City of Albuquerque

Environmental Health Department

Tim Keller, Mayor

Interoffice Memorandum

April 13, 2022

To: **Carina Muñoz-Dyer, Environmental Health Supervisor**

From: **Kyle Tumpane, Environmental Health Scientist**

Subject: **Review of model for Star Paving Company – South Broadway HMA Plant**

Permit # **3448**

Site Location

West of South Broadway Blvd. in Tract B, C and D Plat of Unit I Lands of B G & W Partnership
Easting: 347,775m Northing: 3,869,750m Zone:13

Overview of Facilities

Star Paving Company proposes to construct a 300 ton per hour (tph) hot mix asphalt (HMA) plant to produce asphalt for use in road and highway projects. The facility will be powered by commercial line power and will consist of the following emission sources: four aggregate storage piles, one recycled asphalt pavement (RAP) storage pile, four cold aggregate feed bins, one cold aggregate scalping screen, one RAP feed bin, one RAP scalping screen, one drum dryer/mixer, one drum dryer/mixer baghouse, two asphalt storage silos, two asphalt cement storage tanks, one asphalt cement heater, seven conveyors, two paved and two unpaved haul roads. The drum dryer/mixer will burn either pipeline quality natural gas or on-specification used oil. The asphalt cement heater will burn either ultra-low sulfur diesel or propane.

Conclusions of Dispersion Modeling

Modeling was performed for PM_{10}, $PM_{2.5}$, NO_2, CO, SO_2, H_2S and Pb using AERMOD. Compliance was demonstrated for NAAQS and NMAAQS.

Modeling conducted in-house demonstrates compliance with applicable regulatory requirements. Modeling files are archived, are part of the public record for this permit application, and are available for printing. Two modeling protocols were submitted and reviewed. The first protocol was submitted on January 26, 2021 and denied on February 25, 2021. The second protocol was submitted on April 9, 2021 and approved on April 13, 2021.

Assumptions used in the modeling review

1. The HMA Asphalt Cement Heater (Unit 16 – HMAHEAT) can operate 24/7 year-round. All other sources are limited as listed below.
2. Operating hours: January: 7 AM – 5:30 PM, December: 7 AM – 5 PM, 7 days/week
   February – November: 24 hours/day, 7 days/week
3. Asphalt production is limited to 300 tons/hour and 700,000 tons/year (per modeling report).
4. Asphalt production is limited to: January: 3000 tons/day
   February, March: 3300 tons/day
   April, May: 4200 tons/day
   June-August: 5400 tons/day
   September, October: 4200 tons/day
   November: 3300 tons/day
   December: 3000 tons/day

5. The limits for haul trucks are as follows: 24 trucks/hour total may enter and leave the facility; 12 trucks/hour may be asphalt trucks traveling on the Unpaved Asphalt Haul Road (UPA) (Fig. 3) to be loaded with asphalt and 12 trucks/hour may be aggregate, asphalt cement or RAP trucks traveling on the Unpaved Aggregate, Asphalt Cement, RAP Haul Road (UPO) (Fig. 3).
6. Total aggregate (RAP and/or aggregate) throughput may be a maximum of 282 tons/hour.
7. The drum dryer/mixer (Unit 13) particulate emissions are controlled by a baghouse (Unit 13b). The baghouse stack has a height of at least 21.3 feet, a diameter of no more than 4.2 feet and an exit velocity of at least 73.49 feet/second. The baghouse must be located in between the western sections of the UPA and UPO haul roads (Fig. 3) and must be at least 394 feet on all sides from the fence that restricts access to the property.
8. Water sprays must wet material at the unloading drop points from the aggregate feed bins and RAP feed bins onto the respective conveyors (Units 3 & 9). The remaining aggregate and RAP handling steps (screens and transfer points, Units 4, 5, 6, 10, 11, 12) must be controlled by water sprays and/or roofed enclosures.
9. The four aggregate and one RAP storage piles must be located west of the Unpaved Aggregate, Asphalt Cement, RAP Haul Road (UPO); at least 270 feet from the northern fence, at least 325 feet from the southern fence, at least 600 feet from the eastern fence and be at least 200 feet from the western Star Paving fence (Fig. 1).
10. PVI & PVO haul roads are paved at least up to the locations shown in Figures 1 & 2 and the eastern portions are at least 20 feet from the eastern Star Paving fence.
11. UPA & UPO haul roads do not need to be paved but they must have a base course, such as asphalt millings, and a surfactant applied.
12. All haul roads are one lane traffic. Trucks can travel in one direction on a roadway at any given time.
13. A fence restricts access to the property

Modeling Parameters

Rural dispersion coefficients
Hourly emission factors to specify hours of operation
Reduced hourly emission factors for annual $PM_{2.5}$ models based on 700,000 tons/year annual throughput limit
Temporally-varying NO_2 background
PVMRM for 1-hour NO_2 and ARM2 for annual NO_2 models
Hourly ozone background from South Valley monitor for 1-hour NO_2 model

Emission rates used in the review can be seen below in **Tables 1, 2 & 3**.

Table 1: Particulate Emission Rates

Source ID	Emission Unit Description	PM_{10} (lbs/hr) 65% aggregate	PM_{10} (lbs/hr)* 100% aggregate	$PM_{2.5}$ (lbs/hr) 65% aggregate	$PM_{2.5}$ (lbs/hr)* 100% aggregate
HMASTK	Baghouse Stack Unit 13	6.9		6.9	
HMAHEAT	Asphalt Cement Heater Unit 16	0.022		0.022	
DRUMUNL	Asphalt Silo Loading Unit 14	0.18		0.18	
HMASILO	Asphalt Silo Unloading Unit 15	0.16		0.16	
HMAPILE1	Storage Pile Handling 1 Unit 1	0.099	0.16	0.015	0.024
HMAPILE2	Storage Pile Handling 2 Unit 1	0.099	0.16	0.015	0.024
HMAPILE3	Storage Pile Handling 3 Unit 1	0.099	0.16	0.015	0.024
HMAPILE4	Storage Pile Handling 4 Unit 1	0.099	0.16	0.015	0.024
HMABIN1	Bin Loading Bin 1 Unit 2	0.099	0.16	0.015	0.024
HMABIN2	Bin Loading Bin 2 Unit 2	0.099	0.16	0.015	0.024
HMABIN3	Bin Loading Bin 3 Unit 2	0.099	0.16	0.015	0.024
HMABIN4	Bin Loading Bin 4 Unit 2	0.099	0.16	0.015	0.024
HMATP1	Bin Unloading Unit 3	0.008	0.013	0.0023	0.0037
HMASCR	Scalping Screen Unit 4	0.13	0.21	0.0089	0.014
HMATP2	Scalping Screen Unloading Unit 5	0.008	0.013	0.0023	0.0037
HMATP3	Conveyor to Sling Conveyor Unit 6	0.008	0.013	0.0023	0.0037
RAPPILE	RAP Storage Pile Handling Unit 7	0.07	0	0.011	0
RAPBIN	RAP Bin Loading Unit 8	0.07	0	0.011	0
RAPTP1	RAP Bin Unloading Unit 9	0.0048	0	0.0014	0
RAPSCR	RAP Screen Unit 10	0.078	0	0.0053	0
RAPTP2	RAP Screen Unloading Unit 11	0.0048	0	0.0014	0
RAPTP3	RAP Transfer Conveyor Unit 12	0.0048	0	0.0014	0
PVI_0001-21	Haul Road Paved In Volume 1-21	0.16		0.040	
PVO_0001-10	Haul Road Paved Out Volume 1-10	0.075		0.018	
UPA_001-18	Haul Road Unpaved Asphalt Volume 1-18	0.30		0.030	
UPO_001-28	Haul Road Unpaved Aggregate, Asphalt Cement, RAP Volume 1-28	0.47		0.047	
	Totals	**9.45**	**9.80**	**7.56**	**7.61**

*These emissions are for the 100% aggregate scenario, which is unlikely. The 65% aggregate/35% RAP ratio is typical.

