



City of Albuquerque

Environmental Health Department

Richard J. Berry, Mayor

Interoffice Memorandum

December 1, 2016

To: Cale Kanack, Environmental Health Specialist
c/o Isreal Tavarez, Environmental Health Manager

From: Lauren Dickerson, Environmental Health Scientist

Subject: Review of model for C&C Services Commercial

Permit # 3292

Modeling files are archived, are part of the public record for this permit application, and are available for printing at X:\ENVIRONMENTAL HEALTH\SHARE\EH-Staff\Air Dispersion Modeling\Sources2\C and C Services 3292.

Site Location

2901 2nd Street SW

Easting: 348845m Northing: 3879677m Zone:13

Overview of Facilities

C and C Services is requesting a Construction Permit to operate a portable crushing and screening unit for concrete, asphalt, and gravel materials.

Conclusions of Dispersion Modeling

C&C's sources were modeled for CO, NO₂, SO₂, TSP, PM₁₀, and PM_{2.5} using AERMOD. A cumulative analysis was also conducted to include neighboring sources from Albuquerque Asphalt (Permit #1829-RV1-R12). Compliance was demonstrated for appropriate NAAQS and NMAAQs. Modeling conducted in-house demonstrates compliance with applicable regulatory requirements.

Assumptions used in the modeling review

1. Operating hours:
 - a. No operations on Sunday
 - b. 7am-4pm, Mon-Sat.
2. Continuous emissions during operating hours
3. Requested throughput is 300 tph.
4. Annual Throughput limit is 842,400 tons/yr.
5. Haul road emissions based on 300tph for 2808 hr/yr, must limit hauling to operational hours, but no need to limit number of truck trips.

Model (s) Used

AERMOD

Modeling Parameters

Rural dispersion coefficients; NO plume depletion; hourly emissions factors for hours of operation by season; regulatory default parameters, default ARM parameters. Source parameter inputs were consistent between the modeling report and modeling files. Source parameter inputs conformed to state and local guidance.

Emission rates used in the review can be seen below in **Tables 1 & 2**.

Table 1: Particulate Emission Rates for C&C Sources

Equip # (App)	Emission Unit Description (From Application)	Source ID (In Model)	TSP (lbs/hr)	PM10 (lbs/hr)	PM2.5 (lbs/hr)
1	Raw Material Batch Drop (concrete, aggregate)	C&C1	0.164	0.077	0.012
2	Raw Material Batch Drop (asphalt)	C&C2	0.164	0.077	0.012
3	Feeder	C&C3	0.327	0.155	0.024
4	Screen	C&C4	0.375	0.131	0.045
5	Crusher	C&C5	0.081	0.036	0.012
6	Pile1	C&C6	0.045	0.017	0.006
7	Loadout finished pile	C&C7	0.327	0.155	0.024
8	Finish pile	C&C8	0.164	0.077	0.012
9	Finish pile	C&C9	0.164	0.077	0.012
10	Raw Haul Roads (Raw & Finished)	C&CRHR#1-10 C&CFHR#11-24	0.03843 each 0.922 total	0.009375 each 0.225 total	9.375E-4 each 0.023 total
11	499HP diesel engine	C&C11	0.011	0.011	0.011
Totals			2.744	1.038	0.193

LD 10/27/16: Emissions match application, model report, and modeling files.

Table 2: Combustion Gas Emission Rates for C&C Sources

Equip # (App)	Emission Unit Description (From Application)	Source ID (In Model)	CO (lbs/hr)	NO_x (lbs/hr)	SO₂ (lbs/hr)
11	499HP diesel engine	C&C11	2.86	0.33	1.0231
Totals			2.86	0.33	1.0231

LD 10/27/16: Emissions match application, and modeling files. (Model report contained errors in emissions, which were corrected.)

