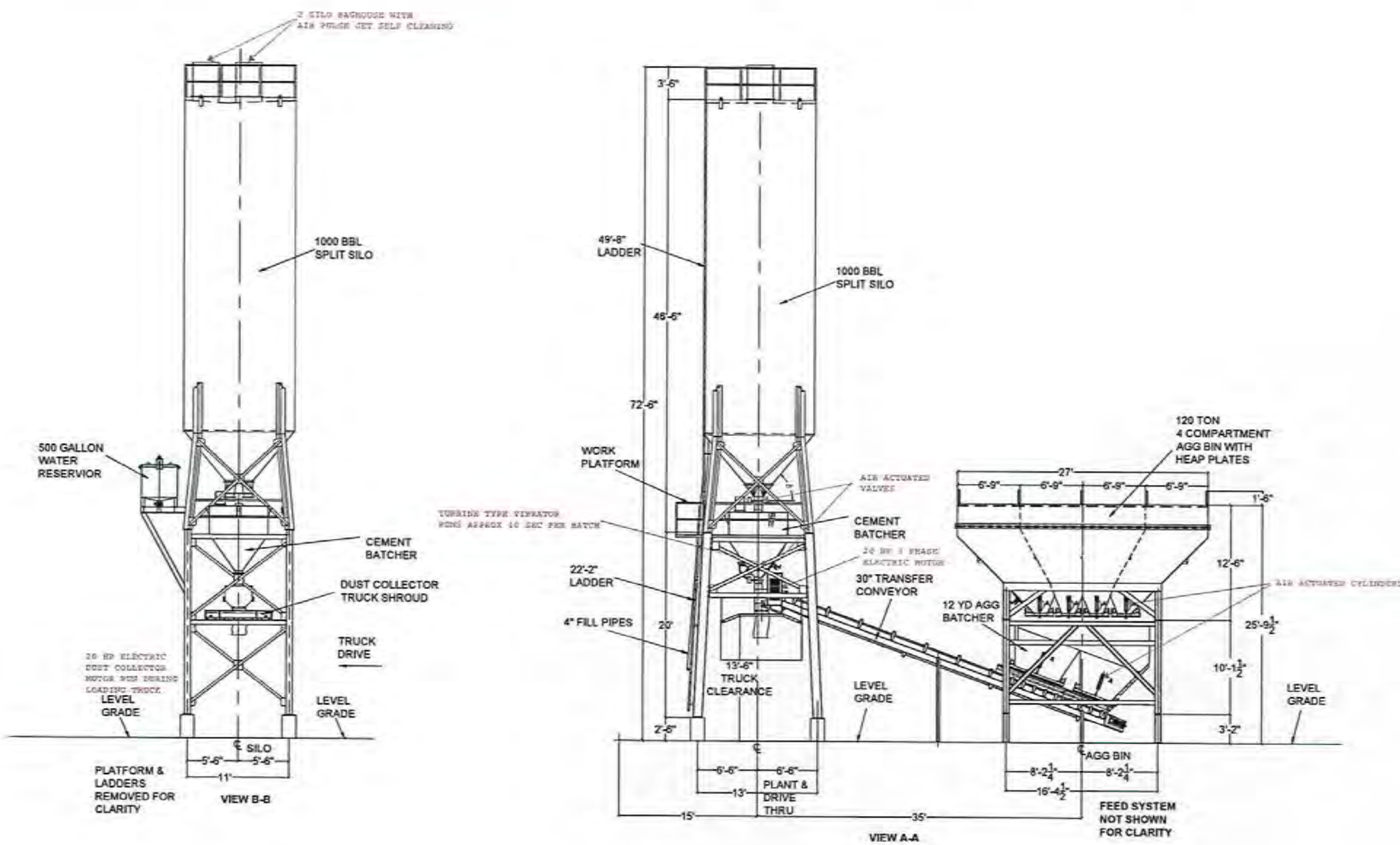
1:1 JEL MANUFACTURING, LLC

APPROVAL DRAWING FOR ROPER CONSTRUCTION

DWG.No. D28-00270

SHEET 1 OF 3

D



ZONE	REV	DESCRIPTION	DATE	BY
		REVISION TABLE		

DRAWN BY: MA — DATE: 05/04/2021 — SCALE: 3/16"=1'-0"