Table 2: Combustion Gas Emission Rates

Source ID	Source Description	NO_x (lbs/hr)	CO (lbs/hr)	SO_2 (lbs/hr)
HMASTK	Baghouse Stack Unit 13	16.5	39.0	17.4
HMAHEAT	Asphalt Cement Heater Unit 16	0.22	0.098	0.078
	Totals	**16.72**	**39.10**	**17.48**

Table 3: Other Emission Rates

Source ID	Source Description	H_2S (lbs/hr)	CO (lbs/hr)	Pb (lbs/hr)
HMASTK	Baghouse Stack Unit 13	0.016		0.0045
DRUMUNL	Asphalt Silo Loading Unit 14	0.00044	0.35	
HMASILO	Asphalt Silo Unloading Unit 15	0.00044	0.40	
HMAHEAT	Asphalt Cement Heater Unit 16			0.0000108
PVO_0001-10	Haul Road Paved Out Volume 1-10		0.059	
UPA_001-18	Haul Road Unpaved Asphalt Volume 11-18		0.047	
	Totals	**0.0169**	**0.86**	**0.0045**

Receptor Grid

Receptor spacing was 25 meters along the fence line. Beyond the fence, receptor spacing was 50 meters out to 500 meters, 100 meters out to 1 kilometer and 250 meters out to 3 kilometers for the particulate ROI models. The combustion ROI model included additional receptors spaced at 500 meters out to 5 kilometers, 1,000 meters out to 10 kilometers and 2,000 meters out to 14 kilometers. The receptor field was reduced for cumulative modeling based on significant receptors, except for the H_2S and Pb model, which did not use a reduced receptor field and the field extended out to 10 kilometers.

Meteorological Data

Albuquerque Sunport (KABQ) 2014-2018 processed with AERMET v.19191 and AERMINUTE v.15272.

Adjacent Sources

Western Organics – permit #470
New Mexico Terminal Services HMA – permit #3340-RMD
New Mexico Terminal Services – permit #3311-M1
New Mexico Aggregates – application #1435-M1
Oñate Feed – permit #1563-M1
Brown-Minneapolis Tank, Inc. – permit #1438-2AR

Terrain Used

USGS 1 arc-second NED files

Modeling Results

Table 4: Impact of Emissions vs. Ambient Air Quality Standards

Pollutant	Averaging Time	Modeled Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Model + Background ($\mu g/m^3$)	Most stringent Standard ($\mu g/m^3$)	Pass/Fail
NO_2	1-hour	74.7	67.9	142.6	188	P
NO_2	Annual	10.8	19	29.8	94	P
CO	1-hour	316.3	Modeled impact below significant impact levels		15007	P
CO	8-hour	197.1			9967	P
SO_2	1-hour	109.2	13.1	122.3	196.4	P
PM_{10}	24-hour (H6H)	61.2	42	103.2	150	P
$PM_{2.5}$	24-hour	10.6 + 0.13	22	32.7**	35	P
$PM_{2.5}$	Annual	2.3 + 0.0031	8.4	10.7**	12	P
H_2S	1-hour	0.3	Modeled impact below significant impact levels		13.9	P
Pb	Monthly*	0.0017			0.15	P

*Standard is quarterly but model was run using a monthly averaging period, which is more conservative.
**Includes secondary $PM_{2.5}$ contributions: 0.13 $\mu g/m^3$ for 24-hour $PM_{2.5}$ model and 0.0031 $\mu g/m^3$ for annual $PM_{2.5}$ model.

Discussion

Star Paving Company proposes to construct a 300 ton per hour (tph) hot mix asphalt (HMA) plant to produce asphalt for use in road and highway projects. The facility will be powered by commercial line power and will consist of the following emission sources: four aggregate storage piles, one recycled asphalt pavement (RAP) storage pile, four cold aggregate feed bins, one cold aggregate scalping screen, one RAP feed bin, one RAP scalping screen, one drum dryer/mixer, one drum dryer/mixer baghouse, two asphalt storage silos, two asphalt cement storage tanks, one asphalt cement heater, seven conveyors, two paved and two unpaved haul roads. The drum dryer/mixer will burn either pipeline quality natural gas or on-specification used oil. The asphalt cement heater will burn either ultra-low sulfur diesel or propane.

NO_X and SO_2 emissions are both less than 40 tons/year. However, to be conservative Star Paving's consultant (Montrose) used the EPA document "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program" and NMED modeling guidance to calculate annual and 24-hour secondary $PM_{2.5}$ concentrations that were added to the modeled results and background. The addition of secondary $PM_{2.5}$ concentrations to the 24-hour and annual $PM_{2.5}$ modeled impacts is conservative. It is conservative because the values calculated, even though they are small, are overestimates of secondary particulate formation at the fence of Star Paving. The modeled impacts shown in Table 4 are along the fence for both the 24-hour and annual direct $PM_{2.5}$ emissions (Fig. 6 & 7). EPA guidance[1] from May 2014 states, "Formation of secondary sulfate and nitrate particulate is a fairly slow process with conversion rates taking many hours to days." As with the example in the EPA guidance where the highest primary emissions impacts occur on the project border, "the peak secondary impacts are expected to occur well downwind of the peak primary impacts."

Several questions were asked of Montrose regarding emission rate calculations, missing models and consistency issues. Modeling was revised once based on adding additional calculations and modeling scenarios to account for the possibility that 100% aggregate/0% RAP could be used in the mix. Handling aggregate produces more particulate emissions that handling RAP so it was requested that Montrose provide emission calculations for a 0% RAP mix and also provide a separate set of Uncontrolled and Controlled Emissions Tables in the Application Form to account for this possibility. The Environmental Health Department (EHD) requested that Montrose update the modeling to account for these potentially higher particulate emissions by adding two additional PM_{10} and $PM_{2.5}$ models. These would be the two highest modeled impact scenarios for PM_{10} and $PM_{2.5}$ for the standard mix and would include the higher particulate emissions for a 0% RAP mix. Montrose provided three or four additional models for 24-hour PM_{10}, 24-hour $PM_{2.5}$ and annual $PM_{2.5}$ with the higher particulate emissions. These are referred to as Aggregate or Agg models later in this discussion and they showed the highest modeled impacts as expected, although the differences were small: only up to 0.3 $\mu g/m^3$. Modeling was also revised to include a lead (Pb) model that included emissions for the drum dryer and asphalt heater due to the possible use of on-specification used oil (also referred to as burner fuel oil or waste oil in the application report) as a fuel for the drum dryer.