Meteorological Data

X:\ENVIRONMENTAL HEALTH\SHARE\EH-Staff\Air Dispersion Modeling\METDATA\AERMET15181\five-year-with-one-minute\AERMETv15181-2001-2005.SFC

Receptor Grid

C&C ONLY model: Receptor spacing was 50 meters along the fence line. A 50 meter grid was used 1000 meters beyond the fence line.

Cumulative model: Receptor spacing was 50 meters along the fence line. A 50 meter grid was used 1000 meters beyond the fence line.

Adjacent Sources

A cumulative impact analysis was performed including C&C's neighboring sources from Albuquerque Asphalt (Permit #1829-RV1-R12). Modeling files from Application #1829-RV1-R1 were obtained from Air Quality Program (AQP) records.

X:\ENVIRONMENTAL HEALTH\SHARE\EH-Staff\Air Dispersion Modeling\Sources\Abq Asphalt

Terrain Used

USGS NED files

Modeling Results

Table 3: Impact of emissions vs. Ambient Air Quality Standards (C&C ONLY)

Pollutant	Averaging Time	Modeled Impact ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Model + Background ($\mu\text{g}/\text{m}^3$)	Most stringent Standard ($\mu\text{g}/\text{m}^3$)	Pass/Fail
TSP	24-hour (H1H)	102.25	31	133.25	150	P
TSP	Annual (2005)	18.52	31	49.52	60	P
PM ₁₀	24-hour	Met using TSP 24hr results.			150	P
PM _{2.5}	24-hour (H1H)	7.16	18.0	25.16	35 (H8H)	P
PM _{2.5}	Annual	1.37	7.5	8.87	12	P
CO	1-hour	163.68	2864	3027.68	15007	P
CO	8-hour	59.33	1260	1319.33	9967	P
NO ₂	1-hour (H1H)	11.16	82	93.16	188.06	P
NO ₂	Annual (2005)	0.23	30	30.23	94	P
SO ₂	1-hour (H1H)	58.55	13.1	71.65	196.4	P
SO ₂	24-hour	8.65	0	8.5	261.9	P
SO ₂	Annual	Not run because 24hr met Annual standard.			52.4	P

Table 4: Impact of emissions vs. Ambient Air Quality Standards (C&C plus Albuquerque Asphalt)

Pollutant	Averaging Time	Modeled Impact ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Model + Background ($\mu\text{g}/\text{m}^3$)	Most stringent Standard ($\mu\text{g}/\text{m}^3$)	Pass/Fail
TSP	24-hour (H1H)	140.70	31	171.70	150	FAIL
TSP	Annual (2003)	25.10	31	56.10	60	P
PM ₁₀	24-hour	Met using TSP 24-hr SIL results.			150	P
PM _{2.5}	24-hour (H8H)	Not required.			35 (H8H)	NA
PM _{2.5}	Annual (2003)	Not required.			12	NA
CO	1-hour	163.78	2864	3027.78	15007	P
CO	8-hour	59.65	1260	1319.65	9967	P
NO₂	1-hour (H1H)	378.25	82	460.25	188.06	FAIL
NO ₂	Annual (2003)	12.54	30	42.54	94	P
SO ₂	1-hour (H1H)	58.55	13.1	71.65	196.4	P
SO ₂	24-hour	6.73	0	6.73	261.9	P
SO ₂	Annual (2003)	0.97	0	0.97	52.4	P

The cumulative model showed three exceedances of the 24-hour TSP standard. The cumulative model also shows exceedances of the 1-hour NO₂ standard; these exceedances were reviewed using the MaxDCont Viewer in BEEST version 11.05.

A cumulative analysis for the 24-hour and Annual PM_{2.5} standards was not required. The South Valley is a heavily industrialized area and the monitored background concentration accounts for the modest PM_{2.5} emissions from the neighboring source – Albuquerque Asphalt.

Table 5 shows the neighboring source’s contributions to the exceedances. C&C’s contribution to the TSP 24-hour exceedances can be determined by subtracting AA’s contribution from the modeled impact of all sources. C&C’s contributions are compared to the appropriate SILs in Table 6.