TOTAL WEIGHT:

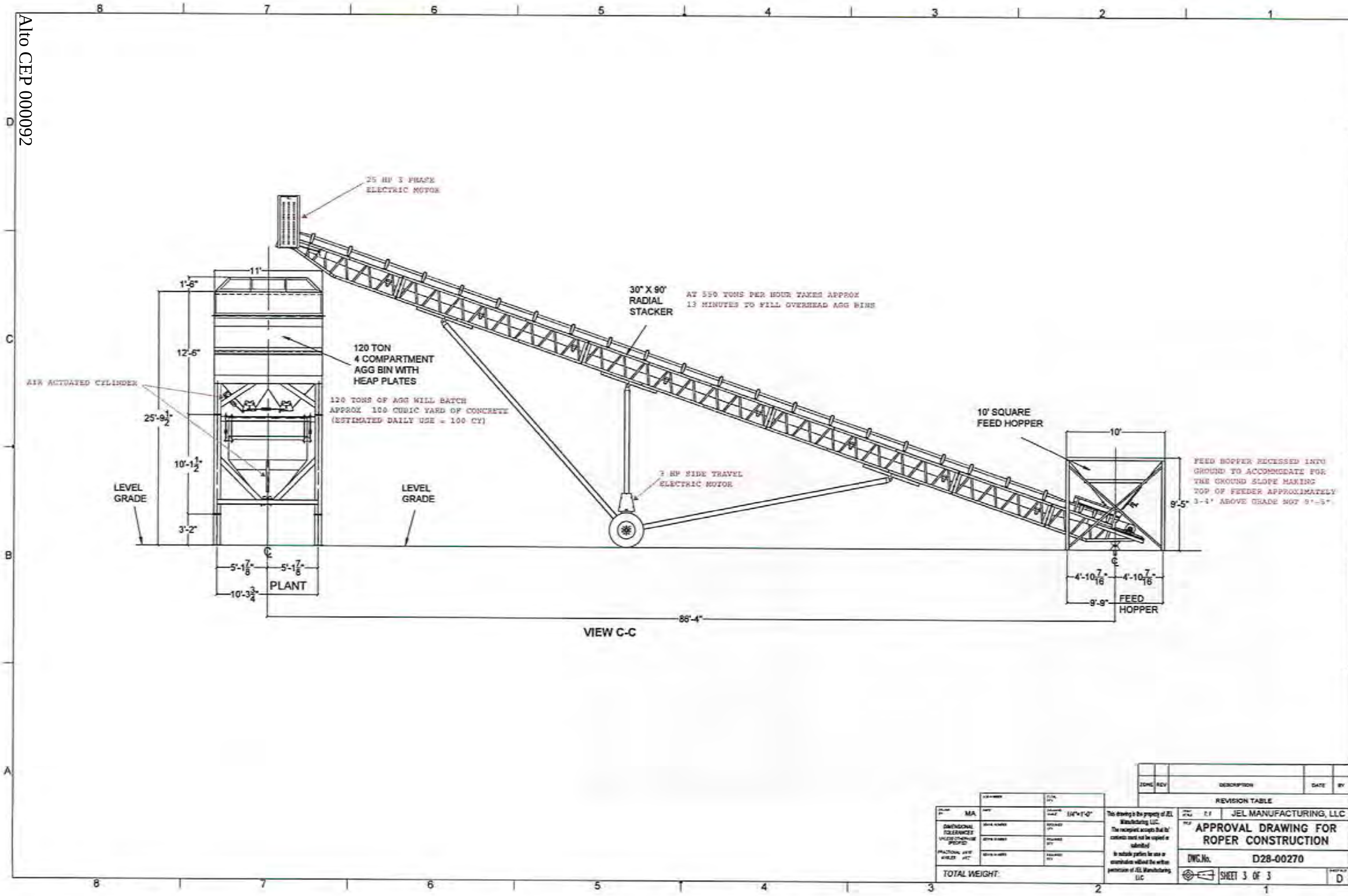
This drawing is the property of JEL Manufacturing, LLC. The recipient accepts that its contents must not be copied or submitted to outside parties for use or examination without the written permission of JEL Manufacturing, LLC

