Air Dispersion Modeling Summary for Permit No. 10129 and 10131

Report Date: 5/1/2024
NMED/AQB Modeler: Eric Peters

Facility Identification:
Project: Las Vegas HMA Plant and Las Vegas Crusher Plant Company: Short Line, LLC
Permit number: 10129 (HMA) and 10131 (crusher) TEMPO ID: 41129 (HMA) and 41130 (crusher)

Location Information:
The facility is located 2.5 miles northeast of Las Vegas, in San Miguel County. The facility is located 12.8 miles north-northeast of Tecolote.
UTM Coordinates: 482,170 m East, 3,943,060 m North, zone 13, Datum: NAD83
Elevation = 6510 feet
Air Quality Control Region (AQCR): 154
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Project Description:
Brief: Short Line, LLC has applied to the New Mexico Air Quality Bureau for a New Source Review air quality permit for the construction of the Las Vegas HMA Plant and the Las Vegas Crusher Plant (the facility). The facilities are an asphalt plant and a gravel crusher plant. The facilities are initially located together. Combined modeling for both facilities was presented to verify that air quality standards will be protected either with each facility operating individually or with both facilities combined. References to "the facility" in this document refers to the combination of both plants unless otherwise specified.

The following types of emission sources are included in the project: Crusher Haul Road, Feeder, Finish Piles, Generator, HMA Bin Loading, HMA Asphalt Cement Heater, HMA Asphalt Silo Loading, HMA Asphalt Silo Unloading, HMA Baghouse Stack, HMA Bin Unloading, HMA Conveyor Transfer to Drum Conveyor, HMA Generator, HMA Haul Road, HMA Scalping Screen, HMA Scalping Screen Unloading, HMA Storage Pile Handling, Primary Crusher, Primary Crusher Conveyor, Raw Material Piles, Screen, Screen Conveyor, Secondary Crusher, Secondary Crusher Conveyor, Stacker Conveyor Drop to Pile, and Waste Conveyor. The emission units used in the modeling are described in the tables below.

For this permit, modeling was required for the following pollutants: Asphalt Fumes, Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Particulate Matter 10 micrometers or less in aerodynamic diameter (PM10), Particulate Matter (2.5 microns or less) (PM2.5), and Sulfur Dioxide (SO_2).

Table 1: Table of Total Facility Emissions

Asphalt fumes (lbs/hr)	NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
1.504	20.290	24.030	7.513	9.213	4.192

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Table 2: Table of Point Sources

Stack Number	Description	Stack Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)	NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)	Asphalt fumes (lbs/hr)
HMASTK	HMA Baghouse Stack	21.0	3.0	58.9	270	6.600	15.600	6.960	2.760	2.760	1.440
DRUMUNL	HMA Asphalt Silo Loading	13.1	3.3	0.0	350	0	0.265	0	0.097	0.097	0.042
HMASILO	HMA Asphalt Silo Unloading	13.1	3.3	0.0	350	0	0.303	0	0.098	0.098	0.020
HMAGEN	HMA Generator	12.0	0.7	120.0	800	6.755	3.889	0.243	0.222	0.222	0
GEN1	Generator 1	12.0	0.7	120.0	800	3.498	2.014	0.126	0.115	0.115	0

Table 3: Table of PointHor Sources

Stack Number	Description	Stack Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)	NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
GEN2	Generator 2	12.0	0.7	120.0	800	3.248	1.870	0.117	0.107	0.107

Table 4: Table of PointCap Sources

Stack Number	Description	Stack Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)	NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
HMAHEAT	HMA Asphalt Cement Heater	10.0	1.0	40.0	120	0.187	0.047	0.067	0.019	0.019