Table 5. Source Contributions to TSP 24-HR Exceedances

Pollutant	Average	Group	East (X)	North (Y)	BEEST Date	Converted Date	Modeled Impact w/ Background ($\mu\text{g}/\text{m}^3$)
TSP	24-Hour	ALL	348981.00	3879612.50	02010924	(01/09/2002)	156.07514
TSP	24-Hour	AA	348981.00	3879612.50	02010924	(01/09/2002)	152.44416
TSP	24-Hour	ALL	348936.00	3879613.00	03111924	(11/19/2003)	163.09237
TSP	24-Hour	AA	348936.00	3879613.00	03111924	(11/19/2003)	162.56417
TSP	24-Hour	ALL	348944.00	3879640.00	03111924	(11/19/2003)	158.20616
TSP	24-Hour	AA	348944.00	3879640.00	03111924	(11/19/2003)	157.66555

MAXI File print-out attached.

Table 6 shows that contributions from C&C sources did not exceed the Significant Impact Level (SIL) for TSP.

Table 6: Significant Impact Level

Pollutant	Average	Group	East (X)	North (Y)	BEEST Date	Converted Date	Modeled Impact ($\mu\text{g}/\text{m}^3$)	SIL ($\mu\text{g}/\text{m}^3$)	Exceed SIL?
TSP	24-HR	C&C	348981.0	3879612.5	2010924	(01/09/2002)	3.63098	5	No
TSP	24-HR	C&C	348936.0	3879613.0	3111924	(11/19/2003)	0.52820	5	No
TSP	24-HR	C&C	348944.0	3879640.0	3111924	(11/19/2003)	0.54061	5	No

The SIL for 1-hour NO₂ is 7.54 $\mu\text{g}/\text{m}^3$. C&C's contribution to any NO₂ exceedance at any receptor was less than 0.07 $\mu\text{g}/\text{m}^3$. The eighth highest impacts showed exceedances at 16 receptors along or near AA's fenceline to the north and west. The cumulative model showed exceedances for impacts ranked 8th through 52nd. The 53rd highest impact showed no exceedance at any receptor. Screenshots of MAXDCONT results attached.

C&C sources did not make a significant contribution to any of the modeled exceedances.

Discussion

AQP modeling staff recommends accepting this model.

The modeling analysis conducted by the Small Business Assistance Program inadvertently included one extra hour of operation for each season or day in the Emission Factors settings for C&C and AA sources. This error was corrected in the AQP analysis. The AQP analysis found equal or lower modeled impacts for all standards, which is likely due to the having fewer operating hours.

The AQP analysis for only C&C sources showed compliance with all NMAAQS and NAAQS. The AQP analysis of the cumulative model showed compliance with all NMAAQS and NAAQS, except for the 24-hour TSP and 1-hour NO₂ standards. The culpability analysis showed that C&C did not make a significant contribution to any of the modeled exceedances.


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* AERMOD ( 15181): C&C Services + AA
* AERMET ( 15181):
* MODELING OPTIONS USED: CONC      ELEV      RURAL
*   MAXI-FILE FOR 24-HR VALUES >= A THRESHOLD OF      150.0
*   FOR SOURCE GROUP: ALL
*   FORMAT: (1X,I3,1X,A8,1X,I8.8,2(1X,F13.5),3(1X,F7.2),1X,F13.5)
* AVE  GRP  DATE      X      Y      ZLEV  ZHILL  ZFLAG  AVERAGE CONC
*-----
24  ALL  02010924  348981.00000  3879612.50000  1506.22  1506.22  0.00  156.07514
24  ALL  03111924  348936.00000  3879613.00000  1506.22  1506.22  0.00  163.09237
24  ALL  03111924  348944.00000  3879640.00000  1506.22  1506.22  0.00  158.20616