SIZE: 1:1 — JEL MANUFACTURING, LLC

APPROVAL DRAWING FOR ROPER CONSTRUCTION

DWG.No. D28-00270

SHEET 2 OF 3 — D



Alto CEP 000092

Q. WOULD YOU STATE YOUR NAME FOR THE RECORD?

A. My name is Carlos Ituarte-Villarreal.

Q. HAVE YOU REVIEWED THE PRE-FILED DIRECT TECHNICAL TESTIMONY SUBMITTED BY PETITIONER ROPER CONSTRUCTION, INC. ("ROPER") AND THE NEW MEXICO ENVIRONMENT DEPARTMENT IN THIS PROCEEDING ("NMED")?

A. Yes, I have reviewed the pre-filed testimony submitted by Roper and the pre-filed testimony submitted by NMED.

Q. DID YOU REVIEW THE TECHNICAL TESTIMONY FILED BY ROPER AND NMED REGARDING THE USE OF THE CORRECT AP-42 HAUL ROAD FACTOR FOR INDUSTRIAL ROADS?

A. I did review that testimony.

Q. HAVE YOU CHANGED YOUR OPINIONS ABOUT THE USE OF THE CORRECT AP-42 HAUL ROAD FACTOR?

A. No. AP-42 Guidance, specifically Table 13.2.1-3, includes the silt loading values and emission rates for paved roads at concrete batching plants. ALTO Exhibit 36 shows Table 13.2.1-3. This is the correct silt loading value, not the value for public paved roads used by Roper and condoned by NMED. Concrete batching facilities use the specific loading factor for concrete batching facilities set forth in Table 13.2.1-3, 12 grams ug/m3, routinely in model analyses. Use of that loading factor comports with standard industry practice.

Q. [redacted]

ALTO
EXHIBIT 35

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

[redacted]

[redacted]

[redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

[redacted]

Q. [redacted]

A. [redacted]

Table 13.2.1-3 (Metric And English Units). TYPICAL SILT CONTENT AND LOADING VALUES FOR PAVED ROADS AT INDUSTRIAL FACILITIES [a]

Industry	No. of Sites	No. Of Samples	Silt Content (%)		No. of Travel Lanes	Total Loading x 10^{-3}			Silt Loading (g/m^2)	
			Range	Mean		Range	Mean	Units[b]	Range	Mean
Copper smelting	1	3	15.4-21.7	19.0	2	12.9 - 19.5 45.8 - 69.2	15.9 55.4	kg/km lb/mi	188-400	292
Iron and steel production	9	48	1.1-35.7	12.5	2	0.006 - 4.77 0.020 -16.9	0.495 1.75	kg/km lb/mi	0.09-79	9.7
Asphalt batching	1	3	2.6 - 4.6	3.3	1	12.1 - 18.0 43.0 - 64.0	14.9 52.8	kg/km lb/mi	76-193	120
Concrete batching	1	3	5.2 - 6.0	5.5	2	1.4 - 1.8 5.0 - 6.4	1.7 5.9	kg/km lb/mi	11-12	12
Sand and gravel processing	1	3	6.4 - 7.9	7.1	1	2.8 - 5.5 9.9 - 19.4	3.8 13.3	kg/km lb/mi	53-95	70
Municipal solid waste landfill	2	7		-	2	-			1.1-32.0	7.4
Quarry	1	6		-	2	-			2.4-14	8.2
Corn wet mills	3	15		-	2	-			0.05 – 2.9	1.1

[a] References 1-2,5-6,11-13. Values represent samples collected from *industrial* roads. Public road silt loading values are presented in Table-13.2.1-2. Dashes indicate information not available.[b] Multiply entries by 1000 to obtain stated units; kilograms per kilometer (kg/km) and pounds per mile (lb/mi).