The revised modeling also included corrections to the location of the first source of the Unpaved Asphalt Haul Road (UPA) and to the length of the Unpaved Aggregate, Asphalt Cement, RAP Haul Road (UPO) so that it properly connected to the Paved Road Out Haul Road (PVO). Corrections were also requested for the HMASTK and HMAHEAT stack parameters so that they were consistent between all models and application documents but there were still issues with those as described below. Corrections were requested for the asphalt cement storage tanks dimensions and it was requested that these two tanks be included in the models as structures for downwash analysis and that the tanks, silos and baghouse be included for downwash analysis in all models.

Differences in Modeled Results

Differences in modeling results between EHD and Montrose are possibly due to a few reasons. The first possible source of difference is that EHD used 1 arc-second National Elevation Dataset (NED) files, whereas Montrose used 1/3 arc-second NED files. This could lead to slight differences in source and receptor elevations, which could lead to slight differences in modeled results.

[1] Guidance for $PM_{2.5}$ Permit Modeling, EPA-454/B-14-001, May 2014, page D-3

A source of difference in the 1-hour SO_2 and annual NO_2 models is that EHD made the following changes prior to running: HMASTK height, exit velocity and stack diameter, and HMAHEAT height were changed to match the ROI Combust model, 1-hour NO_2 model, the application Stack Parameters Table and the modeling report Table 5. The annual NO_2 background value was also changed from 30 $\mu g/m^3$ to 19 $\mu g/m^3$ to reflect the updated background value released on 05Nov2021. This was after the submittal of this application so the background value used by Montrose was correct when submitted and is more conservative.

Differences in particulate modeled results are due to different reasons for each pollutant and averaging period. The 24-hour PM_{10} modeled result for EHD is different and in a different location, west of New Mexico Terminal Services (NMTS) western fence, because EHD chose the highest 6th high (H6H) modeled result in ambient air at a receptor that had a significant contribution from Star Paving in the significant impact level (SIL) model. Montrose performed a refined modeling analysis using post files that provided data on whether Star Paving made a significant contribution to a given receptor on the same day that the H6H modeled result occurred. Montrose found that Star Paving did not make significant contributions to the receptors west of NMTS western fence on the same day the H6H modeled result occurred, therefore they selected a receptor on the western Star Paving fence, although their reported result of 102.5 $\mu g/m^3$ does not match the submitted model result for that receptor, which shows 109.1 $\mu g/m^3$, but both are below the standard. EHD did not use the receptors on the interior Star Paving fence that borders Western Organics because both properties are considered restricted access so receptors inside either property or on the interior fence between the properties are not in ambient air. The selection of the different receptor also resulted in the Scenario 9 Aggregate model having the high PM_{10} result for EHD versus the Scenario 10 Aggregate model for Montrose.

The 24-hour $PM_{2.5}$ modeled result is slightly higher for EHD than for Montrose because Montrose added the incorrect secondary $PM_{2.5}$ contribution amount. The correct secondary $PM_{2.5}$ contribution values were calculated on p.32 of the modeling report but then different, lower values were added to the $PM_{2.5}$ annual and 24 hour results on p.33-34 of the modeling report. The change is only 0.1 $\mu g/m^3$ for 24-hour $PM_{2.5}$ and no change for annual $PM_{2.5}$ when rounded to one decimal place. The annual $PM_{2.5}$ modeled result for EHD is lower than the modeled result submitted by Montrose due to the receptor used for the high modeled result. Montrose used a receptor that they state is on the Western Organics western fence but this receptor is actually 2-3 meters inside the western fence of Western Organics and therefore is not in ambient air. Because of this EHD used a receptor on the southern Star Paving fence because this was the highest in ambient air. Both results are below the standard.

A test was run on the highest modeled impact annual $PM_{2.5}$ model (S11 Agg) to confirm that a change in one surrounding source parameter did not affect the modeled result. The NMT HMA Crusher – Unit 15 has a 6 meter release height in the annual $PM_{2.5}$ models. The release height for this units is 5 meters in the 24-hour $PM_{2.5}$ and 24 hour PM_{10} models and in the provided surrounding source data. However, the example release height for a crusher in the NMED modeling guidelines is 6 meters. The release height was changed to 5 meters in the annual $PM_{2.5}$ S11 Agg model and the modeled results on the Star Paving fence changed only slightly in the 4th and 5th decimal places.

Cumulative Modeling Methodology

The cumulative models included numerous sources within 2 kilometers of Star Paving's proposed location. Montrose was instructed to include the closest four sources for all pollutants and the further two sources, Oñate Feed and Brown-Minneapolis Tank, Inc., only for NO_2 and SO_2 cumulative models but Montrose conservatively included all the surrounding sources in all cumulative models. The particulate matter backgrounds came from South Valley monitor data and the monitor is located approximately 3.95 miles from the proposed Star Paving fence and is representative of a mixed residential-industrial area. The NO_2 backgrounds came from the monitor at Del Norte High School, which is located approximately 12.8 miles from the proposed Star Paving site. The primary source of NO_2 at the Del Norte monitor is most likely from traffic. The monitored background should conservatively account for I-25 traffic near the Star Paving site while the surrounding sources included in the cumulative models account for nearby industrial emissions.

Contributions to Maximum Modeled Impacts

There were no modeled exceedances of any pollutant in ambient air. MAXDCONT Viewer was used to investigate modeled 1-hour NO_2 exceedances within the NMTS/New Mexico Aggregates (NMAGG) and Oñate Feed properties and modeled 24-hour $PM_{2.5}$ exceedances within the NMTS/NMAGG and Western Organics properties.

The results from MAXDCONT Viewer show that Star Paving will not make a significant contribution to any of the modeled exceedances. The exceedances inside NMTS/NMAGG, Oñate Feed and Western Organics properties do not occur when those source's own impacts are removed. The impacts of NMTS/NMAGG's, Oñate Feed's or Western Organics' emissions within their own property cannot be held against any other source. MAXDCONT Viewer was also used to investigate the Star Paving contribution to 1-hour NO_2, 1-hour SO_2 and 24-hour $PM_{2.5}$ modeled results in ambient air to determine the highest result with a significant contribution from Star Paving. Those high results were compared to the standards.

The 24-hour PM_{10} and annual $PM_{2.5}$ models also showed modeled exceedances within NMTS/NMAGG and Western Organics properties. As noted above, the exceedances inside NMTS/NMAGG and Western Organics properties do not occur when those source's own impacts are removed and the impacts of NMTS/NMAGG's or Western Organics' emissions within their own property cannot be held against any other source.

Blocks of Time Modeling Technique

The particulate emissions were modeled using a blocks of time technique to allow for operational flexibility. This is accomplished using scenarios, in this case 12 scenarios or 12 modeling files for each particulate standard and averaging time, which shift the operating times of the equipment. For example, scenario 1 has HMA operations from Midnight to 6 PM for June through August, then scenario 2 has HMA operations from 2 AM through 8 PM for June through August, then scenario 3 has HMA operations from 4 AM through 10 PM for June through August, and so on for 12 scenarios until the entire 24 hour period is covered. This ensures that the worst case hours are modeled and allows Star Paving the flexibility to operate 24 hours/day, 7 days/week from February through November. This means that the hot mix asphalt plant can only operate at maximum production of 300 tons/hour for a certain number of hours but could operate at a lower throughput for longer each day as long as production does not exceed the designated tons per day limit for each month except for January and December, which are limited to 7 AM – 5:30 PM and 7 AM – 5 PM, respectively. The hours and daily throughput limits at 300 tons/hour are as follows: January, December – 10 hours, 3000 tons/day; February, March, November – 11 hours, 3300 tons/day; April, May, September, October – 14 hours, 4200 tons/day; June – August – 18 hours, 5400 tons/day. The source HMAHEAT, the Asphalt Cement Heater (Unit 16), was modeled as operating all hours, i.e. 24/7/365 without blocks of time, in every scenario. This source will not be restricted in its operating hours.