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* AERMOD ( 15181): C&C Services + AA
* AERMET ( 15181):
* MODELING OPTIONS USED: CONC      ELEV      RURAL
*   MAXI-FILE FOR 24-HR VALUES >= A THRESHOLD OF      145.0
*   FOR SOURCE GROUP: AA
*   FORMAT: (1X,I3,1X,A8,1X,I8.8,2(1X,F13.5),3(1X,F7.2),1X,F13.5)
*AVE  GRP      DATE      X      Y      ZLEV      ZHILL      ZFLAG      AVERAGE CONC
-----
24 AA      02010924      348981.00000      3879612.50000      1506.22      1506.22      0.00      152.44416
24 AA      02111324      348981.00000      3879612.50000      1506.22      1506.22      0.00      147.80917
24 AA      03111924      348936.00000      3879613.00000      1506.22      1506.22      0.00      162.56417
24 AA      03111924      348944.00000      3879640.00000      1506.22      1506.22      0.00      157.66555
24 AA      04111924      348950.80000      3879568.60000      1506.22      1506.22      0.00      148.04774
1 AA      05110924      348980.40000      3879479.80000      1506.22      1506.22      0.00      146.61494

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City of Albuquerque

Environmental Health Department Air Quality Program

Richard J Berry, Mayor

Modeling Review Checklist

Please fill in the appropriate dates and initial.

LAUREN DICKERSON

Facility Name: <u>C&C</u>	Permit #: <u>3292</u>	Date	Initials
1. Do the emission rates in the model match the controlled emission rates in the application? <u>Yes</u>		<u>11/2/16</u>	<u>JJD</u>
2. Do the modeled hours match the requested hours from the application? <u>No - but corrected in my review. Jan-4pm M-Sat C&C</u> <u>Neighboring Source (AA) W 8-4, SPRING 8-5, SUM 7-6, FALL 7-5</u>		<u>11/2/16</u>	<u>JJD</u>
3. AQP replicates modeling numbers submitted for facility <u>Results were slightly lower than applicant's report.</u>		<u>11/2/16</u>	<u>JJD</u>
4. Design concentrations: a. appropriate backgrounds numbers <u>YES</u> b. used H1H for TSP <u>YES</u> c. used H1H, H2H, H6H, <u>H8H</u> , etc per App W (criteria pollutants) <u>for PM2.5</u> d. used maximum annual modeled impact <u>YES</u>		<u>11/2/16</u>	<u>JJD</u>
5a. Sources of large particles w/in 1000 feet? <u>YES</u> If so, was a cumulative analysis performed for TSP? <u>YES</u> Modeled emission rates match permitted (TSP minus PM10) rates for nearby sources? <u>YES</u>		<u>11/2/16</u>	<u>JJD</u>
5b. Any nearby sources of criteria pollutants worthy of inclusion? If so, were they included? <u>YES neighboring engine included.</u>		<u>11/2/16</u>	<u>JJD</u>
6. Was the no urban area setting used? <u>YES</u> If not, was urban justified?		<u>11/2/16</u>	<u>JJD</u>
7. Any buildings that might cause downwash? <u>No buildings</u> Was BPIP_Prime run? <u>No</u> Was building downwash performed? <u>No</u>		<u>11/2/16</u>	<u>JJD</u>
8a. Were appropriate particle size distributions used for TSP? PM10? <u>Not applicable</u> Were distributions appropriately assigned to sources?		<u>11/2/16</u>	<u>JJD</u>
8b. Was plume depletion used for appropriate pollutants only? <u>Not used in my review</u>		<u>11/2/16</u>	<u>JJD</u>
9. Were emission factors used? <u>NO</u> Specifying hours with & w/o emissions? <u>YES</u> Other? _____		<u>11/2/16</u>	<u>JJD</u>
10. Do UTMs of sources match up with Google Earth to w/in 5 meters? <u>YES</u>		<u>11/2/16</u>	<u>JJD</u>
11. Fenceline: Is public access restricted? <u>YES</u> Does the modeled fenceline mirror the shape of property parcel? <u>YES</u> Do the fenceline UTMs match Google Earth/Maps? <u>YES</u>		<u>11/2/16</u>	<u>JJD</u>