ALTO
EXHIBIT 36

upon: traffic characteristics (speed, ADT, and fraction of heavy vehicles); road characteristics (curbs, number of lanes, parking lanes); local land use (agriculture, new residential construction) and regional/seasonal factors (snow/ice controls, wind blown dust). As a result, the collection and use of site-specific silt loading data is highly recommended. In the event that default silt loading values are used, the quality ratings for the equation should be downgraded 2 levels.

Limited access roadways pose severe logistical difficulties in terms of surface sampling, and few silt loading data are available for such roads. Nevertheless, the available data do not suggest great variation in silt loading for limited access roadways from one part of the country to another. For annual conditions, a default value of 0.015 g/m^2 is recommended for limited access roadways.[9,22] Even fewer of the available data correspond to worst-case situations, and elevated loadings are observed to be quickly depleted because of high traffic speeds and high ADT rates. A default value of 0.2 g/m^2 is recommended for short periods of time following application of snow/ice controls to limited access roads.[22]

The limited data on silt loading values for industrial roads have shown as much variability as public roads. Because of the variations of traffic conditions and the use of preventive mitigative controls, the data probably do not reflect the full extent of the potential variation in silt loading on industrial roads. However, the collection of site specific silt loading data from industrial roads is easier and safer than for public roads. Therefore, the collection and use of site-specific silt loading data is preferred and is highly recommended. In the event that site-specific values cannot be obtained, an appropriate value for an industrial road may be selected from the mean values given in Table 13.2.1-3, but the quality rating of the equation should be reduced by 2 levels.

The predictive accuracy of Equation 1 requires thorough on-site characterization of road silt loading. Road surface sampling is time-consuming and potentially hazardous because of the need to block traffic lanes. In addition, large number of samples is required to represent spatial and temporal variations across roadway networks. Mobile monitoring is a new alternative silt loading or road dust emission characterization method for either paved or unpaved roads. It utilizes a test vehicle that generates and monitors its own dust plume concentration (mass basis) at a fixed sampling probe location. A calibration factor is needed for each mobile monitoring configuration (test vehicle and sampling system), to convert the relative dust emission intensity to an equivalent silt loading or emission factor. Typically, portable continuous particle concentration monitors do not comply with Federal Reference Method (FRM) standards. Therefore, a controlled study must be performed to correlate the portable monitor response to the road silt loading or size specific particle concentration measured with an approved FRM sampling system. In the calibration tests, multiple test conditions should be performed to provide an average correlation with known precision and to accommodate variations in road silt loading, vehicle speed, road dust characteristics and other road conditions that may influence mobile monitoring measurements or emissions characteristics. Because the paved road dust emissions are also dependent on the average vehicle weight for the road segment, it is important that the weight of the test vehicle correspond closely to the average vehicle weight for the road segment or be adjusted using the average vehicle weight relationship in Equation 1. In summary, it is believed that the Mobile Monitoring Method will provide improved capabilities to provide reliable temporally and spatially resolved silt loading or emissions factors with increased coverage, improved safety, reduced traffic interference and decreased cost.[40, 41, 42]

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GOVERNOR

JOHN A. SANCHEZ
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DEPUTY SECRETARY

DEPARTMENT ACCEPTED VALUES FOR:
AGGREGATE HANDLING, STORAGE PILE, and HAUL ROAD EMISSIONS

TO: Applicants and Air Quality Bureau Permitting Staff

SUBJECT: Department accepted default values for percent silt, wind speed, moisture content, and control efficiencies for haul road control measures

This guidance document provides the Department accepted default values for correction parameters in the emission calculation equations for aggregate handling and storage piles emissions in construction permit applications and notices of intent submitted under 20.2.72 and 20.2.73 NMAC; and the Department accepted control efficiencies for haul road control measures for applications submitted under 20.2.72 NMAC.