Table 5: Table of Volume Sources

Source ID	Description	Release Height (ft)	Horizontal Dimension (ft)	Vertical Dimension (ft)	CO Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
CR_0001	Crusher Haul Road Volume	11.2	19.8	10.4	0	1.276	0.128
FEED	Feeder	19.7	3.8	7.6	0	0.654	0.099
FP	Finish Piles	8.0	23.5	7.4	0	0.654	0.099
HMABIN1	HMA 1 Bin Loading (3 Bins)	19.7	3.8	7.6	0	0.369	0.056
HMATP1	HMA Bin 1 Unloading	6.6	1.5	3.1	0	0.005	0.001
HMATP2	HMA Bin 2 Unloading	6.6	1.5	3.1	0	0.005	0.001
HMATP4	HMA Conveyor Transfer to Drum Conveyor	6.6	1.5	3.1	0	0.005	0.001
HR_0027	HMA Haul Road Volume	11.2	19.8	10.4	0.042	0.661	0.066
HMASCR	HMA Scalping Screen	13.1	3.8	7.6	0	0.083	0.006
HMATP3	HMA Scalping Screen Unloading	6.6	1.5	3.1	0	0.005	0.001
HMAPILE1	HMA Storage Pile Handling	8.0	23.5	7.4	0	0.369	0.056
PCRSH	Primary Crusher	19.7	3.8	7.6	0	0.108	0.020
TP2	Primary Crusher Conveyor	6.6	1.5	3.1	0	0.009	0.003
RAW	Raw Material Piles	8.0	23.5	7.4	0	0.654	0.099
SCR	Screen	13.1	3.8	7.6	0	0.148	0.010
TP4	Screen Conveyor	6.6	1.5	3.1	0	0.009	0.003
SCRSH	Secondary Crusher	19.7	3.8	7.6	0	0.108	0.020
TP3	Secondary Crusher Conveyor	6.6	1.5	3.1	0	0.009	0.003
STK1	Stacker Conveyor Drop to Pile	13.1	1.5	3.1	0	0.654	0.099
TP1	Waste Conveyor	6.6	1.5	3.1	0	0.009	0.003

Modeling Assumptions: The asphalt heater and asphalt cement storage silo operate continuously. The rest of the facility operates during daylight hours only.

Permit Conditions for Permit 10129, HMA Plant:

Operating hours: The asphalt heater and asphalt cement storage silo may operate at any time. The rest of the facility shall only operate during daylight hours.

Permit Conditions for Permit 10131, Gravel Crusher:

Operating hours: The facility shall only operate during daylight hours.

Relocation conditions: The Crusher Plant may relocate to other parts of New Mexico without providing additional modeling with the following exceptions. The permit does not provide authority to locate in tribal land or Bernalillo County. Upon relocation, all sources of NO_X shall be at least 143 meters from the nearest fenceline. When located in an area with minor source baseline dates established for PSD increments, the Crusher Plant shall move to a new location before one year of starting operations at that location. Locations in Lea County, Dona Ana County, or the City of Rio Rancho are not authorized.

If a location does not meet the conditions above, the facility may gain authorization under this permit by providing modeling that addresses the relevant conditions. Before submitting a relocation request for these exceptions, the facility shall submit an analysis that demonstrates compliance with applicable air quality standards and/or PSD increments at the new location. After NMED responds with approval of the analysis, the relocation application for those locations may be submitted.

Conclusion:

This modeling analysis demonstrates that operation of the facility described in this report neither causes nor contributes to any exceedances of applicable air quality standards. The standards relevant at this facility are NAAQS for CO, NO_2, PM10, PM2.5, and SO_2; NMAAQS for CO, NO_2, and SO_2.

20.2.72.400-499 NMAC establishes permitting requirements for State Toxic Air Pollutants (TAPs) which are identified in 20.2.72.502 NMAC. The regulations require a source to conduct modeling to predict the concentration of a TAP if its potential emission rate is greater than the screening level identified in that section. The screening level may be adjusted by the stack height correction factor listed in 20.2.72.502 NMAC. If a source must model the concentration of a TAP, the TAP is not expected to pose an environmental concern, and no further action is required, if its concentration remains below one percent of the Occupational Exposure Limit (OEL) for that TAP. For this application, modeling demonstrates that the concentrations of Asphalt Fumes remain below one percent of the OEL.

Action: The permits can be issued based on this modeling analysis.

Modeling report submitted by Montrose Air Quality Services (dated 10/26/2023)
Modeling was last revised on 2/19/2024.
The air quality analysis demonstrates compliance with applicable regulatory requirements.

Model(s) Used: AERMOD version 22112 was used to run the modeling analysis.