Equipment Setbacks and Control Requirements

Setback conditions will be needed for the storage piles and HMA plant to ensure that those sources do not end up close to the fence at a later date. The four aggregate and one RAP storage piles must be located west of the Unpaved Aggregate, Asphalt Cement, RAP Haul Road (UPO); at least 270 feet from the northern fence, at least 325 feet from the southern fence, at least 600 feet from the eastern fence and be at least 200 feet from the western Star Paving fence (Fig. 1). This will keep the piles between the northern and southern east-west portions of the UPO, paved in (PVI) and paved out (PVO) haul roads. The HMA baghouse stack must have a height of at least 21.3 feet, a diameter of no more than 4.2 feet and an exit velocity of at least 73.49 feet/second. The baghouse must be located in between the western sections of the UPA and UPO haul roads (Fig. 3) and must be at least 394 feet (120 meters) from the Star Paving fence on all sides as modeled and shown in Figures 1 & 3. Total aggregate (RAP and/or aggregate) throughput may be a maximum of 282 tons/hour. Aggregate throughput may vary from 177 tph to 282 tph. RAP throughput may vary from 105 tph to 0 tph. Since 100% aggregate scenarios were modeled and handling aggregate produces more particulate emissions than handling RAP, the amount of RAP used could go above 105 tph if some mix required it, as long as the total aggregate/RAP throughput is 282 tph at maximum. The facility may have up to two asphalt storage silos and two asphalt cement storage tanks according to the equipment list and modeling files.

Water sprays must wet material at the unloading drop points from the aggregate feed bins and RAP feed bin onto the respective conveyors (Units 3 & 9). The scalping screen (Unit 4) and RAP screen (Unit 10) had emissions calculated as controlled screening per AP-42 Table 11.19.2-2. The scalping screen unloading to scale conveyor (Unit 5), RAP screen unloading (Unit 11), scale conveyor transfer to slinger conveyor (Unit 6), and RAP transfer conveyor to drum (Unit 12) all had emissions calculated as controlled transfer points per AP-42 Table 11.19.2-2. Therefore all these units (4, 5, 6, 10, 11, 12) must be controlled by water sprays and/or roofed enclosures.

Both the Star Paving sources and the NMTS HMA sources used reduced hourly emission factors for the annual $PM_{2.5}$ models. The Star Paving reduced hourly emission factor was 0.470 based on the requested annual permit limit of 700,000 tons/year divided by the potential annual production of 1,488,900 tons/year based on the daily throughput limits discussed above. This is acceptable since those limits will be permit conditions. The NMTS HMA reduced hourly emission factor was 0.521 based on the requested annual permit limit of 800,000 tons/year divided by the potential annual production of 1,534,400 tons/year. This is acceptable because that is how modeling was done for NMTS permit #3340 and the limits are permit conditions.

Haul Roads/Truck Traffic

All haul roads were modeled as one lane traffic. That means that haul trucks can travel in one direction on a roadway at any given time. On the entrance/exit paved section, the PVI and PVO haul roads were modeled on top of each other, which indicates a single road. This means a truck could be going in or going out but trucks should not be able to travel in both directions at the same time. The PVI and PVO haul roads must be paved from the entrance/exit at least up to the modeled locations as shown in Figures 1 & 2. The eastern portions of the PVI and PVO haul roads must be at least 20 feet from the eastern Star Paving fence. The Unpaved Asphalt Haul Road (UPA) and Unpaved Aggregate, Asphalt Cement, RAP Haul Road (UPO) road sections must have a base course, such as asphalt millings, and have surfactant applied in order to achieve the 90% control efficiency used in emission calculations and models. Water could be used in addition to the surfactant if it does not affect the performance of the surfactant. However, the use of 'surfactants or asphalt millings and watering' as described at the top of the Controlled HMA Haul Truck Travel calculations section on p.B-23 in the application report is not acceptable because a base course, such as asphalt millings, and watering together achieve only 80% control efficiency according to NMED guidance. Surfactants alone, without a base course, also do not achieve 90% control efficiency. Up to 24 trucks/hour may enter and leave the facility based on the emission calculations and modeling that was performed. Of those 24 trucks/hour, 12 trucks/hour may be asphalt trucks traveling on the Unpaved Asphalt Haul Road (UPA) (Fig. 3) to be loaded with asphalt and 12 trucks/hour may be aggregate, asphalt cement or RAP trucks traveling on the Unpaved Aggregate, Asphalt Cement, RAP Haul Road (UPO) (Fig. 3).

The Technical Analysis Section recommends accepting this model.