Aggregate Handling and Storage Pile Emission Calculations

Applicants should calculate the particulate matter emissions from aggregate handling and storage piles using the EPA's AP-42 Chapter 13.2.4.
http://www3.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf

Equation 1 from Chapter 13.2.4 requires users to input values for two correction parameters, U and M, where U = mean wind speed and M = material moisture content. Below are the accepted values for U and M:

Default Values for Chapter 13.2.4, Equation 1:

Parameter	Default Value
U = Mean wind speed (miles per hour)	11 mph
M = Material moisture content (% water)	2%

Applicants must receive preapproval from the Department if they wish to assume a higher moisture content and/or a lower wind speed in these calculations. Higher moisture contents may require site specific testing either as a permit condition or submitted with the application. Applicants may assume higher wind speeds and lower percent moisture content in their calculations without prior approval from the Department.

Haul Road Emissions and Control Measure Efficiencies

ALTO
EXHIBIT 39

Applicants should calculate the particulate matter emissions from unpaved haul roads using the EPA's AP-42 Chapter 13.2.2. http://www3.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf

Equation 1(a) from Chapter 13.2.2 requires users to input values for two correction parameters, s and W, where s = surface material silt content (%) and W = mean vehicle weight (tons). The applicant should calculate the mean vehicle weight in accordance with the chapter's instructions. Below is the accepted value for the parameter s:

Default Values for Chapter 13.2.2, Equation 1(a):

Parameter	Default Value
s = surface material silt content (%)	4.8%

Applicants may use a higher silt content without prior approval from the Department. Use of a lower silt content requires prior approval from the Department and may require site specific testing in support of the request.

Equation 2 from Chapter 13.2.2 allows users to take credit for the number of days that receive precipitation in excess of 0.01 inches, in the annual emissions calculation, where P = number of days in a year with at least 0.01 inches of precipitation.

Default Values for Chapter 13.2.2, Equation 2:

Parameter	Default Value
P = number of days in a year with at least 0.01 inches of precipitation	70 days

Applications submitted under Part 72 may request to apply control measures to reduce the particulate matter emissions from facility haul roads. Applications submitted under Part 73 may not consider any emission reduction from control measures in the potential emission rate calculation, as registrations issued under Part 73 are not federally enforceable under the Clean Air Act or the New Mexico Air Quality Control Act. In order for those control measures to be federally enforceable, the controls must be a requirement in an air quality permit.

Below are the Department accepted control efficiencies for various haul road control measures:

Haul Road Control Measures and Control Efficiency:

Control Measure	Control Efficiency
None	0%
Base course **or** watering	60%
Base course **and** watering	80%
Base course **and** surfactant	90%
Paved **and** Swept	95%

Q. PLEASE STATE YOUR NAME FOR THE RECORD?

A. My name is Breanna Bernal.

Q. DID YOU PROVIDE DIRECT TECHNIAL TESTIMONY ON BEHALF OF ALTO PREVIOUSLY IN THIS MATTER?

A. Yes. My direct technical testimony was filed on September 21, 2022.

Q. ARE YOU FAMILIAR WITH THE DIRECT TECHNICAL TESTIMONY FILED BY PETITIONER ROPER CONSTRUCTION, INC. ("ROPER") FILED ON THAT SAME DATE?

A. I have reviewed the Direct Technical Testimony filed by Roper in this proceeding. I focused my review on the testimony submitted by Ryan Roper regarding water usage and water usage calculations.