Note: Complete modeling input and output files can be made available and are located in the Modeling Archives in the folder, "10129_Short Line, LLC_Las Vegas HMA Plant" and "10131_Short Line, LLC_Las Vegas Crusher Plant".

Modeling Parameters:
The AERMOD regulatory default parameters were included in assumptions made by the model.

Building downwash produced by buildings at the facility was considered. The following buildings were included in the modeling.

Table 6: Table of Buildings

Building Name	Height (m)	Diagonal Length (m)
ACTANK	2.4	8.8
ASPSILO	19.8	3.0
BAG	3.7	9.8
BFTANK	2.4	8.9
CROOM	3.7	8.9
DRUM	3.0	9.2
GEN	3.7	14.1

Complex Terrain Data:
Elevations of receptors, facility sources, and surrounding sources were obtained from USGS GeoTIFF files using AERMAP. Both simple and complex types of terrain were used to model the facility. Flat terrain was used for terrain-following fugitive sources and complex terrain was used for point sources.

Receptor Grid: The following grids were used to determine the maximum concentration for each pollutant.

Table 7: Table of Receptors

Grid Type	Description	Shape	Spacing	Radius
Cartesian	Rough	Square	1000 meters	50 kilometers
Cartesian	Intermediate	Square	500 meters	5 kilometers
Cartesian	Fine	Square	100 meters	1 kilometers
Cartesian	Very fine	Square	50 meters	0.5 kilometers
Fence line	Very, very fine	Fence line	50 meters	Fence line

Receptors outside of the radii of impact were discarded for the surrounding source runs.

Meteorological Data: AERMOD – Santa Fe 2017-2021.

Adjacent Sources:
The Division 's Modeling Guidance was used to select 12 sources within 50 km of the facility.
The facility is 2.2 km from Crusher - Northern NM Wood Business Park, GCP2 3957. The facility is 2.7 km from Concrete Batch Plant-Las Vegas, GCP5-3635. The facility is 6.7 km from Screening Plant GCP2-3966. The facility is 101.4 km from MSCI - 500TPH Crusher NSR-2190. The facility is 102.7 km from Los Alamos National Laboratory. The facility is 115.6 km from No6 Compressor Station Laguna.

PSD Increment Information:
The facility is a minor source (for PSD purposes) located in AQCR 154. The minor source baseline dates here are not yet established for NO_2, not yet established for SO_2, not yet established for PM10, and not yet established for PM2.5.
The facility is 20.7 km from the Class I area Pecos Wilderness Area. Class I area modeling is not required.

Results Discussion:
Asphalt Fumes Analysis:
New Mexico State Toxics are not expected to pose environmental concern if their concentrations remain below one percent of the occupational exposure limit (OEL) for that pollutant. Maximum Asphalt Fumes concentration is 13.28334, which is 26.6% of the standard. The concentration of Asphalt Fumes is below one percent of the OEL.
The maximum total 8-hour Asphalt Fumes concentration was 13.283 µg/m3, which occurred 92 m east from the center of the facility. This was 26.6% of the 1%OEL.

CO Analysis:
The 1-hour CO concentration was below the significance level. No cumulative analysis is required. The maximum source alone 1-hour CO concentration was 695.948 µg/m^3, which occurred 51 m northwest from the center of the facility. This was 4.6% of the NMAAQS.

The 8-hour CO concentration was below the significance level. No cumulative analysis is required. The maximum source alone 8-hour CO concentration was 218.960 µg/m^3, which occurred 80 m south-southeast from the center of the facility. This was 2.2% of the NMAAQS.

NO_2 Analysis:
ARM2 was used with default options (0.5 minimum ratio, 0.9 maximum ratio) to determine the conversion of NO_X to NO_2.

Compliance with 1-hour NO_2 NAAQS automatically demonstrates compliance with air quality standards of other periods. The maximum total 1-hour NO_2 concentration was 182.782 µg/m^3, which occurred 73 m southeast from the center of the facility. This was 97.2% of the NAAQS. The maximum source alone 1-hour NO_2 concentration was 182.774 µg/m^3, which occurred 73 m southeast from the center of the facility. This was 97.2% of the NAAQS.