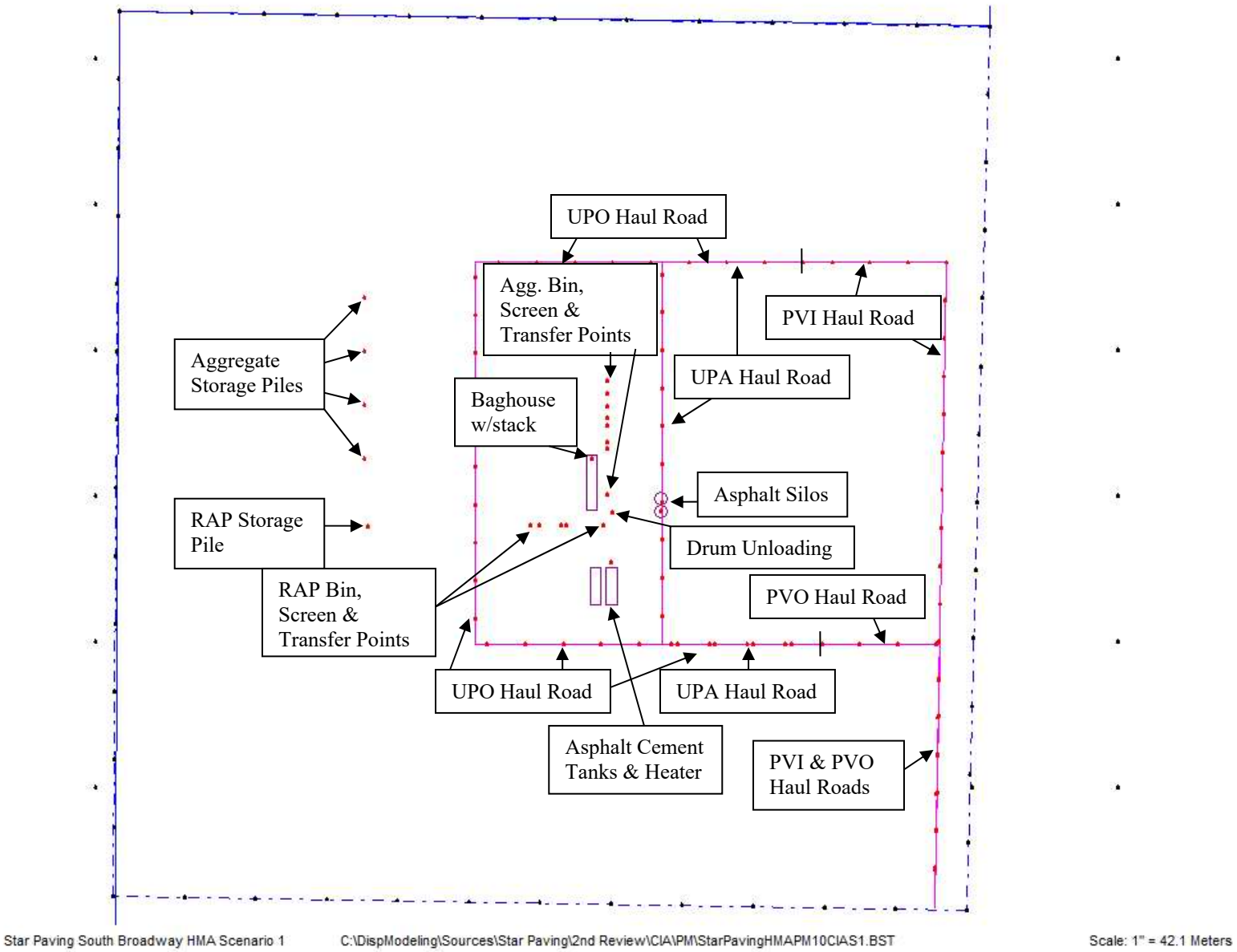

Figure 1. Star Paving source layout.

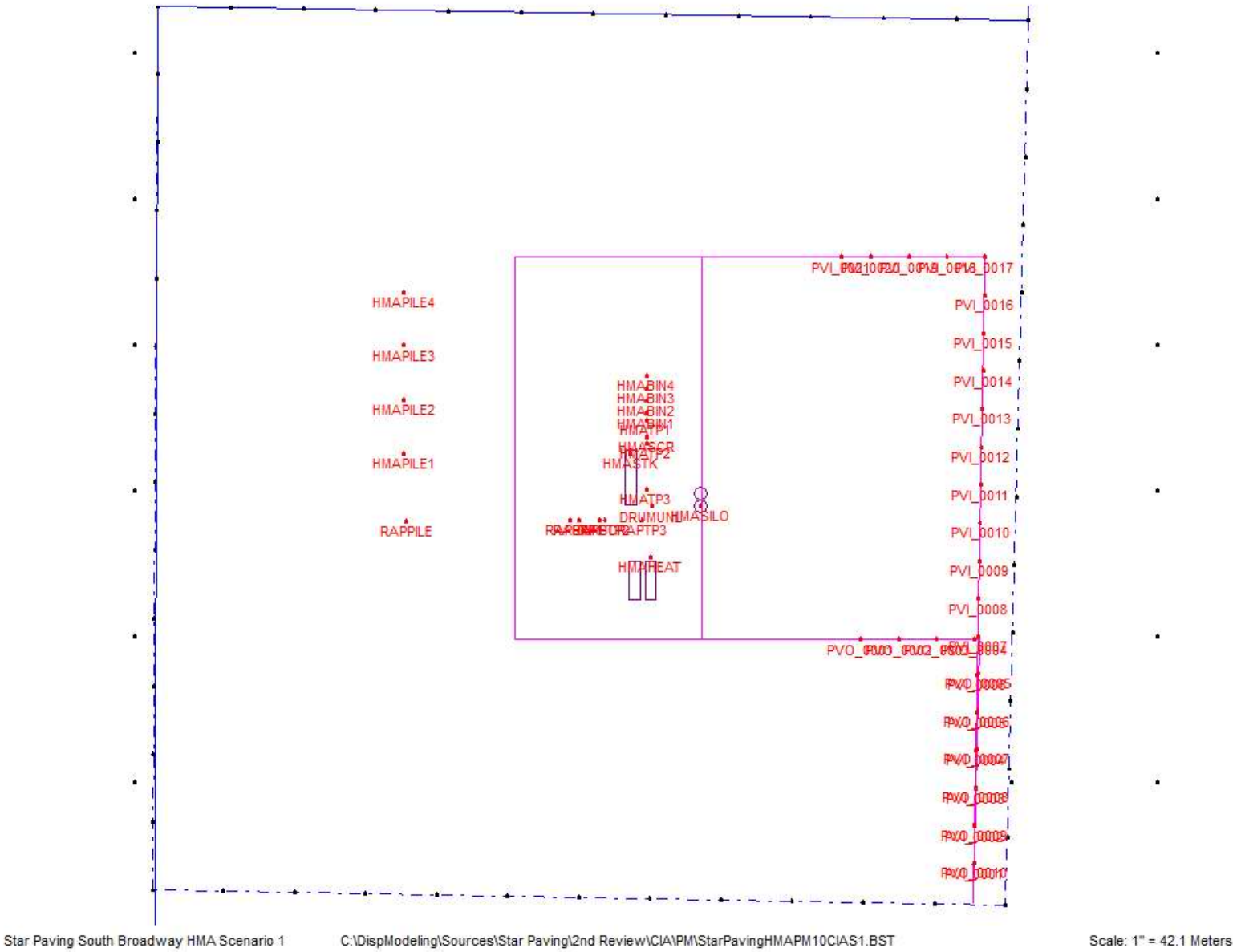

Figure 2. Paved haul roads PVI and PVO.