Q. DID YOU FORM OPINIONS ABOUT MR. ROPER'S TESTIMONY ABOUT WATER USAGE AND WATER USAGE CALCULATIONS?

A. Yes, there are several reasons why Mr. Roper's testimony about water usage and water usage calculations are not scientifically and technically valid. First, on page 3 of Mr. Roper's written pre-filed testimony, he states that water is needed for concrete production, dust suppression, haul road maintenance, and watering of stockpiles. However, he never quantifies the water usage necessary to accomplish emission control at the haul roads or the stockpiles. Mr. Roper based his estimates of water usage solely on dust suppression and concrete production – *i.e.,* the amount of fine aggregates and the water per cubic yard in the concrete design mix from Section 6 of the application.

Q. WHY IS THAT SIGNIFICANT?

ALTO
EXHIBIT 43

A. Mr. Roper's water usage estimates notwithstanding, there is still no testimony, data, or information regarding how much water is necessary to control visible emissions emanating from the haul road and the stockpiles. Accordingly, Roper has failed to demonstrate compliance with these requirements of the Draft Permit.

Q. DID YOU REVIEW AND ANALYZE THE ESTIMATES PROVIDED BY ROPER REGARDING WATER USAGE?

A. Yes. On page 3 of Mr. Roper's direct testimony, Mr. Roper stated that he anticipates that the plant will need on average 3,000 gallons of water for the production of concrete and 500 gallons of water for dust control per day of operation. Using Mr. Roper's estimates, daily production would have to be less than 200 cubic yards per day. If 750,000 gallons of water is needed for annual production of concrete, annual production values would be approximately 24,000 cubic yards per year. If 125,000 gallons of water is needed for annual dust suppression, annual production values would be approximately 48,000 cubic yards per year. These daily and annual production rates are internally inconsistent. Based on the amount of fine aggregate used in the concrete design mix and the maximum production value of 750 cubic yards per day, I calculate that 1,978 gallons of water per day would be needed to add the 2% moisture to the material. This is nearly 4 times higher than what Mr. Roper quantified for average daily usage for dust control.

Q. [redacted]

A. [redacted]

[redacted]

Q. DID YOU CALCULATE HOW OFTEN WATER WOULD HAVE TO BE DELIVERED TO THE FACILITY BASED ON YOUR WATER USAGE CALCULATIONS?

A. On page 4 of Mr. Roper's testimony, he states that a 4,000 gallon water truck will fill the two 11,000 gallon water tanks at the facility site approximately 4-5 times per week. However, there would need to be over 6 water truck deliveries per day to supply the water needed for the [redacted] daily production value of 750 cubic yards per day.

Q. DOES [redacted] 6 WATER TRUCKS REFLECT ALL OF THE WATER USAGE AND DELIVERY PER DAY AT THE FACILITY?

A. No. As I mentioned earlier, the quantity of water needed for haul road and stockpile maintenance is not discussed by Mr. Roper or his expert, Mr. Wade. Additional water will be needed for these activities, which are mandated in the NMED's Draft Permit.

Q. IN YOUR DIRECT TESTIMONY, YOU TESTIFIED THAT ROPER HAD NOT IDENTIFIED A WET DUST SUPRESSION SYSTEM TO CONTROL EMISSIONS AS REQUIRED BY THE NMED DRAFT PERMIT. IN YOUR REVIEW OF ROPER'S DIRECT PRE-FILED TESTIMONY, DID YOU SEE AN IDENTIFICATION OF SUCH A SYSTEM?

A. No. There is no identification of a wet dust suppression system along the process system identified in the Application. According to Table 2-C of the Application, identifying the emission control equipment for the emission sources, additional moisture content is the sole emission control technology at Process Unit 3, the Feed Hopper Conveyor, Unit 4, the Aggregate Bins, Unit 5, the Weigh Batcher, and Unit 6, the Delivery Conveyor. Roper's pre-filed direct testimony did not provide any evidence establishing the existence of spray nozzles, as the key component of a Wet Dust Suppression System, to distribute additional moisture content at Units 3-6, much less the number of spray nozzles, the location of the spray nozzles, and the flow rate of the spray nozzles.