12. Met data used for criteria pollutants: <u>ABQ 2001-2005</u> NWS AERMOD: 2001 - 2005 Other : _____	11/2/16	JJ
13. Receptor grid: 50-meter or less resolution on the fence line? <u>YES</u> 100- meter or less resolution out to at least 500 meters? <u>YES</u>	11/2/16	JJ
14. Were haul roads modeled according to NMED procedure? <u>YES</u> If not, what were the differences and why?	11/2/16	JJ
15. Will any of the sources move within the property? <u>NO</u> If so, was that covered conservatively in the model? <u>N/A</u>	11/2/16	JJ
16. Does the explanation of modeling methodologies and operating scenarios in the modeling report match what was modeled? <u>YES</u> Could the explanations in the report be interpreted in more ways than one? <u>NO</u>	11/2/16	JJ
17a. Were sources modeled with appropriate source types? <u>YES</u>	11/2/16	JJ
17b. Did the volume source dimensions come from NMED Guidance? <u>YES</u>	11/2/16	JJ
17c. Were raincaps and horizontal modeled per NMED Guidance? <u>N/A</u>	11/2/16	JJ
18. If ARM2 was used in 1-hr NO2 modeling, was its use appropriate? (See the conclusion section in EPA's Sep 30 2014 memo) <u>N/A</u>	11/2/16	JJ
19. Does the in-stack ratio conservatively cover all NOx emitting stacks? <u>N/A</u>	11/2/16	JJ
20. Have receptor elevations been checked? <u>YES</u>	11/2/16	JJ
21. Have all concerns in the modeling log been addressed? <u>N/A</u>	11/4/16	JJ
Additional comments:		



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Peer review checklist

Please fill in the appropriate dates and initial.

Facility Name: <i>CTC services</i> Permit #: <i>3292</i>	Date	Initials
1. Does the assumptions section of the modeling report make sense? <input checked="" type="checkbox"/>	<i>12/12</i>	<i>JJ</i>
2. Does the discussion at the end of the modeling report make sense? <input checked="" type="checkbox"/>	<i>12/8</i>	<i>JJ</i>
3. Inconsistencies w/in AQD review, i.e. among .SUM, .GRF, & summary table? (Electronic files and/or paper) <input checked="" type="checkbox"/>	<i>12/8</i>	<i>JJ</i>
4. In the results table, are any design concentrations higher than the respective standards? <i>yes, but they are explained</i>	<i>12/9</i>	<i>JJ</i>
5. Within the review, do the emissions for individual sources add up to the totals?	<i>12/9</i>	<i>JJ</i>
6. Do total emissions in the modeling review match those in the report submitted by the consultant? <i>couldn't find that table in SBAP report, but matched up w/ application</i>	<i>12/9</i>	<i>JJ</i>
7. Do the hours of operation in AQP report match those in the report submitted by the consultant? <input checked="" type="checkbox"/>	<i>12/12</i>	<i>JJ</i>
8. Are all elements of the modeling report present? <i>The template has changed. Everything needed is changed.</i>	<i>12/12</i>	<i>JJ</i>
9. Does the print-out showing the layout of sources roughly match satellite imagery? <i>n/a</i>	<i>12/12</i>	<i>JJ</i>
10. Do the address and UTM's in the review match up? <input checked="" type="checkbox"/>	<i>12/12</i>	<i>JJ</i>
11. Is the modeling review labeled with the correct permit number? <input checked="" type="checkbox"/>	<i>12/12</i>	<i>JJ</i>
12.		
13.		
Additional comments: <i>Maxcont images for 1-hr NO₂ are 8th hi avgs; table 4 lists H1H - so this is not an inconsistency per bullet #3</i>		