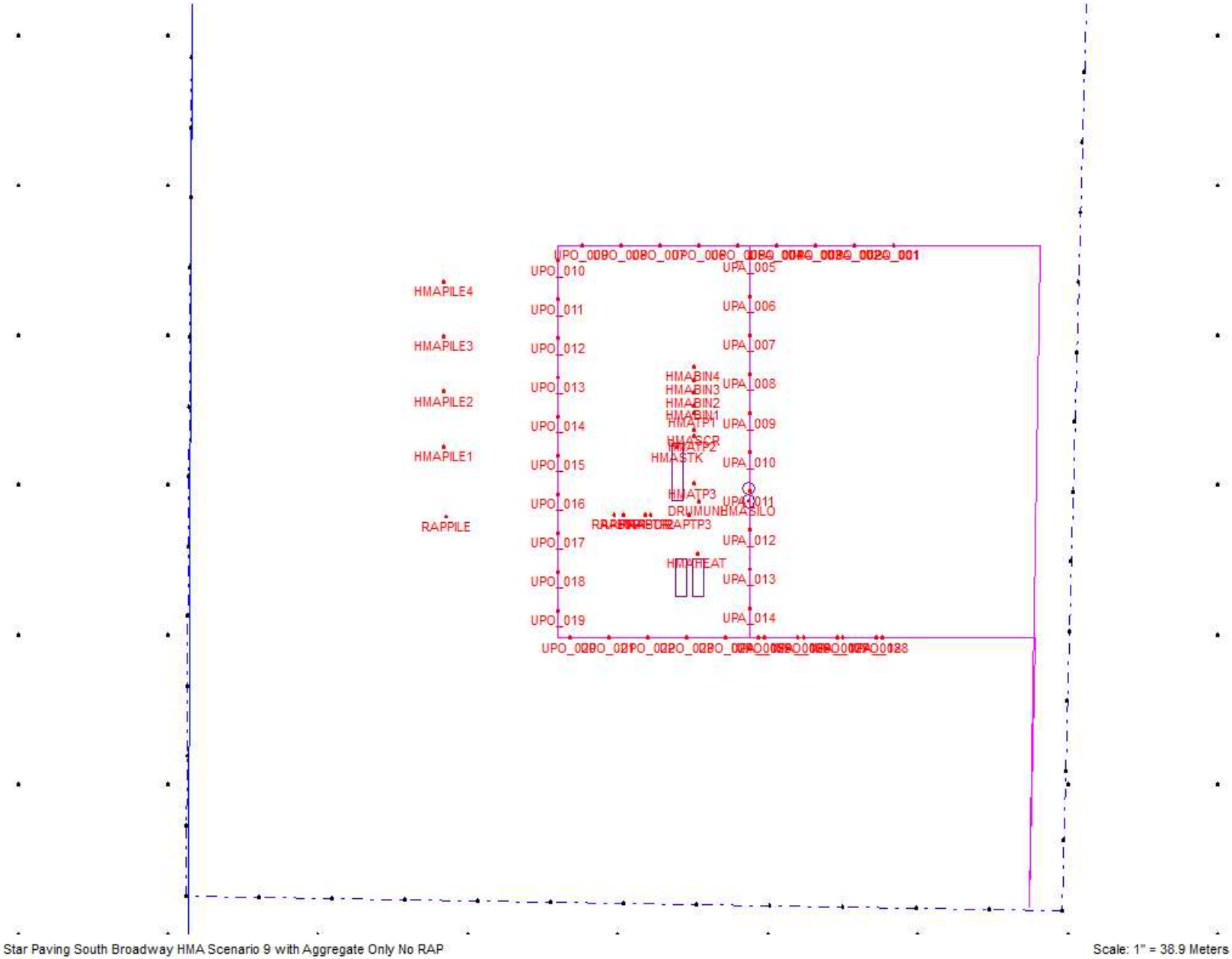

Figure 3. Unpaved haul roads UPA and UPO.

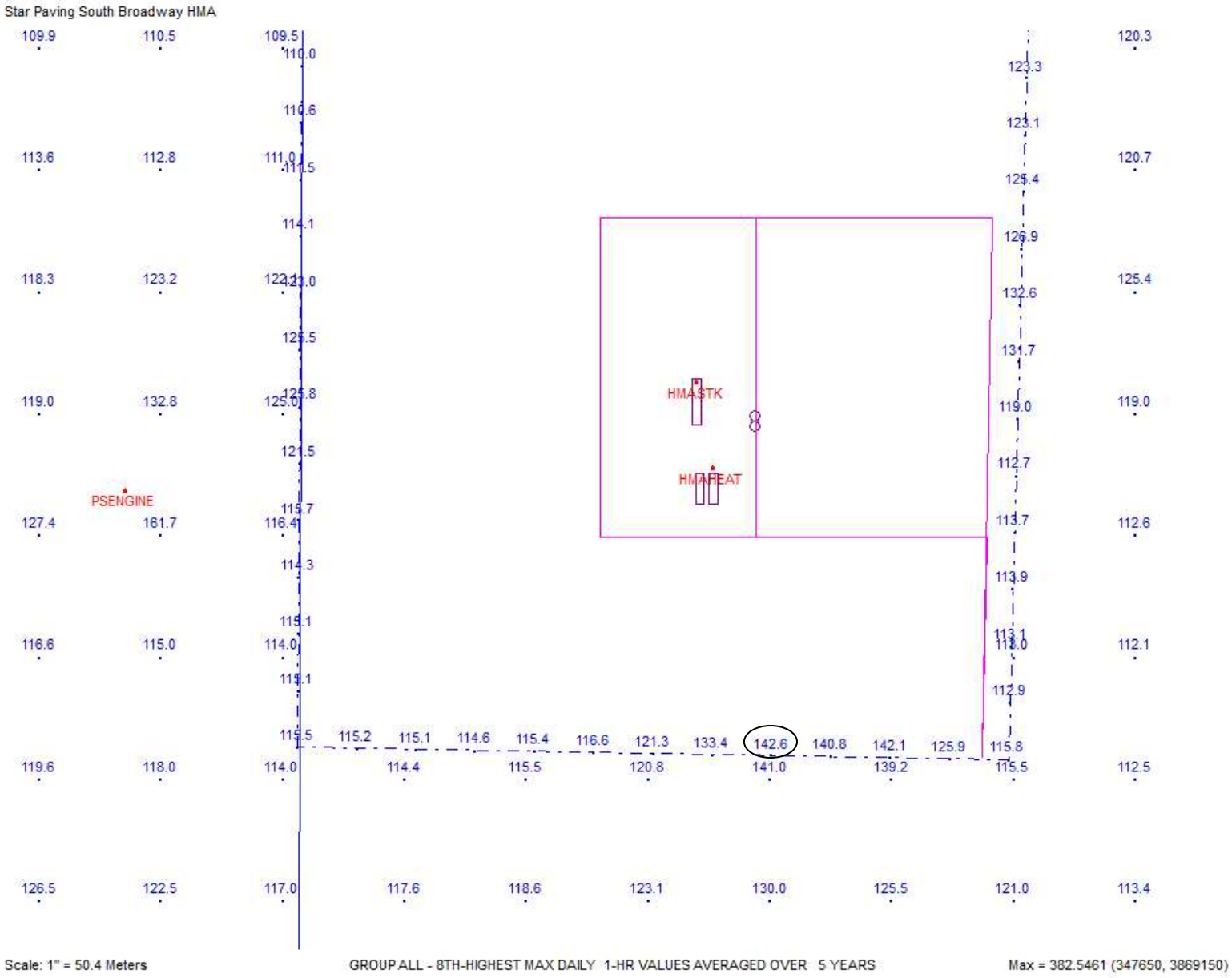

Figure 4. 1-hour NO_2 results: highest with significant contribution from Star Paving, background included.

Figure 5. 1-hour NO_2 model MAXDCONT Viewer results – Star Paving contribution is lower value, background included in total upper value.