The maximum total annual NO_2 concentration was 14.972 µg/m^3, which occurred 126 m south from the center of the facility. This was 15.9% of the NMAAQS. The maximum source alone annual NO_2 concentration was 14.016 µg/m^3, which occurred 126 m south from the center of the facility. This was 14.9% of the NMAAQS.

PM10 Analysis:
The maximum total 24-hour PM10 concentration was 92.128 µg/m^3, which occurred 282 m south-

southwest from the center of the facility. This was 61.4% of the NAAQS. The maximum source alone 24-hour PM10 concentration was 92.128 µg/m^3, which occurred 282 m south-southwest from the center of the facility. This was 61.4% of the NAAQS.

PM2.5 Analysis:
The maximum total 24-hour PM2.5 concentration was 21.752 µg/m^3, which occurred 320 m west from the center of the facility. This was 62.1% of the NAAQS. A background concentration of 9.200 µg/m^3 was added from the monitor 3SFA, at 2001 Aviation Drive, Santa Fe, NM. The maximum source alone 24-hour PM2.5 concentration was 12.540 µg/m^3, which occurred 52 m west from the center of the facility. This was 35.8% of the NAAQS.

The maximum total annual PM2.5 concentration was 9.001 µg/m^3, which occurred 73 m east-southeast from the center of the facility. This was 75.0% of the NAAQS. A background concentration of 3.700 µg/m^3 was added from the monitor 3SFA, at 2001 Aviation Drive, Santa Fe, NM. The maximum source alone annual PM2.5 concentration was 3.663 µg/m^3, which occurred 73 m east-southeast from the center of the facility. This was 30.5% of the NAAQS.

SO_2 Analysis:
Compliance with 1-hour SO_2 NAAQS automatically demonstrates compliance with air quality standards of other periods. The maximum total 1-hour SO_2 concentration was 103.655 µg/m^3, which occurred 52 m north-northwest from the center of the facility. This was 52.8% of the NAAQS. The maximum source alone 1-hour SO_2 concentration was 103.655 µg/m^3, which occurred 52 m north-northwest from the center of the facility. This was 52.8% of the NAAQS.

The maximum total annual SO_2 concentration was 4.248 µg/m^3, which occurred 2151 m northeast from the center of the facility. This was 8.1% of the NMAAQS. The maximum source alone annual SO_2 concentration was 2.987 µg/m^3, which occurred 118 m northeast from the center of the facility. This was 5.7% of the NMAAQS.

Table 8: Table of Ambient Impact from Emissions

Pollutant	Period	Modeled Facility Concentration ($\mu g/m^3$)	Modeled Concentration with Surrounding Sources ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Cumulative Concentration ($\mu g/m^3$)	Standard	Value of Standard ($\mu g/m^3$)	Percent of Standard	UTM East (m)	UTM North (m)	Elevation (ft)
Asphalt Fumes	8-hour	13.283	13.283		13.283	1%OEL	50	26.6	482,262.0	3,943,061.0	6508
CO	1-hour	695.948	695.948		695.948	NMAAQS	14997.5	4.6	482,134.0	3,943,096.0	6507
CO	8-hour	218.960	218.960		218.960	NMAAQS	9960.1	2.2	482,207.0	3,942,989.0	6507
NO_2	1-hour	182.774	182.782		182.782	NAAQS	188.03	97.2	482,221.0	3,943,007.0	6506
NO_2	annual	14.016	14.972		14.972	NMAAQS	94.02	15.9	482,165.0	3,942,934.0	6504
PM10	24-hour	92.128	92.128		92.128	NAAQS	150	61.4	482,077.0	3,942,794.0	6498
PM2.5	24-hour	12.540	12.552	9.200	21.752	NAAQS	35	62.1	481,850.0	3,943,050.0	6502
PM2.5	annual	3.663	5.301	3.700	9.001	NAAQS	12	75.0	482,234.0	3,943,025.0	6508
SO_2	1-hour	103.655	103.655		103.655	NAAQS	196.4	52.8	482,154.0	3,943,110.0	6510
SO_2	annual	2.987	4.248		4.248	NMAAQS	52.4	8.1	483,500.0	3,944,750.0	6584