Q. WHY IS THIS INFORMATION IMPORTANT?

A. As I testified in my direct pre-filed testimony, a Wet Dust Suppression System is a condition of the NMED Draft Permit. Accordingly, evidence regarding the manufacturer, make and model is essential to determine the existence and effectiveness of such a system, including the control efficiencies for such a system. Failure to supply this information demonstrates that Roper has not committed to compliance with the NMED Draft Permit conditions and the efficacy of ensuring additional moisture content for Units 3-6 is speculative. Moreover, identification of the placement of the spray nozzles is important because merely adding additional moisture content to only the front end of the process – *i.e.*, the piles, the Feeder Hopper, or the Feeder Hopper Conveyor does not sufficiently control emission throughout the entire process.

Q. WHY IS THAT?

A. Because there can be, and likely will be, a lag time between adding moisture to the front end of the process and actually moving materials through to the end of the process. Material will lose moisture content if it is idle in any one of the four process units requiring additional moisture content for emissions control. For example, water added to the stockpiles or the Feeder Hopper (Unit 3) may lie idle until Roper runs the material through the entire process to produce concrete. The same goes for the Aggregate Bins (Unit 4), the Weigh Batcher (Unit 5) and the Delivery Conveyor (Units 6). A review of Section 4 of the Application reveals these different locations. For a Wet Dust Suppression System to effectively control emissions at Units 3-6, spray nozzles in sufficient quantity and output capability must be present throughout this process flow.

Q. COULD YOU PLEASE STATE YOUR NAME FOR THE RECORD?

A. My name is Eluid L. Martinez.

Q. HAVE YOU REVIEWED THE DIRECT TESTIMONY FILED BY RYAN ROPER IN THIS PROCEEDING?

A. Yes, I have.

Q. DID MR. ROPER'S TESTIMONY REGARDING THE AVAILABILITY OF WATER CHANGE THE OPINIONS SET FORTH IN YOUR DIRECT TESTIMONY?

A. No. Mr. Roper identified several potential sources of water supply. However, without more information beyond the name of a potential source regarding the amount of water available from these sources and Roper's access to these sources, it is impossible to determine whether Roper will have water in sufficient quantities to achieve the emission control efficiencies identified in the Application for Units 3-6 and the stock piles.

Q. WHY IS THAT ADDITIONAL INFORMATION IMPORTANT?

A. In my opinion, based on my 50+ years of experience with state and federal agencies, an application that identifies water as the method of abatement of emissions should not approved without a showing that the water necessary to achieve emissions abatement is obtainable and available. Otherwise, the proposed project is speculative and questionable.

Q. DID YOU REVIEW THE DIRECT TECHNICAL TESTIMONY FILED BY THE NEW MEXICO ENVIRONMENT DEPARTMENT ("NMED") IN THIS PROCEEDING?

A. Yes.

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Q. DID YOU FORM OPINIONS REGARDING THE NMED DIRECT TECHNICAL TESTIMONY?

A. Yes.

Q. WHAT ARE THOSE OPINIONS?

A. The NMED asserted that they did not have the jurisdiction to require Roper to identify the source, availability and amount of water but they did have the jurisdiction to shut down the plant if Roper did not comply with the Permit Conditions requiring water application at certain emission sources under certain conditions. In my opinion, it is not in the interest of an applicant, nor in the public interest, to authorize construction of a plant only for the plant to be shut down based on the unavailability of water to comply with the Permit Conditions requiring water application.

Q. [redacted]

A. [redacted].

Q. [redacted]

A. [redacted]

Q. THANK YOU FOR YOUR REBUTTAL TESTIMONY.