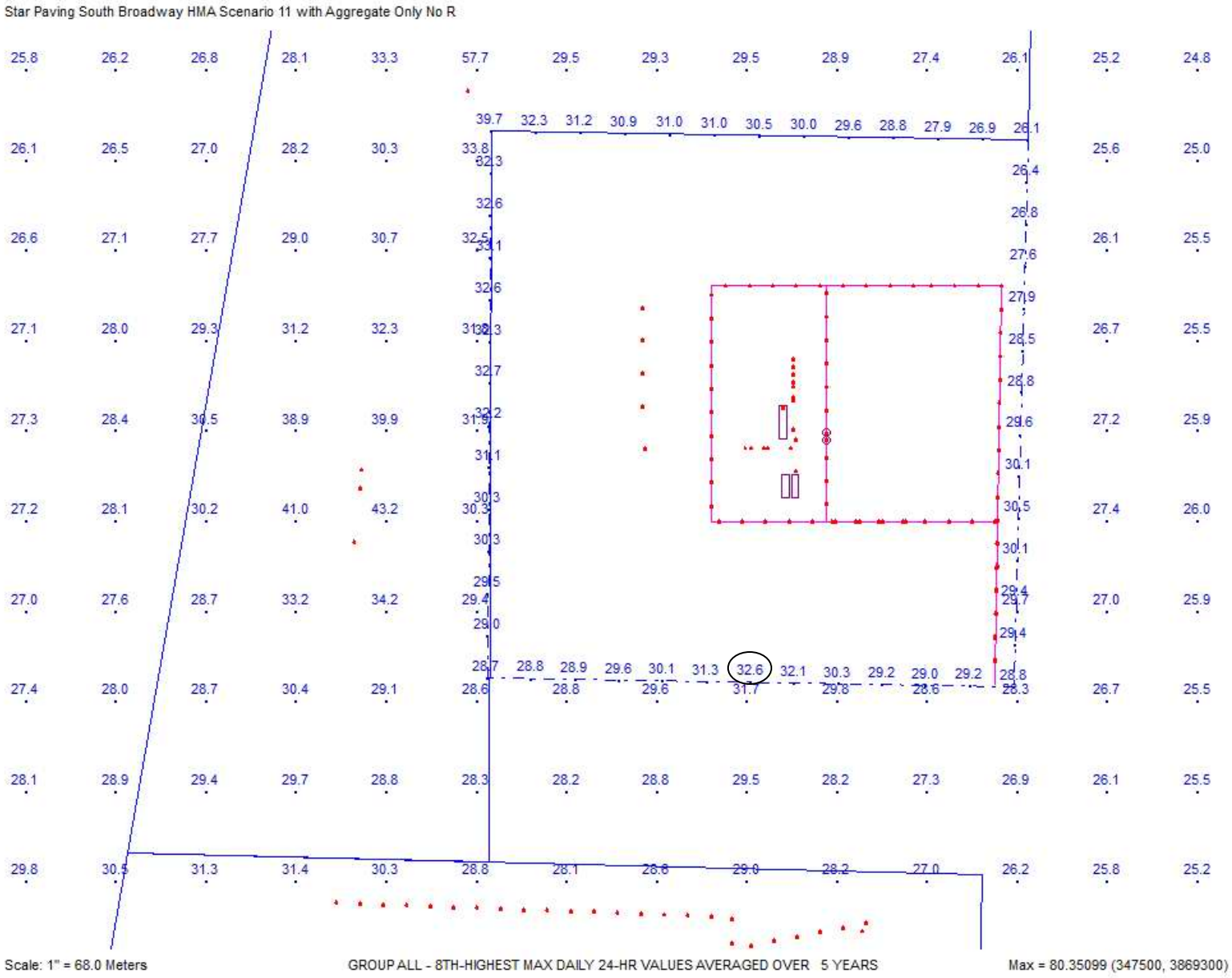

Figure 6. 24-hour $PM_{2.5}$ Scenario 11 Aggregate results, background included but not secondary $PM_{2.5}$.

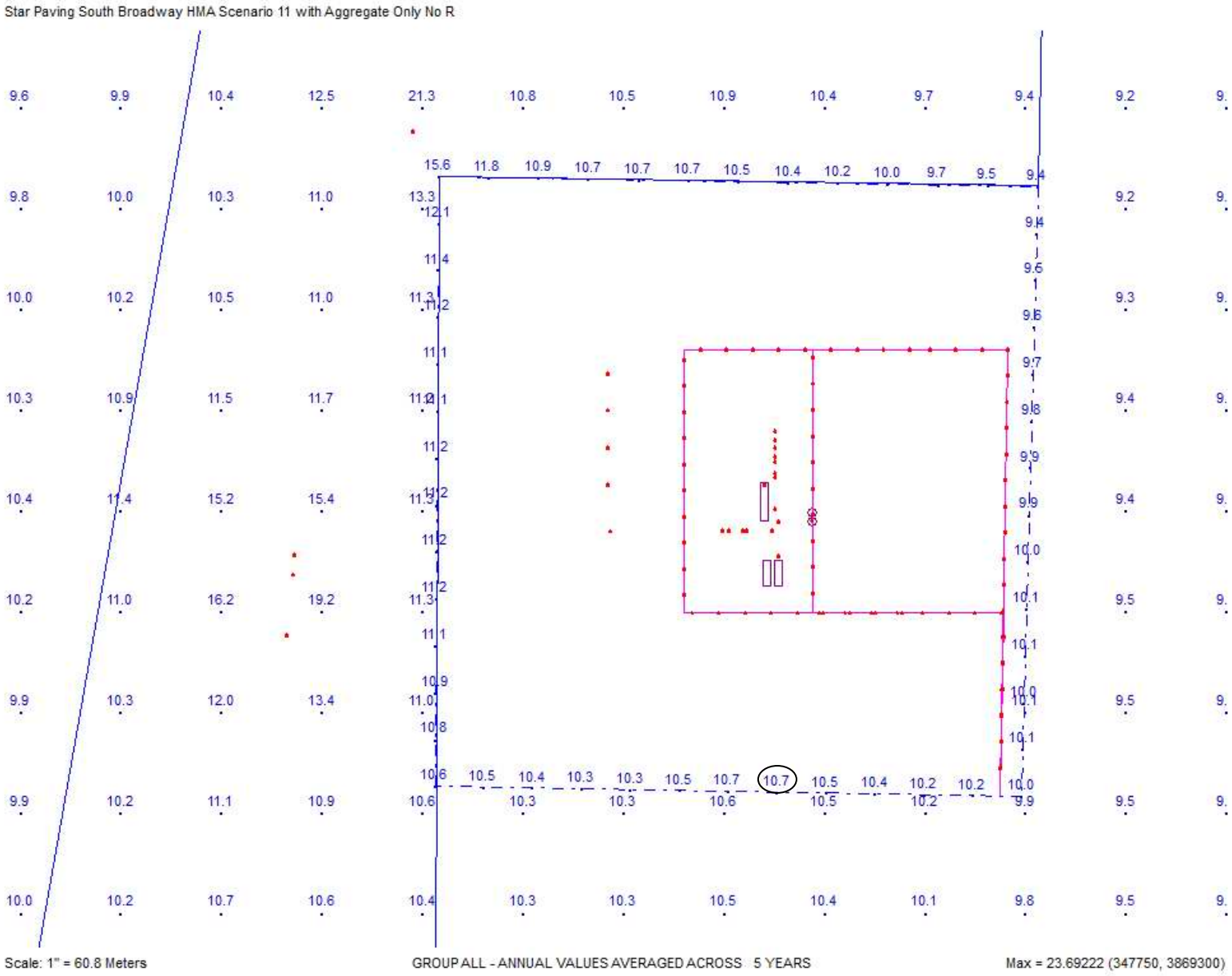

Figure 7. Annual $PM_{2.5}$ Scenario 11 Aggregate results, background included but not secondary $PM_{2.5}$.

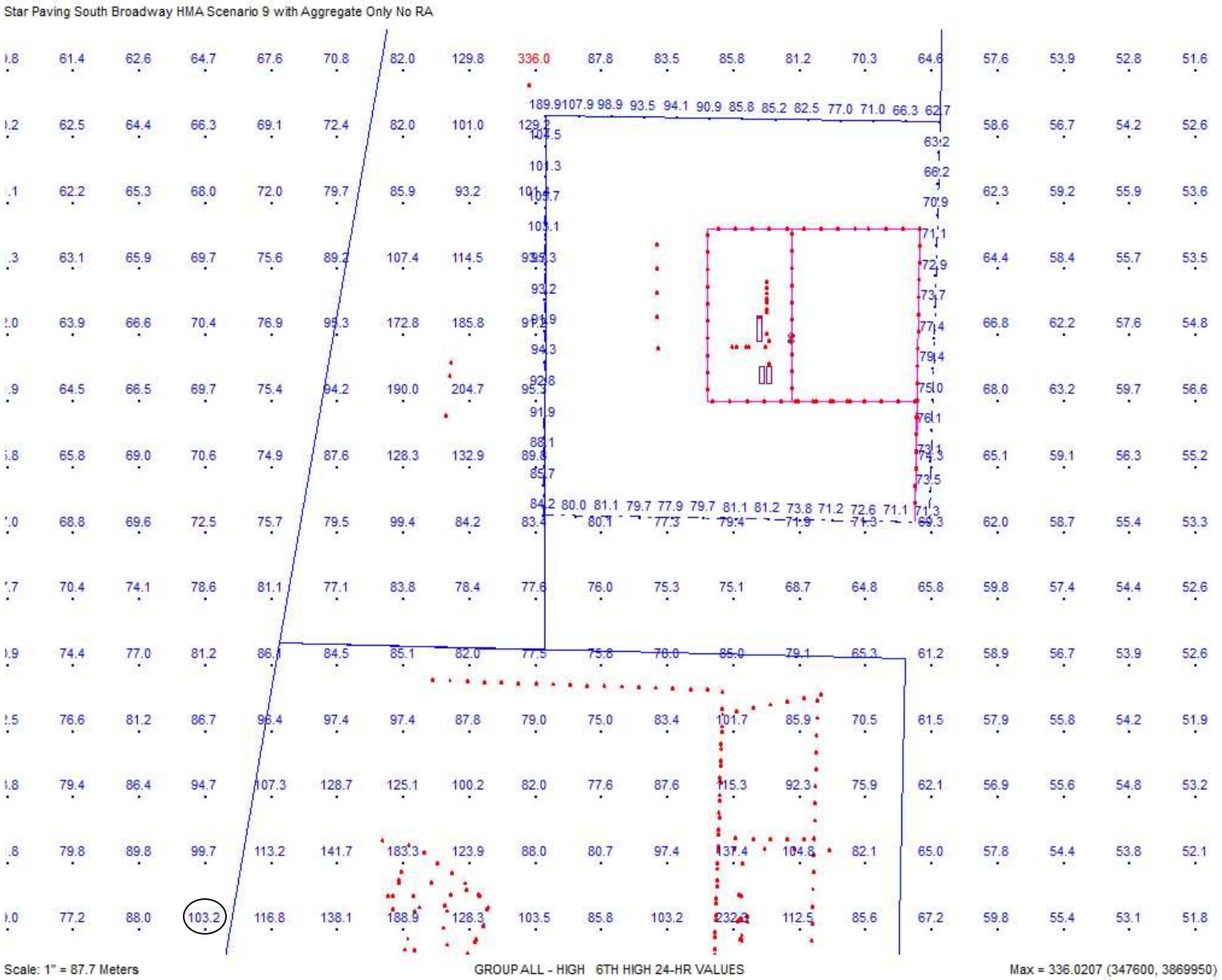

Figure 8. 24-hour PM_{10} Scenario 9 Aggregate results, background included.

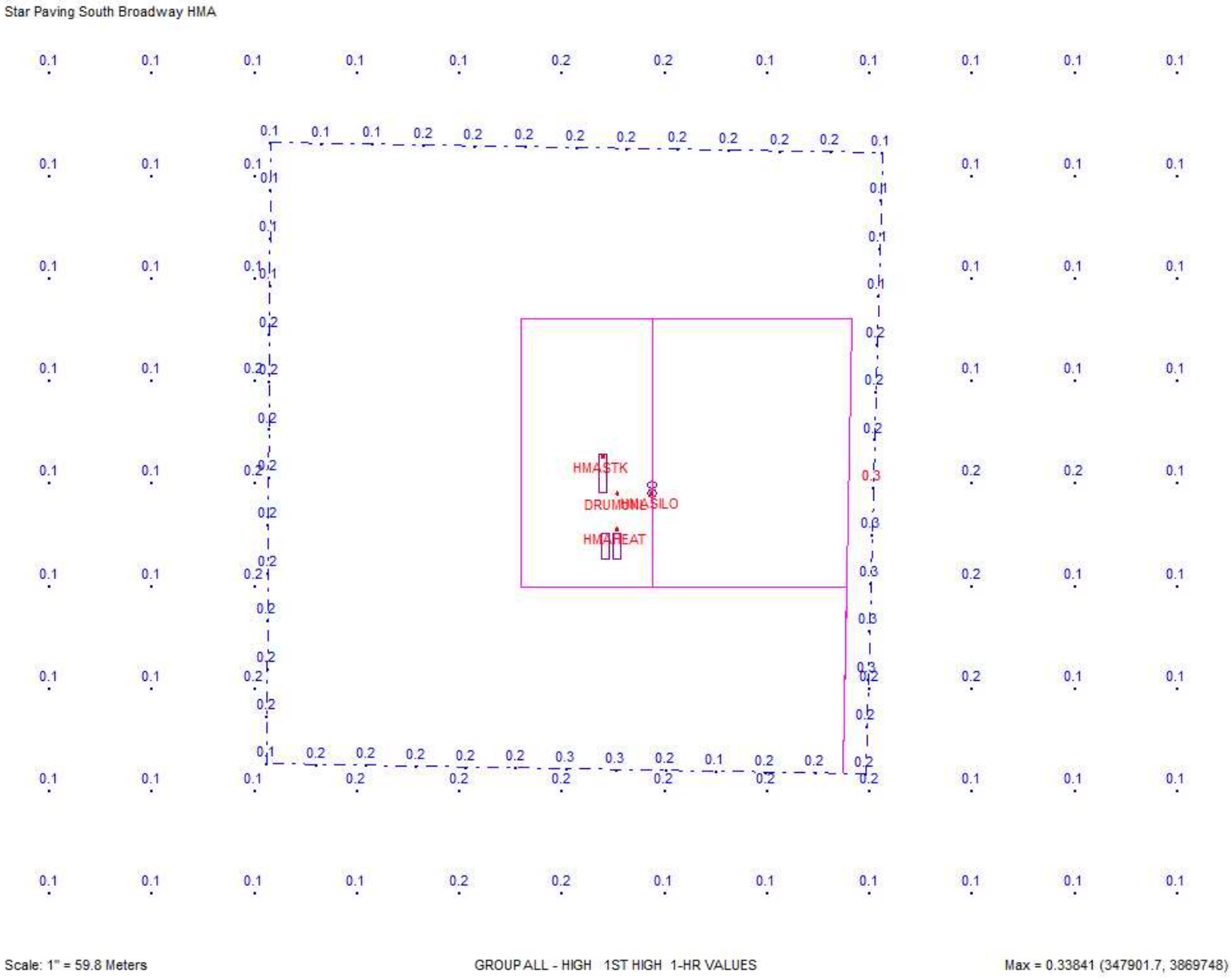

Figure 9. 1-hour H_2S results.